

Counterfactual, prevention and causal thinking about  
workplace slip and trip accidents:  
A study of Safety Professionals, Managers  
and Accident Subjects.

By

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# Counterfactual, prevention and causal thinking about workplace slip and trip accidents:

A study of Safety Professionals, Managers and Accident Subjects.

## Abstract

Counterfactual thinking typically follows an unexpected event and involves the mental simulation of an alternative outcome which can be either better or worse than the original one. In general, exceptional and controllable events are selected for change over those that are routine and uncontrollable, and actions are likely to be changed over inactions. Importantly an individual's social role is thought to be critical in determining what is changed and how. Counterfactual thoughts have been associated with causal thinking and more recently with missed opportunities to prevent an unwanted outcome.

Accidents at work are unwanted outcomes and are likely to generate counterfactual thoughts. As slips and trips continue to cause a significant number of injuries they are the focus of this research. Safety Professionals, Managers and Accident Subjects are most commonly involved in accident investigations and the study asks whether their different social roles or the type of accident influences how they use counterfactual, prevention and causal thoughts.

612 respondents were recruited representing Safety Professionals, Managers and Accident Subjects. After reading a slip or trip scenario they completed a counterfactual, prevention and causal sentence and these were analysed against 14 structural dimensions, seven of which were used for the first time in this study.

The respondent's job group and the type of accident were found to influence certain structural dimensions of the counterfactual, prevention and causal thoughts more than others. The respondent's job group strongly influenced counterfactual

direction, and the addition or subtraction of antecedents based on actions or inactions, whilst the type of accident strongly influenced the temporal location of the antecedent.

Norm Theory (Kahneman & Miller, 1986) proposed that exceptional antecedents were selected for counterfactual change and a categorisation of types of exceptional events has been developed and applied in this study.

The implications of these types of thoughts by Safety Professionals, Managers and Accident Subjects are considered.

## Statement of Objectives

The purpose of the current research was:

1. To identify how the seven structural dimensions of the counterfactual sentence identified in previous research were used in the specific setting of a slip or trip accident.
2. To establish how the seven new structural dimensions of the counterfactual sentence were used in the specific setting of a slip and trip accident.
3. To identify how the 13 sentence dimensions were used in the prevention and causal sentences in the specific setting of a slip and trip accident.
4. To examine the effect of accident type (slip or trip) on the structure of counterfactual, prevention and causal sentence sentences.
5. To examine the effect of job type (Safety Professionals, Managers and Accident Subjects) on the structure of counterfactual, prevention and causal sentences.

Occupational slip and trip accidents continue to be a significant cause of personal injury and lost time to the UK economy, despite high profile campaigns and prevention programmes such as ‘Shattered Lives’ run by the Health and Safety Executive (HSE) in 2012 (HSE, 2012a).

In 2011/12 30,059 occupational slip and trip accidents were reported to the HSE or local authorities, under the provisions of the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (HMSO, 1995). Two of these were fatal, 8,929 caused major injuries (defined in the regulations, including fractured arms and legs) and 21,130 resulted in absences from work lasting more than three days. (HSE, 2013a). Slip and trip accidents accounted for 40% of all reported major injuries and 24% of over three day absences. HSE estimate that each slip or trip accident resulting in a major injury costs the UK economy approximately £17,900 and each accident resulting in an over three day absence costs £330, so the total annual cost for major injury accidents is in the region of £160 million and the total annual cost of over three day accidents is approximately £70 million (HSE, 2013b).

There is a substantial body of research and published literature on various aspects of slip and a trip accidents which has tended to focus on the foot / floor interface, addressing matters such as friction coefficients, the type of flooring and footwear. However the psychology of slip and trip accidents has received scant attention in the past, so I undertook a research project as part of my Masters Degree which identified that accident subjects and their managers had differing perceptions as to causal responsibility for slip and trip accidents (Lehane, 1998 & 2001). In the current study, the concept that people’s roles influence their perspectives on slips and trips is developed further through the use of counterfactual thinking, which is triggered by surprising, negative and unwanted outcomes such as an injury following an occupational slip or trip.

Counterfactual thinking is often described as ‘if only...’ thoughts and in this study the basic structure of those thoughts are recorded and analysed after respondents from three populations associated with slip or trip accidents (Safety Professionals,

Managers and Accident Subjects) had read a scenario and completed an 'if only...' sentence. The analysis applied to the counterfactual sentences was also applied for the first time in this study to the respondents' preventative and causal thinking, which was recorded at the same time as their counterfactual thoughts. I anticipated that differences in the perceptions held by Safety Professionals, Managers and Accident Subjects about slips and trips would present themselves through their different counterfactual, prevention and causal thoughts.

I will review the counterfactual thinking literature in detail in the following section but in summary, counterfactual thinking seeks to establish a mental representation of an alternative outcome to that which actually occurred.

Early research on counterfactual thinking established an understanding of basic rules by examining the thoughts of respondents on a number of dimensions, which included: the direction of the outcome, being either better or worse than the actual outcome; whether the alternative outcome was achieved by making a change to an action or inaction; whether an antecedent was added or removed from the sequence of events; whether a routine or exceptional antecedent was changed; the temporal position of the antecedent; the locus of control over the antecedent; and whether the antecedent was dynamic or static.

These dimensions were tested in various ways but in the main research relied on undergraduate psychology students as respondents, using three main approaches including scenarios, games of chance / anagram tests and recalling personal experiences.

Respondents' counterfactual responses varied across these dimensions depending on many factors including the reason they were engaging in counterfactual thinking, which can be influenced to a significant degree by respondents' social role.

Counterfactual thinking has been applied to a range of research-based situations some of which have involved accident type outcomes or at least involved injury,



negligent or criminal behaviour. In the main, the setting of the scenario has been of secondary interest to the researchers, simply providing a situation and outcome which would generate counterfactual thought which was the primary purpose of the research. No previous study has attempted to combine research into counterfactual thought with a specific relevant social situation and compared the counterfactual thoughts of respondents with a personal, emotional, physical or professional interest in it. This study seeks to do just that by examining the ways that Safety Professionals, Managers and Accident Subjects use counterfactual thinking associated with an occupational slip or trip accident. In recent years the Health and Safety Executive (HSE) have undertaken targeted campaigns seeking to reduce the incidence of slip and trip accidents but these have been resistant to interventions and the rate of incidents has remained largely unaltered.

A general understanding of counterfactual thinking was initially established by identifying its various structural dimensions and then applying this knowledge to more complex aspects of people's cognitions. This study returned to those basic building blocks of counterfactual thinking, utilised an approach in which the respondent's social role was critically important, and ascertained how this affected the structure of their counterfactual thoughts following a socially relevant outcome.

In summary, this study sought to compare the structural dimensions of counterfactual thoughts generated by Safety Professionals, Managers and Accident Subjects following a scenario-based occupational slip or trip accident. Seven previously identified structural dimensions of counterfactual thought were used along with seven new ones identified during this study. The different social roles of the three respondent groups were expected to influence their reasons and motivations when they engaged in counterfactual thinking, and this was expected to influence the structure of their counterfactual thoughts generated in response to the accident scenario.

One of the main social determinants is expected to be the respondents' knowledge of occupational safety law and how that frames the counterfactual responses of Safety Professionals especially.

Counterfactual thinking has been associated with causal and prevention thinking and in this study the structural dimensions that have been identified for counterfactual thinking are also applied to the respondents' causal and prevention thoughts. This was a novel approach and allowed the three types of thinking to be compared across the same structural dimensions for a single incident.

I will review relevant literature relating to counterfactual thinking and relate it to occupational accidents in general and specifically to slips and trips. I will also touch on how the legal framework established by statute may influence the respondents' approach to counterfactual, prevention and causal thinking.

After describing the approach I took in this study, I will report the results and discuss their implications in the light of current knowledge and what it might mean for occupational accidents generally, and slips and trips specifically.

## Literature Review

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### **What is Counterfactual Thinking?**

Counterfactual means ‘contrary to the facts’ and counterfactual thinking usually starts with an actual outcome which is surprising, unexpected or unwanted. The sequence of events (antecedents) leading up to the outcome is mentally explored and one of those antecedents is selected and changed (mutated) in a way which is designed to bring about a different (counterfactual) outcome. The antecedent selected and changed may only differ from the actual one by a small amount, but that difference is either sufficient and / or necessary to bring about the desired outcome (Roese & Olsen, 1995).

Counterfactual thinking has been studied by philosophers (e.g. Lewis, 1973; Stalnaker, 1968) and psychologists (e.g. Kahneman & Miller, 1986; Kahneman & Tversky, 1982) and has been shown to play a role in a range of cognitive processes such as causal judgements (e.g. Roese & Olson, 1997), deductive reasoning (e.g. Johnson-Laird & Byrne, 1991) and creativity (e.g. Hofstadter, 1985).

Counterfactual thinking has also been shown to have a range of affective consequences including feelings of regret and elation (e.g. Gilovich & Medvec, 1994; Landman, 1987). Negative emotions such as regret or guilt can be generated by upward counterfactual thoughts when the counterfactual alternative is better than the actual outcome (e.g. Roese, 1994; Roese & Olson, 1995), whilst positive emotions such as relief may result from downward counterfactuals comparing the actual outcome with a worse alternative (Sherman & McConnell, 1996). The prospect of being able to achieve a desired better outcome revealed through counterfactual thinking is said to be motivational (Smallman & Roese, 2009). Aboulnasr and Sivaraman (2010) found that people who engaged in upward counterfactual thinking were more highly motivated to read and take notice of nutritional information on foods after a negative health event and suggested that counterfactual thinking was a valuable public policy instrument that can be used to aid the success of food labelling change.

Counterfactual thoughts tend to focus on actions rather than failures to act (Kahneman & Tversky, 1982) at least in the short term (Byrne & McEleney, 1997) and on exceptional rather than routine events (Kahneman & Miller, 1986, but see Davis, Lehman, Wortman, Silver, & Thompson, 1995 for an exception) and dynamic rather than static events (Kahneman & Varey, 1990), and controllable rather than uncontrollable events (Girorro, Legrenzi, & Rizzo, 1991).

The focus of people's counterfactual thoughts is influenced by the order of events and their relationship to each other. In a causal chain, people tend to change the first event (Wells, Taylor, & Turtle, 1987) whereas it tends to be the last event in an independent chain of events (Miller & Gunasegaram, 1990).

Kray, George, Liljenquist, Galinsky, Tetlock and Roeser (2010) proposed that counterfactual thinking helped individuals to derive meaning from life's pivotal events and relationships and created the sense that they were 'meant to be' by establishing causal connections among otherwise discrete events with both positive and negative outcomes. They suggest this approach applies to a broad spectrum of personal turning points, but not a single one and not whilst an event is fresh or raw. It is an interesting idea that an occupational accident causing a significant injury could over time become integrated in to someone's life in a positive way which helps them find meaning and purpose. However, in the immediate aftermath of a traumatic event such as an accident, counterfactual thoughts can also be associated with insomnia (Schmidt & Ven der Linden, 2009) and post-traumatic stress disorder (El Leithy, Brown, & Robbins, 2006).

Occupational accidents are set against an employer's legal duty to identify and manage risk and protect employees. Whilst this duty is placed on the employer it is commonly discharged by individuals within the organisation on behalf of the employer. When an accident occurs, individuals who hold this responsibility on behalf of the employer may feel blame, or indeed be blamed, for the accident and we know from the work of Creyer and Gurhan (1997), Catellani and Milesi (2001), and Branscombe, Owen, Garstka and Coleman (1996) that counterfactuals have a

role in blame assignment by highlighting the availability and salience of a better outcome 'if only...' someone had done something different. In situations where people feel personally at risk of being blamed upward counterfactuals have also been found to play a role in excusing failure by shifting the blame to unstable factors (McCrea, 2008) and are used in a self-protective way (McCrea, 2007). Similarly counterfactual thoughts have also been associated with denial of responsibility (Markman & Tetlock, 2000), lower future expectations (Sanna, Chang, & Meier, 2001) and used to suggest that external factors rather than internal factors prevented a better outcome (Goerke, Moller, Schultz-Hardt, Napiersky, & Frey, 2004).

The difference between 'what is' and 'what could have been', the factual and the counterfactual, can range from small to large and between life and death. Teigen, Kanten and Terum (2011) reported that about half of the people who were asked to consider how their lives could have been different considered not only how it might have been better or worse but went to the other extreme and suggested the complete opposite of what they had attained or experienced. They suggested that this could indicate a more general tendency in people's counterfactual thinking to be conceived as polar opposites rather than just minor modifications of reality, and that this arises from a more abstract or schematic mind-set that activates a prototypical outcome over the more mixed outcomes that actually arise from day to day living, arguing that this is consistent with construal theory (Trope & Liberman, 2003). Teigen et al. (2011) tested the idea that counterfactual thinking was more schematic because it relates to more distant or hypothetical events than those that have actually happened. In a series of experiments, they tested whether predicted consequences of counterfactual events were judged to be more extreme, and extreme consequences of counterfactual events were more likely, than corresponding judgements of factual events. They made an interesting comment relating to situations involving life and death, observing that people seemed to be willing to go a long way in constructing counterfactuals that are not even close to reality, partly because so much is at stake, observing that in the world of

counterfactual thinking there seems to be some truth in the saying that opposites attract. Their first experiment showed that spontaneous counterfactuals drawn from people's own lives have a tendency to be constructed as polar opposites, with highly positive events having highly negative counterfactuals and moderately positive events having moderately negative counterfactuals.

The idea of being lucky or unlucky is intimately associated with counterfactual thoughts and Teigen (1995) considered that luck was essentially determined by a comparison between the factual and counterfactual outcome, with good luck being experienced where the factual outcome is better than the counterfactual alternative and being unlucky where the factual outcome is worse than the counterfactual alternative. Teigen and Jenson (2011) describe research with families exposed to the tsunami disaster of December 2004 and point out that situations that are not merely dangerous but where an accident has actually occurred, allow for both upward and downward counterfactuals as the accident could still have been prevented but could still have been worse, and clearly occupational accidents fall in to this category. The literature relating to counterfactual thinking following trauma shows that it can lead to self blame, ruminations and counterfactual thoughts about how it could have been avoided and almost always report the use of upward counterfactual thoughts pointing to a better world, but these thoughts can become maladaptive. Further details can be found in Branscombe, Wohl, Owen, Allison and N'Gbala (2003) who reported on rape victims, Callander, Brown, Tata and Regan (2007) who examined responses to recent miscarriages, and Parker, Middleton and Kulik (2002) who considered the failure of silicone breast implants.

After something unwanted or unexpected occurs, such as a slip or trip accident at work, people are inclined to think about it and these thoughts are often directed towards how a different outcome might have been brought about (counterfactual thinking), how it might have been prevented and what the cause was.

Counterfactual thinking is usually illustrated by the phrase 'If only X then Y', where 'X' represents a changeable (mutable) event occurring before the actual outcome and 'Y' represents the different outcome. For example, after slipping on a

spillage of milk on a supermarket floor an accident subject might think 'If only a warning sign had been put out then I would not have walked in the milk and slipped'.

Ross and Nisbett (1991) considered the social setting in which counterfactual thinking is performed as being important in defining the conditions under which counterfactuals are brought to mind, as well as influencing their specific content. They also considered the goals and motivations of individuals within a particular social setting, along with their individual interpretation of those situations, to be important in shaping the counterfactual worlds they create. Occupational slip and trip accidents occur in a specific social setting, that of work, and equally important in the context of this research are the legal responsibilities and duties imposed on employers and employees by the Health & Safety at Work etc. Act 1974 (HMSO, 1974) and a range of regulations made under the act.

People in a social situation rarely make absolute judgements but require comparable situations against which to make judgements. These usually take the form of other people in similar circumstances or similar events, but in cases where there are no readily available comparisons people may mentally manufacture such events using counterfactual thinking. In the context of this research individuals do not have to create a counterfactual alternative world as they have a real one against which to make a comparison when a slip or trip accident occurs. People do not commonly slip or trip at work so they use their everyday non-accident experiences as the basis against which to compare an accident. This non-accident condition becomes the norm and the desired state of the world, against which an accident can be judged.

Counterfactual thinking is a central element in Kahneman and Miller's (1986) Norm Theory which describes the psychology of surprise. After an event has occurred and been judged as unexpected or surprising, a comparison is made between the actual outcome and the expected outcome. The expected outcome is referred to as the norm and forms the cognitive anchor against which comparisons are made. When the expected outcome (norm) is similar to the actual outcome there

is no element of surprise and little further cognitive processing is undertaken, however when the norm and actual outcome are different, there is an element of surprise and further cognitive processing follows. The purpose of constructing a counterfactual world is to convert an unwanted or unexpected outcome back to its expected value (norm) by changing mutable antecedents. Mutable antecedents are generally considered to be something which was exceptional, unusual or missing, so an outcome is more likely to be undone by the alteration of a mutable aspect of the circumstances leading up to it than by altering a routine antecedent (Kahneman & Miller, 1986; Kahneman & Tversky, 1982).

Norm Theory predicts that when people engage in counterfactual thinking an exceptional item is selected from the antecedents and changed into one that is more routine. Kahneman and Miller (1986) suggested that there was a fundamental tendency to create counterfactual simulations that re-establish normality and illustrated this in their study in which Mr. Jones was killed in a car accident after either leaving work early or taking a different route home. After reading the scenario respondents were asked to complete an 'if only...' sentence and they focused their attention on changing the time Mr. Jones left work or his route home more than other options which would have brought about a different outcome. A slightly different approach was suggested by Gavanski and Wells (1989) who proposed that changing exceptional events towards more routine ones only occurred in response to more exceptional outcomes and that this was based on a correspondence heuristic in which exceptional outcomes follow exceptional antecedents. They also showed that normal outcomes were mutated by changing both normal and exceptional antecedents.

Roese and Olsen (1995) suggested that counterfactuals were generated in a two-stage process. In the first stage the possibility of a different outcome had to be made available and once this had been activated the actual content of the counterfactual was then determined in the second stage.



The availability of a counterfactual alternative is determined by social and motivational factors including the desirability of the actual outcome (outcome valance), how close the actual outcome came to another outcome, and the degree of personal involvement with the outcome.

At a basic level an unwanted outcome could threaten the safety or survival of an individual or at a higher level it might mean failing to achieve something that was being positively pursued. Negative or unwanted outcomes are undesirable and signify a problem or threat to the individual or that the environment was not properly understood, and they produce more active and directed cognitive activity resulting in enhanced processing, concentrating on avoiding repeating the same error in the future (Roese & Olsen, 1995).

How close an individual believes an actual outcome was to an alternative one can also stimulate the generation of counterfactuals. Miller, Turnbull and McFarland (1990) suggested that counterfactual closeness was “a function of the intuitive implicit mental models of the world and its operation, and these models give rise to what have been labelled as explicit expectancies. The ease with which the parameters of a mental model may be revised determines the availability of counterfactual representations”. Small changes to parameters are more realistic and plausible and lead to counterfactual alternatives being more readily available, whereas large changes to the parameters of a model are less realistic and plausible and counterfactual alternatives are less available so less readily generated.

Kahneman and Tversky (1982) illustrated the concept in their scenario involving Mr. Crane and Mr. Tees. Mr. Tees was perceived to be more disappointed missing his flight by five minutes than Mr. Crane who missed his by 30 minutes, because it is more plausible to have arrived five minutes earlier than 30 minutes earlier.

Meyers-Levy and Maheswaran (1992) commented that being personally involved in an unwanted outcome is also likely to prompt counterfactual thinking and influence its content. An outcome which directly affects an individual is more relevant and provides a greater urgency to resolve than one which does not. At a basic functional

level if an outcome places an individual at risk of harm, instinctive self-preservation demands that the situation needs to be understood so that it can be avoided in the future. Motivational needs are said to influence the availability of counterfactual thinking (Ross & Nisbett, 1991; Seelau, Seelau, Wells & Windschitl, 1995) and an individual's motivation is influenced by their role in the context of a particular social setting and their involvement with the actual outcome. Counterfactual thinking may be undertaken from a personal or public perspective (Markman, Gavanski, Sherman, & McMullen, 1995). A personal perspective involves the consideration of the event and the generation of counterfactual alternatives from the viewpoint of the person who was actually involved with and experienced the outcome and in this study is probably limited to the Accident Subject. The degree of personal involvement decreases as the respondent's role becomes more distant from the event itself, so witnesses, supervisors, managers, employers, safety officers and lawyers would adopt a more public perspective. Following an occupational accident relatively few people will adopt a personal perspective to their counterfactual, prevention and causal thinking, whereas a wider range of people are likely to adopt a public approach and a significant range of affective responses are likely to be based on their different roles, motivations and involvement with the event itself.

The second stage of counterfactual generation (Roese & Olsen, 1995) determines the content and structure of the counterfactual thought and this is linked to the specific properties of the antecedent event selected for change (mutation). They suggest that the content of the counterfactual is related to exceptionality, salience, control, dynamics and serial position.

The structure of counterfactual thoughts has previously been described with respect to seven individual dimensions. One of these, counterfactual direction, refers to the nature of the alternative outcome whilst the other six relate to the antecedent that has been selected and changed to bring about the alternative outcome.

The alternative outcome is described as having a directional quality whereby it can be upward, leading to a better outcome, or downward where the alternative outcome

is worse than the actual outcome. The other dimensions relate to the antecedent itself and are: its normality or exceptionality; describe whether the antecedent was added to or subtracted from the original sequence of events; whether the antecedent is an action or inaction; whether it is static or dynamic; whether is it under the control of the person thinking about it; and where it was located in the temporal sequence of events leading to the outcome. These seven dimensions will be described in more detail later and are the focus for this research along with seven new dimensions which were identified as being particularly relevant to occupational accidents. These were to identify the specific subject of the counterfactual thought and its 'domain' (was it a behaviour, process / procedure or the physical environment); was the scenario actor spontaneously identified; did the counterfactual refer to a personal or situational antecedent; was the counterfactual expressed specific to the scenario or was it more generally framed; was the counterfactual based on details known to the respondent or inferred by the respondent to have existed; and lastly to which of the scenario actors did the counterfactual relate.

Slip or trip accidents involving an injury provide the necessary negative outcome which has been identified as the most common reason to engage in counterfactual thinking (Gavanski & Wells, 1989; Gleicher et al., 1990). The injury brings an alternative outcome to mind and this makes the counterfactual available to the person who is thinking about it and fits the description of the first stage of counterfactual generation suggested by Roese and Olsen (1995). The second stage of counterfactual generation determines the specific content of the counterfactual thought and this is what I refer to as the counterfactual structure. This research focused on the structure of the counterfactual thoughts generated in response to slip and trip accidents by three different respondent groups – Safety Professionals, Managers and Accident Subjects. In this study the structure of the sentences is defined by the 14 dimensions (seven old and seven new) referred to previously.

### **The Function of Counterfactual Thought.**

Roese (1994) proposed that counterfactual thoughts were functional in that they could be used to prepare for the future and this is especially relevant to situations where the individual is likely to be exposed to a similar outcome again (McMullen, Markman, & Gavanski, 1995), alternatively people might use counterfactuals to make themselves feel better about their current situation by comparing it in a positive light to a less desirable outcome (Kasimatis & Wells, 1995; Miller & McFarland, 1986; Roese & Olsen, 1995).

Epstude and Roese (2008) published an updated account of the functional theory of counterfactual thinking and proposed that counterfactual thoughts influenced behaviour by one of two routes, either a content-specific pathway involving specific informational effects on behavioural intentions which then influences actual behaviour, or a content neutral pathway involving indirect effects such as affects, mind-sets or motivation.

Ferrante, Giroto, Straga and Walsh (2013) suggested that thinking counterfactually about the past and thinking about the future (prefactual thinking) might be different and that counterfactual thinking is not as helpful in preparing for the future as had been suggested by previous research. They point out that counterfactual thoughts are more frequently generated after negative outcomes and that they improve reality more effectively when people are expecting to encounter the similar situations again in the future and therefore people should produce similar thoughts when they imagine how the past and future could be improved, however they highlight the work of Van Boven, Kane and Mc Graw (2009) who proposed that the two types of thought may differ because reality concerns constrain future thoughts more than past ones, and go on to suggest their own opposing hypothesis in which they propose that the possibility to realise a future outcome may constrain mental simulation of the future more than the past. After failing to solve a task an individual thinking about how the past could have been better can change the features which constrained their performance including those rules which govern the situation, for example time limits or their own ability, and this challenges the

common view that counterfactuals only involve minimal departures from reality (Byrne, 2005). If the same individual then thinks about improving future performance the same constraints still exist in the future scenario and they have to switch to changing more personally controllable features such that there are more future-based goal-orientated thoughts than there were when changing the past.

When an individual thinks about achieving a better outcome in the future (an upward counterfactual) this has the effect of highlighting the distance between the actual outcome and the desired outcome and may make people feel less satisfied with the current situation, but this engenders hope for a better future (Roese & Olsen, 1995). However when people are faced with a one-off event which has led to an unsatisfactory outcome, generating a plan for the future is unhelpful so people may instead use counterfactuals to make a comparison to an even worse outcome (downward counterfactual comparison) which can help them feel better about the actual outcome. For example Medvec, Madey and Gilovich (1995) demonstrated that Olympic bronze medallists were more satisfied than silver medallists where the alternative of coming in fourth place would have meant missing a medal altogether.

The consequences of upward and downward counterfactuals can be reversed according to Markman and McMullen (2003), and Markman, McMullen, Elizaga and Mizoguchi (2006) who proposed the Reflection Evaluation Model (REM) in which focusing individuals' thoughts on the counterfactual alternative (reflection) rather than on the comparisons of the alternative with the actual outcome (evaluation) leads to more positive affect. REM predicts that upward evaluation should give rise to stronger motivation than upward reflection, because it is more likely to specify implementation strategies that allow one to evaluate the observed consequences of actions and implement novel strategies, whereas upward reflection is much more like a positive fantasy. The divergence between REM and other functional approaches is even more evident in downward counterfactuals.

Downward reflection should enhance motivation in achievement domains because it raises an individual's awareness of the possibility that a negative goal state could have occurred, whereas downward evaluation should produce a more complacent

approach because it suggests that a negative goal state has been successfully avoided.

According to Regulatory Focus Theory (Higgins, 1998) promotion orientated individuals focus on growth, achievement and accomplishment, tending to follow strategies that achieve these outcomes, whereas prevention orientated individuals focus on protection, safety and responsibility and tend to follow strategies designed to avoid undesirable outcomes. In the context of counterfactual thinking, promotion focused individuals should be seeking to achieve outcomes that are more favourable than actual outcomes (upward counterfactuals) and those individuals with a prevention focus are more likely to seek to avoid less favourable outcomes or downward counterfactuals (Markman & McMullen, 2006).

Regulatory fit theory proposes that when people engage in decisions or make choices that sustain their preferred regulatory orientation (promotion or prevention) they 'feel right' about what they are doing and that transfers to subsequent choices and decisions. As a consequence, motivational strength is enhanced when people work towards a goal that sustains their regulatory orientation and this should improve their efforts towards achieving their goal. Initially Markman and McMullen (2003) predicted that under their REM theory upward counterfactuals should be more closely associated with promotion goals and downward counterfactuals, particularly downward reflection counterfactuals, should be more closely associated with prevention goals. Refining their theory, Markman & McMullen (2006) suggested that upward evaluation counterfactuals (comparing reality to an imagined better outcome) may be associated with both promotion and prevention goals by showing how a negative outcome could be avoided in the future, as well as highlighting a route to a better future outcome.

Affective counterfactuals have an impact on how we feel and their corresponding emotions include relief, regret, guilt and blame. Affective counterfactuals operate through two principal mechanisms which are contrast effects and emotional amplification. Ben-Ze'Ve (1996, 2000) claims that all emotions are basically of a

comparative nature because they arise when we compare our current situation to our prior state, to our goals and expectations, to other people's conditions and to purely imagined counterfactual outcomes.

Creyer and Gurhan (1997) found that providing information which directed attention towards an individual, resulted in greater mutability of that individual's actions and a slight increase in the amount of blame assigned to them. In two studies involving a road traffic accident scenario respondents generated more counterfactuals (study 1) and assigned greater blame to the driver of the car when their attention was drawn toward the driver for not wearing a seat belt, than when it was not (study 2) and this tendency was also referred to by Kahneman and Tversky (1982) when they proposed the simulation heuristic. In the context of the current study it is interesting to consider how the structure of a typical accident report, which focuses on the actions of the accident subject, could increase the availability of their actions for mutation and they could subsequently be held more responsible for the accident and have greater blame attributed to them.

Counterfactual thinking is also associated with the experience of luck. Perceptions of luck are generated after an event has happened and when it is compared to what could have happened in the circumstances (Kahneman & Miller, 1986). A single outcome can be described as either lucky or unlucky depending on the counterfactual that is activated. It is not uncommon for an accident victim to describe themselves as being unlucky one moment and lucky the next (Teigen, 2005). For example a person may express feelings of being unlucky to have been involved in an accident at all, but also having been lucky not to have been more seriously injured in the circumstances. Equally somebody may feel doubly unlucky where they are both unlucky to have been involved in an accident at all and to have received a more serious injury than would have been expected in the circumstances. Teigen (2005) also suggests that the structure of the narrative can have an important role in deciding whether a story appears to convey good or bad luck. Good luck is generally conveyed by starting with the bad news and ending up with the good news, whereas reversing this order tends to imply bad luck. Accident reports

typically end with the accident (bad news) and may therefore imply that the outcome was bad luck. The details of an accident are usually recorded in a written report of some kind and typically describe the events leading up to the accident and its outcome with an inevitable focus on the role and fate of the accident subject. The focus of the report narrative on the role of the accident subject has been found to increase the likelihood that they will be the subject of subsequent counterfactual thoughts because they are the focal point and are more counterfactually available as a result (Creyer & Gurhan, 1997). Accident reports often end with the accident and injury being described and this narrative structure could result in the reader concluding that the accident subject was to blame for the bad luck and that there is little benefit to be gained investigating the accident.

Not all counterfactual thinking is functional and its positive aspects can be undermined if it becomes dysfunctional. Sherman and McConnell (1995) suggested dysfunctional counterfactual thinking can lead to the identification of the wrong cause, resulting in unnecessary negative affect, or making costly changes to behaviour. Davis et al. (1995) found that people who had lost loved ones under tragic circumstances tried to change aspects of the situation involving their own behaviour even though their behaviour had no causal role in the outcome. The constant searching for an alternative world following such terrible events can lead people to change their own behaviour which Janoff-Bulman (1979) suggested helped the individual achieve a sense of control but could lead to dysfunctional self-blame, despair and depression.

### **Constraining Counterfactual Thinking**

A factual outcome can be mentally undone by altering almost any prior event or condition, although there are some psychological rules which constrain people's consideration of which events or conditions are changed. A counterfactual constraint is a mechanism that precludes entire sets of events or conditions from being considered for mutation, even though their mutation would undo the factual outcome.



Seelau, Seelau, Wells and Windschitl (1995) suggested that counterfactual generation was constrained in three ways through natural law constraints, availability constraints and purpose constraints. In addition Catellani and Milesi (2001) proposed a Social Context Model in which counterfactuals were constrained by an exceptionality effect which was influenced by abnormality in the sense that the outcome violates an intrapersonal norm. They also suggested the Nonconformity Effect in which people under specific circumstances would be especially inclined to focus counterfactuals on actor's behaviours that do not conform with social norms.

The world operates according to the rules of natural laws which include those of physics, motion, time, biology and causality. People learn about these as they develop and gain experience and they rarely express counterfactuals based on the mutation of these rules, although they could be changed to bring about a different outcome, but they would result in non-lucid counterfactuals (Seelau et al., 2005). Counterfactuals are more acceptable when they are based on alterations of specific matters as opposed to negations of general laws (Rescher, 1964) and this was confirmed by Revlis, Lipkin and Hayes (1971) and Revlis and Hayes (1972) who stated that counterfactuals maintained consistency with general laws of the world. Counterfactual thinking is normally constrained by people's knowledge and understanding of the natural laws that govern the world around them (Gleicher et al., 1990), for example people do not negate the laws of gravity when thinking about slips and trips.

Availability constraints limit the selection of events by making certain aspects of a situation less available for mutation. Events that are chosen tend to be conceptually and operationally correlated and are influenced by factors such as the perceiver's knowledge, whether they are normal or abnormal, are acts of commission or omission, or are in the foreground or background. Actions are likely to be reported as part of any description of how an outcome occurred and become part of the reader's factual knowledge; actions are more salient, evoke greater attention and

tend to appear more in the foreground than do inactions and are more commonly changed to bring about a different outcome.

Purpose constraints arise from the roles people play in a situation and are likely to influence counterfactual thoughts and what people publically express. Seelau et al. (1995) assumed that when people engage in counterfactual thinking they have a reason or purpose to do so and that this motivational aspect operates as a constraint. The judicial system is a good example of a situation in which people's roles are fixed (defendant, victim, lawyer and juror) and so are the goals they pursue. A person's reasons for generating counterfactuals may eliminate entire subsets of alternatives that would generally undo the outcome but which are inappropriate or counter to the required purpose (non-lucid counterfactuals). People may be motivated to engage in counterfactual thinking for a number of possible reasons, including assessing the cause, controlling future outcomes or preventing the same outcome from happening again, assigning blame or consoling others. Counterfactual thoughts which do not support the thinker's purpose would be constrained by the social situation and the role of the thinker in that situation.

### **Affective Responses and Emotional Amplification**

Affect is a function of the specific counterfactual generated in response to an outcome. A comparison is made between the counterfactual outcome and the actual outcome and affect is amplified or attenuated to the extent that the counterfactual results in an outcome that is different from or similar to the actual outcome. When the counterfactual has an outcome opposite to the actual event and when the counterfactual can be easily simulated (it is likely, has a high probability or comes to mind easily) emotional affect will be amplified. However when the counterfactual fails to alter the event, there will be a minimal influence on affect or it may even be blunted because of the apparent inevitability of the outcome.

Emotional amplification is a feature of Norm Theory which predicts that the affective response to an outcome would be enhanced if its causes are considered to be abnormal. An outcome is judged worse if the counterfactual anchor (norm) is

more desirable but an outcome would be judged to be better if the counterfactual anchor (norm) is less desirable (Gleicher et al., 1990). Markman and McMullen (2003) proposed that counterfactuals work on a mechanism of affective contrast in which evaluations based on downward comparisons make us feel better whilst upward comparisons make us feel worse.

### **The Structure of Counterfactual Thoughts**

In the following section I will review relevant literature focusing particularly on seven previously identified structural dimensions of counterfactual thinking starting with counterfactual direction, which is outcome based, before going on to review the six existing antecedent based dimensions, which are: action or inaction; addition or subtraction; normality; temporal position; control; and dynamic or static. After this I will comment on the seven new antecedent based dimensions, which are: specific or general; known or inferred; personal or situational; was the scenario actor spontaneously identified; who was the scenario actor; the specific subject of the sentence; and its domain (physical item, behaviour or procedure / process). These are not reviewed against any existing literature as they have not been used before in connection with counterfactual research but I will make some general observations about their relevance. Lastly I will review aspects of accident investigation and the framing effects of the law on occupational accidents.

### **Previously Identified Structural Dimensions**

#### **Outcome based structural antecedents**

Counterfactual direction relates to the alternative outcome and I will review literature relating to that dimension first before moving on to review the six antecedent based structural dimensions.

#### ***Counterfactual direction***

Kahneman and Miller (1986) noted that an actual outcome could be changed in one of two directions when thinking about an alternative. A better alternative outcome was described as having an upward direction, whereas a worse alternative outcome was referred to as having a downward direction.

Upward counterfactuals are most commonly generated following negative or unwanted outcomes in situations where individuals expect the experience to be repeated (Catellani & Moore, 2000; Markman, Gavanski, Sherman, & McMullen, 1993) and are generally considered to be involved in preparing for the future because they provide strong sign-posting to the individual how to achieve the desired outcome under similar circumstances. McMullen et al. (1995) reported that upward counterfactuals were linked to increased feelings of personal control. However, upward counterfactuals showing how a better outcome could have been achieved or was narrowly missed can generate negative feelings if they are compared to the actual outcome. Landman (1987) reported that upward counterfactuals led to increased feelings of regret as they provided a relevant comparison against which to compare one's current position. For example Medvec et al. (1995) found that Olympic silver medallists were disappointed with their performance when compared to the counterfactual of a gold medal, but bronze medallists were more positive about their performance when they compared it to the worse downward alternative of not winning a medal at all.

If an event is likely to be experienced again there is a functional aspect to generating upward counterfactuals with a view to improving future performance. However if the event is a one off there is no purpose in generating a strategy for the future and it makes sense to console oneself that it could have been worse and this is usually achieved by generating downward counterfactuals (Markman et al., 1993). Downward counterfactuals illustrate how an outcome could have been worse and by highlighting that difference can have a positive affective function, for example people feel relief when judging how the outcome could have been worse. Downward counterfactuals can also be used to provide consolation by making people feel better about the current outcome by drawing attention to having avoided a worse situation (Roese & Olsen, 1995; Seelau et al., 1995).

It is not known how people respond to real life occupational accidents by either generating upward or downward counterfactuals. Counterfactual direction may be related to the frequency of exposure to the hazard and the expected outcome.

Following an unwanted outcome (accident), if someone knows they will be regularly exposed to a significant risk of serious personal injury then an upward counterfactual would be most beneficial (functional) because it prepares a person for the future by indicating a clear and specific means to avoid the accident. However if they are unlikely to be exposed to a similar hazardous situation again then downward counterfactuals might be more likely to be generated.

Counterfactual thinkers are free to choose whether to bring about a better (upward) or worse (downward) alternative outcome; however the social situation, motivation of the individual and perceptions of closeness to the alternative outcome can all play a part in making one direction more likely than the other. For example, imagine two different outcomes from the same event and how these might prompt different directions to subsequent counterfactual thoughts. Consider a builder working on a wet pitched roof who slips and falls 30 feet. In the first instance he falls on to soft grass and receives relatively minor injuries to his ankle and knee, but knowledge of similar falls from such a height would lead us to expect a much more serious injury (a counterfactually close alternative) making that outcome more highly available. In such circumstances the builder may well generate a downward (worse counterfactual) outcome comparing the possible more serious injury with his now lucky escape and feeling of relief, but leaving him no better prepared as to how to avoid the same situation in the future as downward counterfactuals do not necessarily identify specific routes to achieve a better outcome. Hopefully other cognitive strategies would be brought into play so that the builder goes on to think that he might not be lucky again and the close counterfactual, or near miss, highlights the hazard and he will use some suitable fall arrest equipment in the future!

In the second instance the builder falls on to a stone patio and sustains a broken leg, he also hits his head suffering a loss of consciousness. As a result he might well have generated an upward counterfactual thought 'If only I had used a scaffold and not worked from a ladder, I would not have fallen off the roof and broken my leg and not be able to work'.

Kray, George, Liljenquist, Galinsky, Tetlock and Roesch (2010) identified that downward counterfactual thoughts were associated with increased perception of the meaning of life's events in the longer term and asked whether upward versus downward counterfactual comparisons moderated whether functional or dysfunctional consequences emerged. In a similar vein, Teigen and Jensen (2011) also reported that survivors of the tsunami on 26 December 2004 were ten times more likely to have used downwards counterfactuals than upward counterfactuals in interviews held in the Autumn of 2005.

### **Antecedent based counterfactual structural dimensions**

Six existing dimensions relating to the counterfactual antecedent have been identified as being most relevant to this study, these will be briefly reviewed and they are: action or inaction; addition or subtraction; normality; temporal position; controllability; and dynamic or static.

Following this I will comment on the seven new antecedent based dimensions developed and used in this study (specific or general; known or inferred; personal or situational; was the scenario actor spontaneously identified?; who was the scenario actor?; the specific subject of the sentence; and its domain (physical item, behaviour, procedure / process)).

Any antecedent that is selected to be changed will be counterfactually multidimensional, and will exhibit characteristics of all these dimensions.

### ***Antecedent based dimensions - Action or inaction***

The antecedent selected for change may represent either an action or inaction by someone. Some literature refers to actions as being commissions and inactions as omissions.

Kahneman and Tversky (1982), Kahneman and Miller (1986) and Landman (1987) all identified that actions were more likely to be changed than inactions. Kahneman and Tversky (1982) suggested this was because it was easier to imagine the subtraction of an action that had been performed rather than adding in an action that

had not been performed, whilst Kahneman and Miller (1986) explained that actions were inherently abnormal and because people are more likely to change abnormal antecedents they are more likely to generate an alternative outcome by changing an action which was performed rather than by adding in actions that had not been performed. These explanations are rooted in Norm Theory which suggests that inaction is more common (normal) than actions. However, a later explanation by Landman (1993) suggested that this pattern of mutation is better accounted for by the greater salience of actions than inactions.

The predictions of Norm Theory and laboratory based research were not confirmed by Davis et al. (1995) who reported on people's real life experiences of counterfactual thinking following sudden infant deaths (study 2). They reported that only 20% of respondents sought to change actions whereas 66% of respondents changed things that they had not done (inactions). Roese and Olsen (1993a, 1993b) also failed to find evidence to support the predictions of Norm Theory in which actions were changed more frequently than inactions and explained this in terms of people's desire and active planning for success which, like McGill (1989), was seen to come from actions. When the expected success is not achieved it is assumed to come from the absence of these intended actions and therefore when the alternative outcome is changed it is done so through the addition of actions. Roese and Olsen (1995) went on to suggest that undoing success should involve removing an action whereas the undoing of a failure should be accomplished by the addition of a new antecedent, and proposed that the expectation for action versus inaction is linked to specific social situations. In the case of occupational slip and trip accidents because there is a general legal and moral position which seeks to prevent accidents and requires positive steps to achieve this, it is more likely that failures to act (inactions) will be selected for mutation and this tendency is predicted in Tables 1, 2 and 3 for all respondent groups.

Gilovich and Medvec (1994) reported that when people were asked to reflect on their lives their long-term regrets focus on their inactions but short-term regrets focus more on their actions.

The theory of Regulatory Focus differentiates between promotion and prevention goals and is linked to the selection of an action or inaction to bring about a different outcome (Roese, Herr, & Pennington, 1999). In a promotion focus people are concerned with the acquisition of desired goals and are sensitive to omissions so when people fail to gain their desired outcome they generate counterfactuals specifying the addition of some omitted action, whereas in a prevention focus people are concerned with maintaining the status quo and failures to achieve this are based on removing that element which played a role in the failure.

In the light of Regulatory Focus theory, is an occupational slip or trip accident seen through the eyes of a promotion or prevention goal? And how might Regulatory Focus influence counterfactual thinking after a work-related slip or trip accident? I suggest that occupational safety is approached from a prevention standpoint. People do not usually go out with the conscious goal to avoid accidents, that is taken to be the norm and maintaining the status quo is compatible with a prevention focus which implies that actions are mutated.

Kahneman and Tversky (1982) showed that reasoners judged that scenario actors would regret their actions more than their inactions, which Byrne and McEleney (2000) called the Agency Effect. However, in the long term this pattern of regret reverses and inactions are more regretted than actions (Gilovich & Medvec, 1994, 1995) but Byrne and McEleney (2000) proposed that this reversal only occurred under very specialised circumstances and that actions were more often mutated than inactions, except when the imagined consequences of the mentally undone inaction are possibly better than the real consequences of the inaction (and the imagined consequences of the mentally undone action are the same as the real consequences of the action).

#### ***Antecedent based dimensions - addition or subtraction***

The easiest counterfactual change that can be made to an exceptional antecedent is to simply remove it from the outcome sequence, and this is known as a subtractive counterfactual. If an antecedent is missing the event sequence can be changed by



adding the expected one to it and this is known as an additive counterfactual. The substitution of an antecedent is probably a third option, but as it involves both the subtraction of an antecedent and its replacement (addition) by another antecedent these are probably included in the addition category of counterfactual thinking, although this has not been addressed specifically in earlier research.

A typical subtractive counterfactual takes the form of 'If not X then Y' where X is an existing antecedent. This form of counterfactual simply deletes an antecedent from the sequence of events and no more. An additive counterfactual takes the form of 'If X then Y' where X is a new antecedent which was not part of the original sequence of events. Additional counterfactuals are considered to be more creative because they allow antecedents to be freely changed in individual and inventive ways whereas subtractive counterfactuals are limited to the existing set of facts and actual antecedents (Roese & Olsen, 1993b). Additional counterfactuals are also considered more likely to serve a preparatory function by generating specific counterfactuals that result in relatively more efficient plans of action and lead to greater success in the future. Whilst additional counterfactuals are more highly creative they are nevertheless constrained in ways described by Seelau et al. (1995). Mandel and Lehman (1996) stress that negating necessary causes and adding possible preventors is unrelated to the concept of additive and subtractive counterfactuals.

Based on previous studies, inactions have been found to be more readily mutated under promotion focus situations, whereas actions have been changed in prevention focused situations. If this were to apply to occupational slip or trip accidents which I have suggested are viewed from a prevention focus it should lead to them being mutated by making changes to actions via subtractive counterfactuals, however I suggest in Tables 1, 2 and 3 that this will not be the case and that in the social setting of an occupational slip or trip accident respondents will be more likely to use additional counterfactuals because of the strong implication established by the framing of the law that actions are expected to be taken to ensure compliance. I propose that the action / inaction effect will be the stronger determinant of the

counterfactual structure than the addition / subtraction effect. Once an inaction is identified as being the mutable antecedent an additional counterfactual is most likely to follow.

### *Antecedent based dimensions - normality of the antecedent*

Norm Theory proposed that an outcome generates its own specific norm which is then compared to the actual outcome. Where the two are similar there is no element of surprise and there is little need for further cognitive processing, however where the actual event and its corresponding norm are different there is an element of surprise and people are then more likely to think about what made that difference and seek to mentally return things to the expected normal state. This is done through counterfactual thinking in which an antecedent is selected and changed in order to restore normality. Norm Theory predicted that the antecedent selected would be exceptional, unusual or missing and outlined a number of factors which they believed influenced the availability of certain aspects of an event (antecedents) to be changed. These included exceptional and routine events, ideals and violations, causes and effects, focal and background actors. Whilst discussing these factors Kahneman & Miller (1986) make some interesting comments which are particularly relevant to occupational accidents.

### *Exceptional and routine antecedents*

Real life outcomes arise from complex interactions of antecedents, combining routine and exceptional events, but it is the exceptional events that evoke contrasting normal alternatives rather than routine events evoking exceptional alternatives, making changes to exceptional events more likely. There is no suggestion in Norm Theory that what is considered by one person to be an exceptional antecedent will be universally recognised as such by every person who engages in counterfactual thought, and it seems reasonable to suggest that this will be the case following an occupational accident. Indeed Kahneman and Miller (1986) proposed that there would be perspective differences, with different people thinking about an accident bringing to mind different exceptions based on many

factors including their degree of personal involvement, their role in relation to the accident and their experience and knowledge. It is reasonable to expect that Safety Professionals, Managers and Accident Subjects will select different antecedents which they consider to be exceptional to change because they have different perspectives on the accident.

The antecedents presented by Kahneman and Miller (1986) in their Mr. Jones scenario were not truly exceptional or even highly unusual as the respondents were told that Mr. Jones left the office early on occasions either to undertake chores or take an alternative route when he wanted to enjoy the view on clear days. In both cases we know that these options were changed most commonly to bring about a different outcome but it would be hard to say that leaving the office early or taking a different route were strictly causes of his accident, but they were sufficient to have prevented his death had they not been taken on that day. Other studies have presented more genuinely exceptional antecedents in their studies, for example the shooting of a customer in a robbery when he visited a store for the first time (Miller & McFarland, 1986) or the collapse of a scaffold (Macrae, 1992) or the collapse of a storm damaged bridge (Wells & Gavanski, 1989).

Few outcomes can be as traumatic as the loss of a child through SIDS (Sudden Infant Death Syndrome) and Davis et al. (1995) reported a study in which the counterfactual thoughts of parents who had experienced the death of a child were recorded. Against the expectations of both Norm Theory and the Correspondence Heuristic, 67% of parents reported trying to undo the death of their child by changing routine or normal events.

In comparison to the death of a child an occupational slip or trip accident is not so traumatic but is nevertheless still an unwanted event as far as the accident subject is concerned. This is sufficient to prompt the consideration of an alternative outcome through counterfactual thinking, but which antecedent is likely to be identified as being exceptional? After someone knows that a slip accident has occurred the presence of a wet floor is to be expected, and indeed it is relatively common to find

spillages and wet floors in a supermarket. Because a wet floor is both expected after a slip accident and is commonly found in a supermarket Norm Theory would suggest that this type of event was not exceptional and therefore less likely to be selected for change than some other event, in fact the outcome almost demands the presence of a wet floor and it would be more surprising (exceptional) if the floor was not wet! So it remains to be seen what respondents in the current study identify as being exceptional and select for change to bring about a different outcome.

In another departure from Norm Theory, Teigen and Jensen (2011) reported that the survivors of the 26 December 2004 tsunami in South East Asia did not produce counterfactual thoughts about normality and reflections on how the situation could have been better or avoided were conspicuously absent, and they speculate that events on this scale are simply too big to be undone and in the nearest other world there would still be a tsunami but with no lucky escape.

Norm Theory offers a simple view of what is normal or exceptional, presenting it as a dichotomous variable such that an antecedent is either normal or exceptional. However there must be degrees of normality and exceptionality and this is suggested by Gavanski and Wells (1989) in their Correspondence Heuristic which suggests that the more exceptional an outcome is the more exceptional the antecedent will be that needs to be changed to return to normality.

A wet floor, leaving the office early or taking a different route home may not be truly exceptional antecedents, but are sufficiently different to be selected for a counterfactual change. The types of events that people chose to select to change when undertaking counterfactual thinking are perhaps more subtle in their variation from the norm than is originally suggested by Norm Theory but are not so normal or routine as reported by Davis et al. (1995). The results of the counterfactual thoughts recorded in the current study suggest it is possible to refine the understanding of what is normal or exceptional and I have developed a categorisation of five sub-types of exceptional antecedents. I will refer to these as

‘orders of exceptionality’ to maintain some consistency with the language of Norm Theory and these will now be outlined.

*The scenario exceptional event – first order of exceptionality*

This research employed a scenario with a specific exceptional event included in it, in this case it was Mary’s decision to cover for her friend’s holiday and work on a day that she would not usually have worked and it was on this day that she slipped / tripped and was injured. Where respondents select the specific exceptional event presented in the scenario for counterfactual change I have referred to this as being a the ‘scenario exceptional event’ or the first order exception.

*Exception to an existing rule – second order of exceptionality*

In some social situations our behaviour can be guided by implicit and unwritten rules, whereas in other types of social situation it can be subject to more explicit and even documented rules or procedures. In the specific context of occupational health and safety, the legal requirement to have undertaken risk assessments and developed written procedures and established specific behaviours become the norm used as the cognitive anchor for counterfactual thinking. This is expected to be particularly relevant for Safety Practitioners, but what about Managers and Accident Subjects? Do they base their counterfactual thinking on the same set of rules or do they have a different set by which they assess outcomes?

Exceptions to an existing rule arise where social situations or conventions create an expectation that a particular condition exists (norm), but has not been met. For example a workplace procedure may require that an absorbent material is placed over a spillage, but if this were not done it would be selected for change as being an exception to an existing rule.

*New rule exception – third order of exceptionality*

In some instances the person thinking counterfactually has to establish a new rule (norm) to bring about their desired outcome. A previous set of rules may have

become redundant or inappropriate for many reasons, such as the introduction of new technology or working practices, or an unwanted outcome has identified a completely new situation and no existing rule (norms) exists.

*Improving an existing rule – fourth order of exceptionality*

An existing rule is changed and improved with the intention of making the desired alternative outcome more likely to be achieved. An example of this might be to introduce a quicker response time for the Cleaner to attend a spillage and to provide more appropriate equipment.

*Normal or routine exception – fifth order of exceptionality*

Used when something completely normal or routine is changed to bring about the alternative outcome. These are probably unusual because Norm Theory predicts that what is selected to be changed is at least minimally unusual so the decision to select something completely routine or normal may be largely constrained either because it produces a non-lucid counterfactual, conflicts with the purpose of the situation or role, or else conflicts with a natural law.

*Causes and effects*

Kahneman and Miller (1986) proposed that alternatives to the effect would be more available than alternatives to the cause and that alternatives that are recruited should mainly consist of cases in which the same cause is followed by variable effects. This observation might lead to the possibility that counterfactual thoughts whilst undoing the outcome leave the cause unchanged and therefore that counterfactuals are more closely associated with missed opportunities to prevent an outcome than they are to identifying the cause.

*Focal and background actors*

Norm Theory proposed that the mutability of any aspect of a situation increases when attention is drawn to it and this helps to explain why the actions of a focal individual are more mutable and they are therefore assigned an unreasonable degree of responsibility for their fate when they are the victims of violence. One can only

assume that the same bias would also affect someone who has an accident at work because their actions often become the focus of an investigation.

### **Temporal Position**

Counterfactual literature generally refers to two types of antecedent sequences. One type comprises a chain of independent events, and the other a causal chain in which one stage is the cause of the next (which in turn causes the next stage to occur).

The temporal order effect describes the tendency to change the last event in a chain of independent events, and this was first explored by Kahneman and Miller (1986) who found that when people were asked to change a letter in a two letter sequence (xf) they changed the f more than the x. Then Miller and Gunasegaram (1990), using two consecutive coin tosses, reported that people changed the second toss so it matched the first where the winning criteria was to have both heads or tails. This pattern of responses was also found by Segura, Fernandez-Berrocal and Byrne (2002), who discovered that the temporal order effect occurred in four event sequences as well as the two events sequence. In both cases the last event was selected for change more frequently than the first, however in the longer sequence the fourth (last) event was not the most frequently selected one and this put a slightly different slant on the interpretation of the temporal order effect, suggesting that it is not the last event that is especially mutable but the first event that is essentially immutable.

Segura and McCloy (2003) examined the temporal order effect in everyday life situations involving longer chains of mundane antecedents and reported finding the temporal order effect in nine event sequences, but not in six or three event sequences. They also found evidence that an exception to a social norm affected the temporal order effect. They presented respondents with nine mundane tasks that Maria did before leaving the house and being involved in a car accident, one of these actions was selfish (reading a magazine) whilst the other eight were selfless. Respondents were asked how her accident might have been avoided and selected

reading the magazine (selfish action) when it was last in the sequence and when it was first. They argued that the temporal order effect was negated by an exception to a social norm when it was placed at the beginning or end of an independent chain, but less so when it was in the middle of a chain. This effect could have an influence on people's choice of antecedent in an accident situation if someone's actions were found to be an exception to an expected social norm. An employer is required by the Health and Safety at Work etc. Act 1974 (HMSO, 1974) to establish safe systems of work, these set out how people should undertake their work and behave safely and thus become established as the social norm for that particular workplace. If a member of staff breaches that social norm by not following established working practices, their conduct may become more available for counterfactual selection and change if their actions are first or last in a temporal sequence of events, even if their behaviour was not directly causal of the outcome. For example, if someone spilt milk in a supermarket there might be an expectation that they should report it or clear it up. If it was known that they had not behaved in this way their behaviour might be more available for mutation than other more effective antecedents.

The temporal order effect can lead to counterfactuals being dysfunctional (Sherman & McConnell, 1995) if for instance the last person in the chain of events were to be blamed for an unwanted outcome merely because they were associated with the last event, when there was another and better causal explanation. It may be that in these circumstances the last stage represents the final but missed opportunity to prevent the outcome.

In a causal chain the first antecedent triggers the second, which in turn triggers the third which triggers the fourth etc, etc. Where such chains arise the later events appear to be more highly constrained and less mutable than the initial ones and this has been referred to as the 'primacy effect'. People have been shown to perceive events occurring early in a causal chain to have a greater impact and to be more changeable than later events (Brickman, Ryan, & Wortman, 1975; Wells, 1987). Research has indicated that people tend to choose events over which they believe they have control when seeking to bring about an alternative outcome and Johnson,



Ogawa, Delforge and Early (1989) found that subjects perceived less power to prevent an injury when the cause had been influenced by a prior event i.e. was part of a causal chain. They also found that judgements of negligence decreased when the event was second in the chain rather than first, because they had to some extent been predetermined by earlier events.

In real life, unwanted outcomes arise from sequences of events where the relationship between those events is a mixture of both independent and causal. This has been reflected in the design of this study. Table 18 presents the sequence of 11 events used in this study which led up to Mary's accident and the temporal relationship between them is set out in Table 72.

### **Control**

The antecedent which is selected for change may be something which the counterfactual thinker has control over or something which is uncontrollable. From a functional perspective counterfactuals are at their most effective when they focus on matters over which the individual seeking to bring about the different outcome has control over and this was the general finding of Miller et al. (1990) and Giroto, Lengrenzi and Rizzo (1991), who reported that antecedent events directly under the control of the scenario actor were most commonly selected for change. Perceptions of personal control are enhanced when people use self-focused upward counterfactuals which successfully undo the outcome (McMullen et al., 1995).

Walsh and Byrne (2002) also reported that counterfactual thoughts followed certain regularities, with most people thinking 'if only' about controllable events rather than uncontrollable ones.

It makes sense that if an individual is thinking about bringing about a different outcome from a personal perspective that they select an antecedent over which they have direct control to maximise the prospect of achieving the desired outcome. Equally it should follow that when someone looks at an outcome from a public perspective they will also select an antecedent which is under the direct control of an appropriate person, to do otherwise would be dysfunctional. Under a public

counterfactual perspective it is not clear whether the counterfactual thinker selects the person who they believe should have been able to exercise control over the outcome and then attributes the controllable antecedent to them, or selects an available and controllable antecedent and then links it to a person who should have or could have had control over it.

This line of thinking has particular implications in respect of accident investigations, where the control of previously identified hazardous antecedents is expected through risk assessment processes leading to the preparation, implementation and monitoring of safe working procedures. A person may come to mind first (be counterfactually available) where the thinker has social expectations based on someone's role. These expectations form the norm, against which the actual behaviour is compared. For example, the counterfactual thinker may know that an organisation's procedure for a spillage requires the person discovering it to remain with it until the Cleaner arrives to clear it up. If it is discovered that their behaviour is not as expected based on the procedure, their conduct is likely to be selected as being exceptional and changed and they may be held as responsible and blamed. In this instance the behaviour is more likely to be perceived as being one that failed to prevent the accident, but it is easy to see how other controllable behaviours could be seen as more causal, for instance the behaviour of the person who spilt the liquid. The other way that control may influence the counterfactual is through the selection of an exceptional antecedent and associating it to people who had or could have had control over it. Depending upon its position in the antecedent sequence, that antecedent and its associated person might be seen to be the cause of the accident or as having missed the opportunity to have prevented the accident.

Teigen and Jensen (2011) reported that controllable antecedents were more closely associated with upward counterfactuals than were uncontrollable ones, and that this was consistent with the functional perspective of counterfactual thinking. Where people were exposed to the December 2004 tsunami there was no possible control that they could exert so they reverted to the use of downward counterfactuals.

### **Dynamic or static antecedents**

Giroto et al. (1991) noted that factors that change in the real world were more easily altered in mental representations, and Roese and Olsen (1995) suggested that this was based on Kelley's (1967) model of attributional thinking as factors which are dynamic and changing are more likely to be seen to co-vary with an outcome, and be perceived as being more causally linked, than are unchanging factors. They also suggest that salience may be the underlying factor in the dynamic versus static effect, with processes that are in motion drawing more attention than processes that are at rest. In terms of Norm Theory static antecedents would be perceived as routine or normal, whilst it is the changing or dynamic circumstances which are selected for mutation. Dynamic antecedents are also described as being in the foreground and passive antecedents as being in the background.

Many dynamic antecedents may also be perceived as being more controllable because they change over time; there is a perception that they can be influenced by human behaviour, whereas static antecedents are more constant and unchanging and may be less controllable. Although other literature has not addressed the point directly, dynamic antecedents are probably also directly observable or capable of being detected by the senses as the antecedent sequence unfolds, whereas static antecedents are not. This wider concept of a dynamic antecedent being directly observable / detectable and a passive antecedent not being so is used in the present study.

In the context of an occupational slip or trip accident the presence of a contaminant on the floor would be a dynamic antecedent, as it is in the foreground, changes over time and could be seen, whereas the existence of a written system of work to deal with a spillage cannot be directly observed at the time of the accident, is a background factor and so would be static.

### **New antecedent based dimensions used in this study**

In the course of reading the counterfactual literature for this study and thinking how it might apply to the specific situation of an occupational accident seven new

dimensions came to mind as being as being relevant and these are briefly introduced below.

#### ***Specific or general antecedents***

This dimension was suggested by the proposal that Safety Professionals' counterfactual thoughts would be significantly influenced by the legal requirements of the Health and Safety at Work etc. Act 1974 (HMSO, 1974), which sets out goals for employers to achieve but not the detail on how to meet them. If Safety Professionals chose to bring about a different outcome by making a change to an antecedent to comply with a common duty they are likely to express that in a more general way, for example by saying 'If only the Employer had undertaken risk assessments the accident would not have happened', whereas they could have expressed the change to the antecedent more technically and thus specifically such as 'If only the floor had had a higher coefficient of friction Mary would not have slipped'. Managers and Accident Subjects being less constrained by the law might select specific antecedents rather than more general ones.

#### ***Known or inferred antecedents***

The idea that respondents might select an inferred antecedent came from the work of Woodcock (1996) who proposed that Safety Professionals used causal schema when investigating accidents, suggesting that after classifying an accident they adopt a stereotype representing its typical origin, cause and approaches to prevention, even if these facts have not been highlighted or made explicit, such that the antecedent selected to bring about a different outcome, prevent it or be the cause could be one that they have inferred exists in keeping with the causal scheme adopted. There may also be a relationship between the use of general antecedents and their being inferred and specific antecedents being known.

#### ***Personal or situational antecedents***

Counterfactual thinking is undertaken from either a personal or public perspective depending on the thinker's relationship with the outcome.

People who are intimately involved with an outcome are said to adopt a personal perspective, whereas others who are less intimately involved are said to adopt a more public perspective. In the context of this study an accident subject is more likely to adopt a personal perspective, whilst a safety professional is more likely to adopt a public perspective. Irrespective of whether the thinker adopts a personal or public perspective, the actual antecedent that is selected and changed can be one that relates to a personal aspect of the actor (his or her personality or disposition) or to the situation that they found themselves in. There is a parallel in these positions to the well known ‘actor / observer’ effect (Jones & Nisbett, 1971) in which the actor seeks to explain his / her behaviour in terms of the situation he / she was in, whereas observers seek to explain the actor’s behaviour in terms of his / her personality.

***Was the scenario actor identified in the sentence?***

For a counterfactual thought to be functional it needs to offer a specific and unambiguous route to the alternative outcome and one way that this can be achieved is to be very clear to whom the counterfactual thought refers. This is especially so where the thinker has adopted a public perspective and their thoughts do not then refer to themselves. There should be a control based relationship between the antecedent selected and the person who is associated with it. It is difficult to speculate whether the respondent’s job group will have an effect on this dimension; their motivation for engaging in counterfactual thinking is likely to be a key factor. If they are seeking to avoid personal responsibility or attribute blame or responsibility to others then it is likely that they will identify an actor. It is possible that prevention sentences will refer to the actor more than causal sentences because they are said to offer a missed opportunity to prevent the outcome, and these are more likely to be dynamic and associated with the action or inaction of an individual, whereas the cause may be more static and independent of someone’s action or inaction.

### ***Which scenario actor was associated with the sentence?***

Piloting of the questionnaire indicated that about 50% of respondents did not identify a scenario actor in their sentences, so an additional question was added asking respondents to select from a list of scenario actors the one most closely associated with their sentence. From a practical occupational safety perspective, who is being associated with what type of accident and antecedent might be helpful in better understanding the social psychology of this type of accident and influence future interventions.

### ***What was the specific subject of the sentence?***

Understanding which specific antecedents were being identified by different respondent groups or for different types of accident as being capable of bringing about a counterfactual outcome, preventing the accident or being causally linked to it should be relevant to those with a professional or academic interest in slip and trip accidents and offers an opportunity to gain a better understanding of how they are related.

### ***The domain of the specific antecedent***

The specific antecedents were found to fit one of four broader classifications which I have called domains in this study. They related to physical items, behaviours, attitudes, procedures or processes.

### **Counterfactuals and causal thinking**

The current study asked respondents to complete a causal sentence, so I will briefly review key works relating to the relationship between counterfactual and causal thinking. The idea that a counterfactual is closer to missed opportunities to prevent the outcome is advanced by Mandel and Leman (1996) and their work will be referred to.

Since undoing an exceptional or unusual antecedent leads to a different outcome a causal relationship is established between the two. The exact nature of this relationship is beyond the scope of this research but further details can be found in the works of Hart and Honore (1985), Mackie (1974), Mandel and Leman (1996),

Spellman and Kincannon (2001), Spellman, Kincannon, and Stose (2005), Wells and Gavanski (1989), and several major attribution theories have been proposed by Hilton and Slugoski (1986), Heider (1958), Kelly (1967, 1972), Jones and Davis (1965) and Weiner (1974). Interestingly Lipe (1991) suggested that the social psychology of these various attribution theories were all based on the single and important notion of counterfactual reasoning.

In brief, counterfactuals introduce a false antecedent and thereby establish a causal relationship with the actual outcome and in doing so create the necessary requirements for Mill's (1872) Method of Difference. This is the main technique by which scientists infer causation and it is recognised that, where true experiments are not capable of being undertaken, counterfactual simulations can represent a proxy experiment to the extent that the two outcomes differ only in the presence or absence of a particular antecedent which is inferred to be causal. Mackie (1974) proposed that causation was tied to counterfactual questions, arguing that when we are able to imagine or observe instances of the effect without the proposed cause causality cannot be inferred. However when we are unable to imagine or observe alternative situations the proposed causal link is established. Mackie (1974) proposed that counterfactuals tested whether an antecedent was a cause of the outcome by testing whether the cause was a necessary cause of the effect. This is done by constructing a counterfactual in which the causal antecedent is removed, and the easier it is to imagine the effect not happening the stronger the belief that the causal antecedent was a necessary cause of the effect.

Egan, Frosch and Hancock (2008) reported that people generated counterfactual thoughts about the enablers of outcomes more than they did about the causes of outcomes and asked if there was something special about enablers or were they just perceived as being more controllable. They manipulated the controllability of causes and enablers in eight scenarios and found that people generated counterfactuals based on the enabling conditions except when the cause was controllable and the enabler was uncontrollable. In general, enablers shared certain features including being constant, normal and conversationally non-relevant, which

raises a question as to why enablers should be selected for counterfactual change when the general thrust of counterfactual literature has identified that antecedents selected tended to be variable and exceptional. Causes were described as being inconsistent, exceptional and conversationally relevant which should have made them more highly available for counterfactual mutation.

MacMullen and Markman (1994) said “counterfactual generation results in individuals feeling that they have a better understanding of the causal structure of life events and through this, feelings of greater control”. Wells and Gavanski (1989) showed counterfactual assessments were influential in causal judgements and that for an antecedent to be judged as causal it must be changeable and must undo the outcome. They noted that an antecedent’s causal potential was influenced by whether or not changing it altered the outcome. In two studies they showed that respondents attributed greater causal significance to an event where its counterfactual alternative would have brought about a different outcome, than where the counterfactual alternative brought about the same outcome. In experiment 1 they presented a scenario in which Karen was taken out to dinner by Mr. Carlson, her boss, to celebrate her promotion. Karen suffered from a rare hereditary disease where drinking wine can cause a severe allergic reaction. The scenario was presented in two versions. Mr. Carlson was unaware of Karen’s allergy and in one version of the scenario he ordered a dish containing wine after first considering one that did not. In the second version both dishes that Mr. Carlson considered contained wine. Karen ate the dish chosen by Mr. Carlson and suffered a severe reaction and died.

In the second experiment they presented a scenario in which Eugene and Tina were refused a lift by a taxi they had ordered because they were both wheelchair users and the driver was concerned that there was insufficient space in his cab. They had to drive themselves and both died after a bridge that had been weakened by a storm the night before collapsed. In one version of the scenario the taxi driver safely crossed the bridge before it collapsed, while in the alternative version the taxi driver drove off the collapsed bridge in to the river but managed to get out of his vehicle



and survived. As with the Karen study (experiment 1) respondents rated the event where the counterfactual alternative brought about a better outcome, as being more highly causal, than where the counterfactual event brought about the same event. The taxi driver's refusal to take Eugene and Tina was rated as being more highly causal where he safely drove across the bridge before its collapse than where his car also plunged in to the river. Whilst the driver survived, the scenario implied that had Eugene and Tina been picked up by the taxi driver they would have drowned in the river as they were wheelchair users and would not have been able to get out of the taxi. I suggest that the structure of both scenarios is flawed and unconvincing and I will refer to their lack of ecological validity later.

Counterfactuals can be used to look back over a sequence of events to help identify the cause of the outcome, which Lalljee and Albeson (1983) referred to as backward causal inference. This is very much the usual way in which counterfactuals are used, following an unwanted outcome people are prompted to look backwards at the sequence of events leading up to the outcome and identify one of those events which if changed would have resulted in a different outcome. Norm Theory predicted that the most accessible features of an event would be changed. However accessibility of a feature is not a function of its frequency nor is it a good indicator of its causality (Sherman & McConnell, 1995), yet the mutation of this feature suggests it is a primary cause as changing it leads to a different outcome.

Counterfactuals can also be used in a forward looking direction, which Einhorn and Hogarth (1986) referred to as forward causal inference and starts with the selection of an antecedent and using a simulation heuristic (Kahneman & Tversky, 1982) its causal potential can be explored. Forward causal inference is also known as antecedent contrastive processing by McGill and Kline (1993). The use of backward and forward looking counterfactuals in the simulation of possible outcomes will be considered later in the review of the legal requirements in context of undertaking risk assessments and accident investigation.

A degree of pre-existing causal knowledge is necessary for both backward and forward causal inference. The reasoner must know whether changing an antecedent would change the consequences because without a basic understanding of the relationship between the two the counterfactual generated would be ineffective or non-lucid, and for this reason N'gbala and Branscombe (2003) proposed that attributional thinking was more likely to precede counterfactual thinking than vice versa. Without an understanding of the causal relationship between an antecedent and an outcome counterfactual thinking could be dysfunctional and lead to the selection of an inappropriate antecedent or blame being attributed to the wrong person.

The psychological literature suggests that counterfactuals represent a method for testing the plausibility of various hypothesised causes by assessing the counterfactual probability of the target effect still occurring if the causal candidate did not occur. Mandel and Lehman (1996) considered that there would be a considerable variability of results in that a sizable proportion of the counterfactuals people construct would not undo the outcome. However counterfactuals are usually expressed and experienced as compelling possibilities from the moment they become the focus of attention (Hofstadter, 1979) and they have the quality of a confirmation more than that of a test.

Wells and Gavanski (1989) found evidence that counterfactuals influenced causal ascriptions in their Eugene and Tina scenario. However N'Gbala and Branscombe (1995) did not find this effect in their version of the Eugene and Tina scenario, arguing that people focused on necessary causes when undoing an outcome through a counterfactual mutation, but on sufficient causes when ascribing fault.

The assumption that counterfactuals were associated with causation was challenged by Mandel and Leman (1996) who proposed a prevention focus account suggesting that people use 'negate X' counterfactuals as explanations of sufficient but missed ways in which the effect might have been prevented. They reported that the completion of 'if only...' sentences more closely reflected participants' own listings

of how the effect could have been prevented as opposed to how the effect was caused.

Mandel and Leman (1996) considered the relationship between causal thought and counterfactual thought was based on facilitative and inhibitory causes referring to the work of Kelley (1971, 1973). In everyday language, facilitative causes are causes and inhibitory causes are preventors and point out that logically the negation of a necessary cause can be reinterpreted as a sufficient preventor, citing the example of oxygen as being a necessary cause of fire, which is logically the same as saying the absence of oxygen is sufficient to prevent fire. However in psychological terms causes and prevention may focus on different dimensions, proposing that causal ascriptions were most likely guided by co-variation whereas prevention and counterfactual thinking were most likely guided by controllability criteria.

To test their hypotheses Mandel and Lehman (1996) undertook three studies. The first was based on a variation of the Mr. Jones unusual route home from work scenario used by Kahneman and Tversky (1982). Respondents were told that Mr. Jones left work at his normal time but took a different more scenic route home as it was a clear day. Mr. Jones was seriously injured when he was involved an accident when a young man (Mr. Smith) who was drunk ran a red light and collided with him. Respondents were assigned to one of six conditions considering the outcome from Mr. Jones' or Mr. Smith's perspectives and focusing on how the outcome could have been different (counterfactual), how the incident could have been prevented and on the cause, and were asked to write down their thoughts. The results supported their hypothesis that counterfactuals and prevention sentences focused on antecedents that were controllable by either Mr. Jones or Mr. Smith. For example, Mr. Jones could have taken his usual route home, whereas causal sentences focused more on antecedents that co-varied with the focal outcome i.e. driving whilst drunk is associated with accidents.

In study two Mandel and Lehman (1996) used a study based on Mr. and Mrs. Wallace. Mr. Wallace booked a flight to attend a business convention. It was his

first flight as he usually drove or took the train. Mrs. Wallace was not happy with the decision to fly and knew he would change his plans if she pleaded with him but she didn't ask. Mr. Wallace took the flight but was killed when the engine malfunctioned and the plane crashed. Respondents were asked to complete an 'if only...' sentence imagining how Mrs. Wallace might be thinking. Following this they were asked from Mrs. Wallace's perspective how Mr. Wallace's death could have been prevented and what was the cause. Respondents were then asked to rate on a scale between 1 (not at all controllable) to 7 (totally controllable) a) how controllable was the engine malfunction, b) how controllable was Mrs. Wallace's decision not to plead with her husband and c) how controllable was Mr. Wallace's decision to fly. They found that the counterfactual and prevention statements were rated more highly controllable than were causal statements.

Study three refined the study two scenario by manipulating the mutability of both Mr. Wallace's decision to fly (high mutability and low mutability) and Mrs. Wallace's decision not to plead with her husband (high mutability and low mutability) and found that the mutability manipulation had no significant effect on any of the three causal ratings.

### **The law, counterfactual thinking, and slip and trip accidents**

The legal system in England and Wales can be broadly described as having a criminal and a civil component. Criminal law relates to punishment for wrong doings, where people have either done something they should not have done or not done something they should have done. These expected behaviours are set out in statutory law (Acts of Parliament and Regulations) and can become norms against which counterfactual comparison are made. This is particularly likely to be the case for Safety Professionals who are intimately familiar with the law and most likely to use it as a framework against which to assess compliance, by comparing the actual unwanted outcome against the counterfactual outcome by changing a legally non-compliant antecedent with one that complies with the law. Civil law is more associated with the compensation for losses incurred in various ways including those arising from an occupational accident for loss of earnings or pain and

suffering. This area of law is not relevant to the current study but the influence of counterfactual thinking has been assessed on how mock jurors award compensation (Bothwell & Duhon, 1994).

The role of counterfactuals in a legal context has been considered by legal philosophers such as Hart and Honore (1985) but outside that philosophical consideration there has been some relatively limited research which has used counterfactuals in a criminal law setting, examples of this include Weiner et al. (1994) who explored determinations of negligence and Branscombe et al. (1996), Miller and McFarland (1986), and Turley, Sanna and Reiter (1995) who have presented findings as to how counterfactual thinking has been used in rape cases where the victim was judged as being more responsible when her own actions before the rape were unusual. In many of these studies the legal context was used more to give the appropriate scenario setting to illustrate the counterfactual effect being tested, rather than as pure research on the influence of counterfactual thinking on the working of the legal system.

The theory of Regulatory Focus (Roese et al., 1999) differentiates between promotion and prevention goals and is linked to the selection of an action or inaction to bring about a different outcome. In a promotion focused situation people are concerned with the acquisition of goals and are sensitive to omissions, and when people fail to gain their desired outcome they generate additive counterfactuals, whereas in a prevention focused situation people are concerned with maintaining the status quo and when people fail to achieve this counterfactuals are based on subtracting the action that played the role in the failure.

It is likely that most aspects of occupational safety are approached with a prevention focus in which people seek to prevent accidents from occurring and maintaining the non-accident condition (status quo). Unless someone is deliberately walking on ice people do not go out with the objective to avoid falling over, that is taken to be the norm and to that extent maintaining the status quo is compatible with a prevention focus. Roese et al. (1999) identified that actions were most likely

to be changed in prevention focused situations, whereas inactions have been found to be more readily mutated under a promotion focus. If this applies to an occupational setting then accidents should be mutated by subtracting actions from the antecedent chain, however this may be confounded by the specific social and motivational aspects involved in slips and trips which are introduced by the presence of legal duties. Roese and Olsen (1995) proposed that the expectation for action versus inaction will be linked to specific social situations. In the case of occupational slip and trip accidents, because there is a general legal and moral position which seeks to prevent accidents, it is more likely that failures to act will be selected for mutation.

Counterfactual thinking can be used both proactively by running a forward causal simulation and reactively using a backward causal simulation. Occupational accidents occur in social situations where the norm is established through compliance with various statutory requirements, including undertaking risk assessments, which lead to the development and maintenance of safe working procedures. These can be described as being proactive in that they should be undertaken and implemented before work is started in order to actively manage and prevent an accident from arising and the causal potential of an antecedent can be assessed by putting it in a forward causal simulation (Einhorn & Hogarth, 1986). After an accident has happened an investigation is undertaken and this is a reactive response in which counterfactual thoughts are used to assess the potential cause or missed opportunity to have prevented the accident through the use of backward causal simulation (Laljee & Ableson, 1983).

When an occupational accident occurs, a range of individuals both within and outside the organisation will be affected by it, they will have different roles and will be viewing the incident from different perspectives, have different degrees of involvement (psychological distances) and motivation. This research sought to explore the structure of the counterfactual thinking which was generated following such an incident and focused on three groups, namely Safety Professionals, Managers and Accident Subjects. It is easy to appreciate how different their motives

could be when they each think about how a different outcome could have been achieved. A Safety Professional might think about how the accident could have been avoided if legal requirements had been met, and associated with this might be judgements of responsibility set against legal duties. A Manager might think about why it took so long for the spillage to be cleaned up and undertake counterfactual thinking with a view to finding someone to blame as much as shifting blame away from themselves. The Accident Subject might think that they should have been more observant of the floor conditions.

Section 2 of the Health and Safety at Work etc. Act 1974 (HMSO, 1974) establishes a duty on employers to “protect, so far as is reasonably practicable, the health, safety and welfare of their employees”. This creates a forward looking and on-going duty to prevent accidents and ill health to their staff. This general duty is then underpinned by various other statutory provisions (regulations) and of particular relevance to this research are the Management of Health and Safety Regulations 1999 (HMSO, 1999). The management regulations establish a further duty on employers to undertake a risk assessment in order to identify hazards, establish whether they are adequately controlled and if not to implement the necessary measures. This process is likely to use counterfactual thinking through forward causal inference involving a simulation heuristic. Looking at an occupational slip risk through the process of forward causal inference might involve the assessment of risk associated with the type of flooring material. Some understanding of the causal relationship between antecedent events and outcomes is necessary to undertake this process. For example the effect of replacing a smooth highly polished floor with a rougher surface can be run through a forward causal simulation heuristic and the level of risk can be assessed with the objective of minimising people slipping over. Equally, after an accident has occurred it would be possible to apply a backward causal inference process and change parameters so that they meet legal standards and evaluate whether they would have brought about a difference outcome.

Kahneman and Tversky (1982) used counterfactuals in a different way when proposing their simulation heuristic. In Norm Theory counterfactuals are used to bring about a change to an actual outcome by making an alteration to a prior antecedent event; in the simulation heuristic an antecedent is selected and changed in order to see what effect it may have on the outcome. There does not necessarily need to be a specific outcome in mind when running the simulation, but if this technique were used in an occupational safety setting making a change to an antecedent which increases the risk of an accident would be rejected. The simulation heuristic can be used in making predictions or assessing the probability of a specified event so is akin to the cognitive process used in making a risk assessment that is required of an employer under health and safety law, Management of Health and Safety Regulations 1999 (HMSO, 1999).

These two approaches utilising counterfactuals are complementary in terms of the way that a safety professional may think. Selecting an antecedent and running a forward simulation (Einhorn & Hogarth, 1986) can help assess the potential of that antecedent to cause or prevent a subsequent accident. When an accident does occur the unwanted outcome (loss or injury) provides the necessary negative affect to stimulate the use of a counterfactual approach in searching the antecedent events, with a view to selecting one which if altered would bring about a different outcome.

### **Hindsight bias and unrealistic control**

Hindsight bias refers to a person's judgement that an outcome was more predictable, even inevitable, after learning about an outcome – in retrospect people 'knew it all along'. (Fischhoff, 1975; Hawkins & Hastie, 1990; Nestler & Von Collani, 2008).

Hindsight bias may be dysfunctional in that it can lead a person to wrongly believing that the outcome of mutating an antecedent was more foreseeable than it was and therefore more controllable than it was, leading to the selection of inappropriate antecedents to change with unrealistic conclusions being made about the role of oneself or others in preventing the unwanted outcome. Clearly this can



have implications in connection with accident investigation and the application of the law. Health and safety law can only apply to risks that are reasonably foreseeable and hindsight bias can distort judgements of how foreseeable the outcome really was.

The implied causal link between the antecedent and the outcome becomes more important when it is considered in terms of why the alternative antecedent was not brought into play to bring about the alternative outcome. The identification of that antecedent and its causal link to the unwanted outcome leads observers to make the assumption that, given the original antecedent, the outcome was inevitable, thus strengthening the hindsight bias effect of making the outcome all the more certain given the preceding antecedents. This can be an issue when considering the relationship between failing to comply with a legal requirement and subsequent blame or liability for an unwanted outcome. The ability to bring about a better outcome through changing an antecedent in a way that meets a legal requirement can highlight a non-existent causal link and bring the legal duty holder in to a position of liability.

Roese and Olsen (1994) suggested that hindsight bias is logically compatible and complementary to counterfactual thinking. They discussed hindsight bias as a belief that once an outcome is known the causal structure is then understandable. This does not mean that the outcome was predetermined but that it was inevitable under the extant antecedent conditions. The more predictable the outcome was under those conditions, the more likely it is that some mutation of those conditions would have led to a different outcome. For example, the more certain a person is that outcome A was predictable under condition X, the more positive that person will be that a change in condition X would lead to a different outcome.

The fact is that the hindsight assessment and the inference about a counterfactual outcome are both likely to be incorrect. The outcome was not as predicable from the antecedent conditions as people think, nor was the alternative outcome based on the

mutation of the antecedent conditions as likely as people think (Sherman & McConnell, 1996).

Hindsight bias carries particular risks for Safety Professionals because it can erroneously strengthen their belief that the mutated antecedent was either the cause of the accident or was a missed opportunity to have prevented it, and important decisions hang on that belief, such as the determination of legal responsibility, blame and punishment. Nestler and Collani (2008) found that the activation of a counterfactual mind-set strengthened the certainty of the hindsight effect in an unrelated task. By inducing individuals to engage in counterfactual considerations in which the alteration of the causal antecedent X undid the outcome Y should strengthen the certainty that X can be attributed to Y and that mind-set then influences their judgement about the certainty of outcome in another realm. Their study poses the question whether Safety Professionals might, through their role and experience and working within a legal framework, be more likely to adopt a counterfactual mind-set and be prone to the effects of hindsight bias in strengthening the link between the mutated counterfactual antecedent and the certainty of its causal power to justify enforcement decisions. Interestingly the defendant in a health and safety prosecution would be seeking to achieve the opposite effect and weaken the association between the antecedent and outcome and thus minimise hindsight bias.

Robbennolt and Sorbus (1997) proposed an integration of counterfactual thinking and hindsight bias and tested this against a legal background involving police powers to stop and search for drugs based on drug courier profiles. These profiles are described as “formal or informal collections of characteristics, used by DEA, a police dept or police officer believes to indicate that the person is carrying illegal drugs”. It struck me that their description of a drugs courier profile was similar to a safety professional’s causal schema described by Woodcock (1996), as both provide a shorthand way of identifying situations requiring their professional intervention.

In their integration model Robbennolt and Sorbus (1997) tested a view that opposed the traditional link between counterfactual thinking and hindsight bias, namely that engaging in counterfactual thinking (induced by an abnormal and truly surprising outcome) would result in a reduction of hindsight bias. More specifically they suggested that when an outcome was normal or as expected, the presentation of the outcome information would produce the typical hindsight bias, however, when the outcome was abnormal or surprising and elicited counterfactual thinking, the hindsight effect would be reduced. They tested this in a study asking respondents to award compensation and punitive damages following a stop and search by a police officer. In the USA no warrant is required for such a stop although the officer must have 'probable cause to act', but if the officer does not have probable cause then the search may be unconstitutional and there is a civil remedy under United States legislation (42 U.S.C. §1983). In such a civil action the actual outcome of the search for drugs is immaterial and jurors are asked to 'put this out of their minds'. There is a parallel to this in UK health and safety law where UK safety professionals could find themselves in much the same position as USA police officers. Both will have taken law enforcement action following their assessment of a situation based on a drugs carrier profile or a causal schema. It seems likely that both safety professionals and the police would believe their actions to be correct based on the outcome which was predicted by the drug courier profile or causal schema, and in both countries their actions are judged by juries. In the USA the successful finding of drugs is irrelevant under a claim under 42 U.S.C. §1983, whereas in the UK the fact that an accident occurred has been judged to be a strong indicator that the risks were not adequately controlled and that is the offence in law and not the accident, which is the manifestation of that failure (*R v Tangerine Confectionery Ltd and Veolia ES (UK) Ltd*, 2011).

The work of Robbennolt and Sorbus (1997) suggests that the relationship between counterfactual thinking and hindsight bias in a legal context can vary based on the roles that people adopt and the framing of the specific legal requirements. The role of Safety Professionals has a strong legal basis and this is another reason why they

may demonstrate a different approach to counterfactual factual thinking following a slip or trip accident from either Managers or Accident Subjects.

### **The framing effects of legislation**

Dunning and Madey (1995) suggested that the way the counterfactual question is put or phrased can influence the subsequent counterfactual mutation through a variety of ways including purpose, salience and availability.

According to Norm Theory inaction is the norm in general social settings, however this may not be the case with health and safety legislation as many statutory duties create the expectation of an action in order to comply with them (HMSO, 1974). The purpose of health and safety legislation is to prevent injury and ill health and like many statutes the requirements can be expressed as either a requirement to do something (action) or a prohibition on doing something (inaction). For example, the duty under section 2 of the Health and Safety at Work etc. Act 1974 (HMSO, 1974) to “ensure so far as reasonably practicable the health, safety and welfare of staff” is written as requiring positive action to meet its requirements (an action), but it could have been written as a prohibition on exposing staff to risks to their health and safety (inaction). As in the case of section 2 where the requirements of health and safety legislation require compliance with duties or the achievement of certain standards, an expectation is raised of positive action towards meeting those standards and these actions become the expected norm against which actual circumstances are judged counterfactually.

In the context of that norm an accident implies that something had not been done to prevent it from occurring and is interpreted as a failure to comply and thus becomes an inaction. Under these circumstances counterfactual thinking may focus on changing inactions which are considered to be exceptional.

When considering legal requirements that prohibit things, it is now easier to see that most of these relate to the prohibition of an action of some sort. A breach of such a prohibition requires the commission of an action, and counterfactuals are likely to be based on removing or undoing that action.

## **Counterfactual thinking – juries, rape, blame, punishment and compensation**

The legal system asks jurors to use counterfactual reasoning to make decisions about causation and compensation in both criminal and civil cases.

To be considered a cause, the event in question must fulfil two requirements. It must be a 'but for' cause of the outcome (also called 'cause in fact', 'factual cause' or 'sine qua non'), and it must be a legal cause (also called a proximate cause) of the outcome. The legal cause limits the otherwise unlimited 'but for' causes for which people could otherwise be held liable (Spellman & Kincannon, 2001).

Roese (1997) distinguished between factors that activate counterfactual reasoning and those that influence the content of the counterfactual generated. As jurors are already in a context in which they are asked to do such reasoning, it is the content that is most relevant. In general, previous studies suggest that:

1. exceptional or unusual events are more often mutated than normal or usual ones,
2. events which are the focus of the story will be mutated more often than those that are not,
3. controllable events will be mutated more than uncontrollable ones,
4. immoral events or actions will be mutated more often than moral ones.

The role and effect of counterfactual thinking by jurors has been researched in relation to rape, blame, compensation and punishment. Each of these will be briefly considered.

### ***Rape***

Turley et al. (1995) reported that a rape victim was found to be more responsible when her own actions before the rape were unusual.

### ***Blame***

We know that focusing attention on an individual's actions is likely to increase their availability for counterfactual mutation and the amount of responsibility attributed to the actor (Catellani & Milesi, 2001; Gavanski & Wells, 1989; Kahneman & Tversky, 1982), such that Branscombe et al. (1996) found that blame assignment to the victim in a hypothetical rape case was greater when the participants undid the outcome by changing her actions rather than those of the offender and that the reverse effect was also noted in that greater blame was attached to the offender if his actions were mutated.

Lehane (1998) reported differences in the attribution of causal responsibility for slip and trip accidents for two groups of respondents, Accident Subjects and their Managers. Accident Subjects placed causal responsibility for slip accidents with other people in 53% of the cases and accepted responsibility for their own accident in 12% of cases, but this was markedly different for trip accidents where 56% of Accident Subjects considered they were responsible for their own accident with other people being responsible for 12%. On the other hand, Managers were more likely to place causal responsibility with the accident subject for both slips and trips, but there were differences here too with Managers attributing responsibility to the accident subject for a slip accident in 37% of cases but 64% in the case of a trip accident. Whilst these results were not predicated on a counterfactual explanation, the existence of such diverse results may indicate significantly different approaches to the cognitive processes associated with accidents and this study seeks to explore further one possible aspect of those differences.

### ***Punishment***

Research has also shown that factors such as normality, direction of counterfactual and perspective can influence the severity of punishment. Turley et al. (1995) reported longer custodial sentences for an offender when mock jurors concentrated on unusual behaviours of the victim, and shorter ones when concentrating on unusual behaviours of the offender.

Wiener et al. (1994) found that determinations of negligence were related to mock jurors' ability to mutate the negligent act, which in turn were related to perceptions of the abnormality of the defendant's behaviour. Antecedent abnormality may influence mock jurors' awards of compensation such that higher levels of compensation are awarded after a negative event following unusual (exceptional) circumstances (Macrae, 1992; Macrae & Milne, 1992; Miller & McFarland, 1986).

Some studies have demonstrated that when counterfactual alternatives to the negative outcome are readily available participants feel greater sympathy towards the victim, envisage more severe punishment for the perpetrator, and judge the case as more serious than when such alternatives are not so readily available (Macrae, 1992).

### ***Compensation***

Miller and McFarland (1986) reported that plaintiff compensation was influenced by counterfactual thinking. Where the negative event arose out of an unusual set of circumstances greater amounts of compensation were awarded than when the same negative event arose out of more normal circumstances. Bothwell and Duhon (1994) reported that the abnormality of the event did not necessarily result in greater compensation where the victim's irresponsibility is emphasised and that lower compensation was awarded to plaintiffs if mock jurors took the perspective of the plaintiff rather than the defendant when imagining how the event could have been avoided.

### **Accident Investigation**

As an experienced health and safety inspector the concept of counterfactual thinking was immediately familiar when I read about it. I recognised it as something that I and other inspectors used intuitively when we thought about accidents. This study did not seek to examine the detailed physical causes of slip and trip accidents or the ways in which they are investigated, but it may be helpful to outline briefly both the legal framework that exists relating to the working environment and the subsequent investigation of slips and trips that may occur.

The incidence of slip and trip accidents has remained largely untouched despite targeted campaigns by the Health and Safety Executive (HSE), local authorities and employers. Over 30,000 slip or trip related accidents were reported to the HSE or local authorities in the UK in 2011/12. These are the accidents with the most serious outcomes requiring formal reporting under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (HMSO, 1995) but there will be many thousands more which are either not reported or are not so serious but which still, nevertheless, cause accident subjects pain and suffering as well as loss of working time to employers. Heinrich (1931) developed the safety pyramid based on a study of industrial accidents and employee injuries and proposed that for every 300 non-injury accidents, there are 30 minor injuries and one major injury, leading to the possibility that there could be up to 900,000 other occupational slips and trips causing less serious injuries. Of the 30,000 reported occupational slip and trip accidents probably about 70% are investigated by managers (Lehane, 1998).

Slip and trip accidents are low tech accidents in that they do not involve any complex processes, control systems or machinery, just people moving from one place to another, something which we do every day and have done since learning to walk. Because slips and trips arise out of such a basic human activity this may impact on how we perceive them and respond to them, and this idea was proposed by Lehane and Stubbs (2006) who suggested that people's responses to slips and trips might be different from other types of accidents because of our universal exposure to them.

The vast majority of research on slips and trips has focused on footwear, floors and contamination, but very little attention has been paid to their psychology. They are generally investigated in a simple way by managers who usually speak to the accident subject and visit the scene of the accident (Lehane, 1998) and this may be appropriate given the simple nature of slips and trips. There is a vast array of accident-related research, investigation techniques and models which Anderson, Johansson, Linden, Svanstrom and Svanstrom (1978) classified into three broad approaches: behavioural, epidemiological and systems. Of these three the



behavioural approach is most relevant, however a full review of this area of research is beyond the scope of this study but a few comments may help set the scene. Greenwood and Woods (1919) were one of the first researchers to consider the role of human factors in work-related accidents and identified that “the bulk of accidents occur to a limited number of individuals who had a special susceptibility to accidents and suggested that the explanation was to be found in the personality of the individuals”. In 1926 Farmer and Chambers coined the term ‘accident proneness’ which led to a search to isolate those factors which made the individual accident prone. However research failed to identify a typical accident prone person although Reason (1974) noted that people seemed to be accident prone for periods of time rather than continually throughout their lives and termed these ‘accident repeaters’, describing them as “Members of a club which is continuously changing its membership”. The elusive search for accident proneness was still being pursued in the 1980s when Boyle (1980) attempted to overcome some methodological problems found in previous studies and identified some support for the idea that individuals were differentiated with respect to their accident rates but saw no immediate opportunity to apply this in an industrial setting, whilst Mayer, Jones and Laughery (1987) failed to find evidence of accident proneness among Shell Oil staff in Texas.

Other behavioural research has considered personality characteristics which measured the impact of personality types on accidents, principally introversion and extroversion (Eysenck, 1947, 1962, 1965, 1970), locus of control (Foreman, Ellis, & Beavan, 1983; Jones, 1984; Jones & Forman, 1984), impulsiveness (Denning, 1983; Hilakivi et al., 1989), and risk taking and sensation seeking (Meadows, 1994; Zuckerman, 1979). As slips and trip arise out of people’s ability to move from one place to another their psychomotor skills may be a factor in their occurrence, but research on reaction time, times tests and co-ordination have not been generally illuminating. Further details on individual differences in accident liability was published by the Health and Safety Executive (HSE, 1998).

According to HSE research on accident investigation (HSE, 2001a) “the majority of companies do not effectively discriminate, or indeed understand the distinction between immediate and underlying causes”. The report also confirmed the relatively unsophisticated approach taken when investigating work-related accidents which focused on the collection of descriptive data representing the events surrounding the incident using witness statements, photographs and reconstructions, with causal analysis limited to immediate causes. The HSE report described two main types of accident investigation, the first being the traditional accident investigation approach, focusing on the individual or behavioural contribution to the incident and largely ignoring other potential contributory factors. The second type being the system-based approach, which sought to embrace the full range of contributing factors. The system-based approach includes a number of important concepts including the recognition of multiple causation, performance influencing factors, immediate and underlying causes and the modification of system factors as being a major preventative strategy. Some safety critical industries such as nuclear power and off-shore oil drilling have been instrumental in the development of complex incident investigation procedures, collectively referred to as Root Cause Analysis, and a summary of the main ones was published by HSE in 2001 (HSE, 2001b).

In general, people are thought to counterfactually change what is made explicit to them, however Woodcock (1996) described the development of causal schema by Canadian safety officers in response to accident types. Through experience safety officers developed a cognitive framework for an accident which is evoked based largely on its general description and classification, thus a representation of a typical slip or trip accident would be brought to mind through hearing about an accident or reading an accident report. If safety practitioners do adopt causal schema it would include a set of expectations (norms) for an accident type against which the specific accident will be judged counterfactually. The possibility that a safety officer brings to mind a typical (normative) representation of an accident type simply by its categorisation raises the question whether the level of

information about an accident, whether presented to them or obtained through a simple investigation concerning a specific accident, has any influence on the way that counterfactual thinking is used to bring about a different outcome.

In the course of an investigation the level of knowledge and understanding of the temporal sequence of events, people's behaviours and the extant conditions increases as its various aspects are explored. If investigators approach an investigation without preconceptions then the opportunities for learning are increased, but if a causal schema is evoked at the initial stage then the subsequent investigation may be constrained and biased, not by what is known but by what is inferred or assumed through the causal schema. This idea is explored in this study by manipulating the level of information given to respondents and assessing its impact on the structure of the respondents' thoughts generated in response to the research scenario.

Differences in the selection of causal strategies between Safety Professionals, Managers and Accident Subjects have also been reported by Lehane (2004), with Safety Professionals focusing on abnormal conditions whilst Managers and Accident Subjects were most likely to attribute the cause to an action or inaction.

Inevitably some of the counterfactual thinking research has been based on accident type scenarios, for example those developed by Wells and Gavanski (1989) which included Karen's wine allergy and Eugene and Tina drowning after the bridge collapsed, and Kahneman and Miller's (1986) car accident involving Mr. Jones. However there has been no specific counterfactual research in the area of occupational accidents and more specifically those involving slips or trips. This research sought to address this neglected area. The motivation for engaging in counterfactual thinking influences the subsequent counterfactual thought process and the specific counterfactual thought which is finally expressed.

### **Consideration of Future Consequences Scale**

Strathman, Gleicher, Boninger, and Edwards (1994) developed the Consideration of Future Consequences (CFC) Scale which measures respondent's propensity to consider the future when making decisions affecting the present.

Given the suggestion by Ross and Nisbett (1991) that there is a strong social and situational influence on counterfactual thinking a variation of the CFC Scale was completed by respondents in the three job groups to evaluate any differences and examine the relationship between the counterfactual mutations used by the groups. The development of the scale for this study is discussed in the Methodology section.

### **Comment on Scenario Designs and their Ecological Validity**

I have referred to the lack of ecological validity in scenario-based counterfactual research and to expand on that point I will critically evaluate three of the most often referred to and varied scenarios.

In their first scenario Wells and Gavanski (1989) presented details of Karen's death following her consumption of wine in a meal of moules marinière brought by her boss after her promotion. Karen suffered from a rare inherited disease which meant she was allergic to alcohol, but her boss was unaware of this and selected meals from the menu, in one version he considered two choices both containing wine and in the other version he considered two choices but only one contained wine. Having read a version of the scenario respondents were asked to mutate events and list important causes of her death. As a real life scenario it lacks credibility, because it is inconceivable that Karen would not have mentioned such a significant life threatening condition to her boss before he took her out for a meal.

In the second test they presented a scenario in which wheelchair users Eugene and Tina die in an accident driving their own vehicle when a bridge collapses after a storm. They were only driving their own vehicle because a taxi driver refused to take both of them as the taxi did not have room for their wheelchairs. The scenario is presented in two versions in which Eugene and Tina die but the taxi driver

survives, in one version he crosses the bridge safely before it collapses and in the other he crashes off the damaged bridge but gets out of his car before it is submerged. Respondents read the scenario before making judgements about cause and responsibility.

I suggest that the scenario introduces biases through its context and emotional content. First of all the language describing Eugene and Tina is emotionally charged referring to them as partially paralysed and using wheelchairs, young and recently married, and giving details of how they met and fell in love. Against this we are told nothing about the taxi driver other than it was a man. We know nothing about his background, how he came to be a taxi driver, we don't know his age, whether he is single, married or divorced, whether he has children, as far as the respondents were concerned he is anonymous.

Thinking about the context of the scenario I also found there to be a lack of realism. We are not given any details of the type of cab, whether any attempt was made by the driver to fit Eugene and Tina in the taxi. It seems improbable that Eugene would have booked a cab and not mentioned that he and Tina were disabled and used wheelchairs requiring a particular type of vehicle, as he would not want to risk a wasted journey by the cab company sending an unsuitable vehicle. No mention was made about whether Eugene had used this cab company before, and if so how many times.

The cab driver's refusal to take them was not causally linked to the collapse of the bridge, his action was not the cause of the bridge collapsing, the cause was the storm. Mandel and Lehman (1996) would have described his actions as being a missed opportunity to have prevented Eugene's and Tina's deaths. His actions were the focus of the narrative and as Kahneman and Miller (1986) point out a person's actions are more highly available for counterfactual mutation. The taxi driver was the last person in a temporal chain of events and in such chains the latter events are more highly mutable, focusing on the actions of the taxi driver highlights how this can lead to potentially dysfunctional counterfactuals. His refusal to pick them up

represented an exception to a social norm, and his action may also have been considered as being selfish which can increase the counterfactual availability of his actions (Segura & McCloy, 2003), but he was not the cause of their death.

Similar criticisms can be made about Kahneman and Tversky's (1982) scenario, also used by Kahneman and Miller (1986), in which Mr. Jones dies in a road traffic accident on his way home from work. In one version he leaves work early and in the other he takes a different route home, but in both versions he is involved in an accident with a truck driven by Tom, a teenager under the influence of drugs. In the 1982 paper respondents were asked to complete counterfactual sentences from the perspective of Mr. Jones' family and friends, and later different respondents were asked to complete the counterfactual sentences from the perspective of Tom's family.

I believe that an emotional bias was introduced to the scenario as quite a lot of detail was provided about Mr. Jones (47-year-old father of three, successful banking executive, with a sick wife for whom he was doing errands). In contrast, all that is said about Tom, the other driver, is that he is a teenager and was under the influence of drugs. The scenario exhibits an imbalance between the two actors, one is represented as being mature, upright, responsible, experienced and law abiding, whilst the other is young, reckless, inexperienced and law breaking. Whilst it is interesting that this imbalance did not affect the respondents' counterfactual focus, respondents instructed to adopt Mr. Jones' family's position mutated antecedents which Mr. Jones had control over, and those instructed to adopt Tom's family's position focused on antecedents which were pertinent to Tom's situation, very much as predicted by the focus rule.

It would have been interesting to have seen how other people viewing the outcome from different positions or the police might have responded. In these circumstances it seems likely that Tom's actions would have been the focus of counterfactual speculation particularly as he was responsible for a deliberate criminal action, that of driving under the influence of drugs, which is most likely an unacceptable social

norm. In particular I would expect the police to focus on Tom's actions because of their illegality and their role to investigate illegal acts. I also suggest that Mr. Jones' decision to leave work early or take a different route home are unlikely to be identified by the police and they are in no way causally connected to the accident, in much the same way that the taxi driver in the Eugene and Tina scenario was not causally responsible for the bridge that collapsed. In both cases the behaviours represent missed opportunities to have avoided the accident.

### **Linking Literature to My Research Proposals**

Counterfactual thoughts link the past with the present and allow us to speculate about the future, influence how we feel, and shape our intentions and behaviour.

Many aspects of counterfactual thinking have been explored through philosophy and social psychology and we have an increasing understanding of how counterfactual thinking functions through many and varied studies, some of which have been referred to in this review.

People respond to an event, even a simple scenario-based one, in an individual and personal way. The strength of that response is influenced by the emotional relationship and relevance between the event and the individual. An event which has actually been experienced must be more emotionally relevant to a respondent than a hypothetical one presented in a scenario. The structure of the scenario often prescribes the motivation for undertaking counterfactual thinking, effectively constraining it to a single standpoint. For example, in Kahneman and Tversky's (1982) scenario the respondents are asked to mutate the outcome of Mr. Jones' car accident from the point of view of a bereaved relative, but there are other people who might have thought about his accident and brought about a different outcome from quite different perspectives by choosing other antecedents. How differently might Mr. Jones' accident be viewed by the driver of the other car, work colleagues, witnesses, police officers who attended the accident or members of the public reading about it in the local newspaper?

As counterfactual thoughts are evoked by negative events or failing to attain desired outcomes or goals, researchers have used studies involving accidents of one type or another and these include Kahneman and Tversky (1982) whose Mr. Jones car accident has been much repeated and adapted by subsequent researchers including Mandel and Lehman (1996). Davis et al. (1995, 1996) considered sudden infant death and spinal column injuries, Brickman et al. (1975) and Eck and Kite (1997) both used road traffic accidents, Wells and Gavanski's (1989) scenario featured Eugene's and Tina's car crashing off a collapsed bridge, and Macrae (1992) used a scaffolding collapse as the basis for a scenario.

In the main these unwanted outcomes, negative events and failures to attain desired goals have been presented through prepared scenarios given to undergraduate students. However a few have involved real life respondents, for example Landman and Manis (1992) used 1,145 adult women who had contacted the University of Michigan's Centre for Continuing Education for Women (as sample 2) and 80 adults as a matched control group (sample 3) in a study of counterfactual thoughts about people's personal decisions; Mandel and Dhami (2005) worked with 90 adult male prisoners in a study looking at the effect of counterfactual thinking on blame, guilt and shame; Davis et al. (1995, 1996) undertook studies of counterfactual thinking in people who had been admitted to hospital following spinal injury and parents whose children had died suddenly and unexpectedly; and Gilovich and Medvec (1994) took random samples of adults from the New York and Chicago telephone directories and residents from nursing homes in their study of regret.

Scenario-based research offers certain advantages because they allow the researcher to contrive a specific set of circumstances that allows them to manage and manipulate the information presented to the respondents so that it meets the counterfactual research aims, ensuring the researcher retains experimental control so that each respondent receives and responds to exactly the same information. However scenario-based research also has limitations - realistically scenarios can only present a limited amount of detail so they tend to lack the rich texture that real life experiences give, there can be no real personal involvement and they can



unintentionally introduce bias, for example refer to my criticism of the Eugene and Tina scenario used by Wells and Gavanski (1989) or the Mr. Jones scenario used by Kahneman and Tversky (1982) and Kahneman and Miller (1986) and subsequently adapted by other researchers.

There are some situations where the scenario approach is more closely representative of the way information is presented to people to respond. A good illustration of this would be a jury at a trial. Jurors are presented with a scenario, which is given to them in the form of the evidence they hear and they all respond to this in their role as a juror and this approach to counterfactual research was used by Miller and McFarland (1986) and Catellani and Milesi (2005) among others.

Clearly one of the disadvantages of using respondents' own experiences is that there is lack of experimental control over the nature of the incident and circumstances under which it happened. This approach, which might be considered to be the ultimate in ecological validity, has to be balanced against the use of a scenario where the information can be controlled so all the respondents react to the same situation, but where there is a lower level of ecological validity.

One of the other limiting factors found in most previous counterfactual research is that it is undertaken by academic researchers typically using undergraduates as respondents, either responding as themselves or by being asked to role play a character from a scenario. This may not be a serious limiting factor for many areas of research in social psychology, but there are times where it is more important that real populations are used, particularly when the respondent's social role in a particular setting has a strong influence and this is the case for counterfactual thinking following occupational accidents. For example, research by Davis et al. (1995) has shown significant variations between counterfactuals generated by real populations and those generated by role-playing students, whilst Woodcock (1996) said "It is hardly original to question the validity of using undergraduate students instead of 'real people'. If the research is applied to naïve attribution, there may be no harm in this practice. However, where the research is supposed to reflect

practitioner's real world judgements, it becomes a role-playing exercise. Role playing only reveals the role player's beliefs about the role-incumbents" and Byrne and McEleney (2000) commented on the limitations of research scenarios saying "judgements about the emotional experience of a fictional character in a scenario are very different from genuinely experienced emotions in a similar real life situation".

Various authors, including Roese and Olsen (1995) and Catellani and Milesi (2005), suggested that the motivation for undertaking counterfactual thinking is very important and proposed a social context model of counterfactual constraints in which the social context of the event itself and the social context in which the event is interpreted influence counterfactual mutability.

Much of the research undertaken into counterfactual thinking has focused on how an individual thinks from a personal perspective, for example how they could have got a better grade in their last exam. In another research approach role-playing respondents are asked to assume the identify of a scenario character and 'stand in their shoes' and respond as though viewing the outcome through the eyes of this other person. This was the approach used by Kahneman and Tversky (1982) when they asked respondents to complete a counterfactual thought sentence from the perspective of Mr. Jones' family. Under these research conditions one wonders if all the respondent does is project their own personal responses on to the scenario character in an 'If that was me I would...' type response. As has already been referred to, counterfactual thinking can be undertaken from an individual perspective focusing on how the thinker could bring about a different outcome for themselves, but also from a public perspective where people consider how an outcome could have been different for someone else and this situation arises whenever we think about an unwanted outcome following an accident. There are many people who are called upon to think this way as part of their professional or civic duties and these include: witnesses, other workers, managers, company safety officers, company directors, health and safety inspectors, insurance assessors, members of a jury, and members of the public hearing or reading about an accident.

Occupational accidents represent an outcome where it is suggested that real populations should be studied because of the influence of the social situation, and multiple perspectives that are brought to bear on such outcomes. It may be possible for undergraduate students to respond as accident subjects as many would have had some first-hand experience of being injured, possibly at work, however students are much less able to respond as managers because they are unlikely to have experience of managing people or have knowledge of a manager's role and responsibilities for the health and safety of their staff. Similarly students cannot replicate the experiences and knowledge of safety professionals. With the aim of presenting the most ecologically representative research, respondents from each of the three real life populations were used in the current study so they could bring to bear their real life experiences of similar situations.

In many of the earlier studies involving counterfactual thinking the unwanted outcome was simply a means of establishing a suitable situation in the minds of the respondents from which to test the researcher's hypothesis about counterfactual thinking. In no previous counterfactual thinking research has the specific nature of the outcome or unwanted event and its antecedents been of equal importance to the counterfactual response. This study takes a fundamentally new approach and for the first time sets out to examine the counterfactual response (along with the prevention and causal response) from different social perspectives to a specific type of real life outcome which has significant implications in the field of occupational safety, and in doing so seeks to develop a new approach to understanding the social psychology of slips and trips in an area which has been dominated to date by an ergonomic approach commonly based on slip resistance and tribology. A flavour of these approaches can be found in the proceedings of the Slips, Trips and Falls Symposium held in Nottingham, UK reported in *Contemporary Ergonomics* (2008).

It was hoped that this approach would integrate the advantages of scenarios (experimental control and manipulation of variables) with the greater ecological validity provided by respondents approaching the scenario from their real experiences of being a Safety Professional, Manager or Accident Subject.

Recognising the benefits and limitations of scenario-based research this study used a scenario which was specifically developed based on a typical accident reported to local authorities involving a slip or trip by a supermarket employee (Mary). As with all scenarios this one cannot convey all the details that would be available to someone involved with a real accident, but nevertheless it is presented as a typical accident report in that it is brief, factual and focused on the actions of the accident subject (Mary).

Given the importance of the social situation on the generation and content of counterfactual thinking, this study gains in ecological validity over previous research by recruiting respondents from three groups of people who had a real life involvement with slip and trip accidents and were able to bring that experience to bear on the scenario as they would in their day to day work, such that this is the first study to specifically explore the effect of different social roles on the same outcome. In this study three different groups, Safety Professionals, Managers and Accident Subjects, were asked to consider how Mary's slip or trip accident could have been different, how it could have been prevented or what its cause was. In doing so this study returned to some of the earliest research into the social psychology of counterfactual thinking when the basic structure of counterfactual thought was identified and sought to compare and contrast the effect of the respondents' different social roles on the structure of counterfactual, prevention and causal thinking of a single event.

### **Summary of literature review and proposals for research**

Reviewing relevant literature covering the fields of counterfactual thinking, causal thinking and accidents highlighted a number of areas where further research is needed, the main one being that counterfactual thinking has not been rigorously tested under real life conditions where the circumstances, the outcome and possible alternative outcomes are at least as important a part of the research as the counterfactual dimensions being tested. There are some exceptions to this where the outcome itself was as significant as the thought processes that followed it and these were the studies by Davis et al. (1995, 1996), where they worked with respondents

who had suffered a serious spinal injury or had lost a child through Sudden Infant Death Syndrome, and the body of work on rape or other real life trauma such as the 2004 tsunami (Teigen & Jenson, 2011) or failed silicone breast implants (Parker et al., 2002), but none of these have considered the outcome of an occupational accident as the situation which has prompted counterfactual thought.

Occupational accidents occur in a specific social setting with its own rules and expectations and where those involved have different roles, be that of employer manager, supervisor, staff or the person who had an accident. The importance of the social situation on framing and constraining counterfactual thoughts has been referred to in previous research, but few studies have properly considered how this impacts on the specific structure of counterfactual thoughts of people with different social roles, perspectives and motivations who are actually involved with a specific outcome under particular real life circumstances.

Counterfactual thinking has been historically associated with causal thinking and in more recent years with missed opportunities to prevent the outcome. Clearly counterfactual thinking can be a route to both, but in the context of an occupational accident is counterfactual thinking more closely associated with one more than the other?

With few exceptions, counterfactual thinking research has used university students as respondents. Whilst this may be acceptable for studies of a general nature they are not suitable in studies of specific real life situations where the respondents must have first-hand personal involvement and appropriate knowledge skills or responsibility to offer a realistic response.

This study set out to address these gaps and inadequacies by establishing a realistic research scenario concerning a typical occupational slip and trip accident and recruiting respondents from three populations (Safety Professionals, Managers and Accident Subjects) who had real life direct and personal involvement in occupational accidents.

In the limited research to date on the psychology of occupational slip and trip accidents differences in the perceptions of causal responsibility between Managers and Accident Subjects (Lehane and Stubbs, 2001) and the causal strategies adopted by Safety Professionals, Managers and Accident Subjects have been identified (Lehane, 2004). This study sought to extend this area of research by recording and then comparing the structure of the counterfactual, prevention and causal thoughts of three groups of people directly involved in occupational slip and trip accidents and allowing and encouraging their social role to naturally influence their responses.

Safety Professionals were expected to demonstrate through the structure of their counterfactual, prevention and causal sentences a greater influence of the legal framework which sets the rules for health and safety in the workplace. Accident Subjects were presumed to have little or no specific knowledge or appreciation of the legal requirements, and that the structure of their counterfactual, prevention and causal sentences would therefore be different to those of Safety Professionals. The responses of Managers was harder to predict - they have responsibilities to protect their staff and to ensure that organisational rules and procedures are followed, but probably don't have the same awareness of the legal requirements as Safety Professionals although should have more than Accident Subjects - so it was expected that the structure of their completed counterfactual, prevention and causal sentences would lie somewhere between those of Safety Professionals and Accident Subjects.

After reading a slip or trip scenario respondents were prompted to complete three sentences. The first was a counterfactual sentence and respondents completed an 'if only...' sentence, 'If only... things could have been different'. Respondents were then asked to show how Mary's accident might have been prevented by completing the sentence 'Mary's accident could have been prevented...' and finally respondents were asked about what they thought was the cause of Mary's accident by completing the sentence 'The cause of Mary's accident was...'. These sentences were compared against fourteen structural dimensions, seven of which had been

identified from previous counterfactual research and seven new ones identified as part of this study.

A single outcome can be judged from many perspectives and most previous counterfactual research has focused on a single perspective from role-playing respondents, with a limited number of studies in which respondents were randomly allocated to one of two perspectives. For example, in Macrae and Milne (1992) respondents were asked to respond as though they were the person who had food poisoning or the food business. In real life situations people's roles and responsibilities influence their motivation for engaging in various type of cognitive processes and this can constrain the scope of that thinking. After an occupational accident such constraints might include blame, responsibility and punishment due to criminal law considerations (Health and Safety at Work etc. Act 1974, HMSO, 1974), civil law compensation and insurance claims and, in addition, possible organisational sanctions for breaches of rules and procedures.

This study focused mainly on the possible role of criminal law and its effects on the structure of the counterfactual prevention and causal thoughts generated by Safety Professionals compared to those of Managers and Accident Subjects. These differences were expected to be revealed through their counterfactual, prevention and causal thoughts. Based on previous research and an understanding of the legal requirements associated with occupational accidents including slips and trips, some general predictions can be made for the ways that the respondents might structure their counterfactual and causal sentences. Whilst there is no comparable literature on how people think about preventing an outcome, an attempt has been made to suggest the most likely structural dimensions. Table 1 sets out the predicted structure of Safety Professionals' counterfactual, prevention and causal thoughts, with those of Managers in Table 2 and Accident Subjects in Table 3. The tables indicate that the expected structural differences between the three respondent groups will be focused on six structural dimensions, those being the temporal location of the selected antecedent (timescale), whether the antecedent was static or dynamic, general or specific to the scenario, known to the respondent or inferred,

was personal or situational, and its domain, which related to the antecedent being associated with a procedure / process, a behaviour, an attitude or a physical item.

The purpose of the current research was:

1. To identify how the seven previously identified structural dimensions of counterfactual thoughts were used in the specific setting of a slip or trip accident.
2. To establish how the seven new structural dimensions of the counterfactual thoughts were used in the specific setting of a slip and trip accident.
3. To identify how the 13 sentence dimensions were used in the prevention and causal sentences in the specific setting of a slip and trip accident.
4. To examine the effect of accident type (slip or trip) on the structure of counterfactual, prevention and causal sentence sentences.
5. To examine the effect of job type (Safety Professionals, Managers and Accident Subjects) on the structure of counterfactual, prevention and causal sentences.



Table 1. Predicted responses for Safety Professionals  
Structure of counterfactual, prevention and causal sentences

Structural element	Counterfactual thinking	Prevention thinking	Causal thinking
Direction	Better outcome	N/A	N/A
Action or inaction	Inaction	Action	Inaction
Addition or subtraction	Addition	Addition	Subtraction
Exceptionality	Exceptional antecedent	Normal antecedent	Exceptional antecedent
Timescale*	Distal to the accident (before the day of the accident)	Proximal to the event (the day of the accident)	Proximal to the event (the day of the accident)
Did scenario actor have control	Yes	Yes	Yes
Dynamic or static antecedent *	Static	Static	Static
Case specific / general antecedent *	General	Specific	General
Known or inferred antecedent*	Inferred	Inferred	Inferred
Personal / situational antecedent*	Situational	Situational	Situational
Spontaneous identification of scenario actor	No prediction	No prediction	No prediction
To whom did the sentence relate	No prediction	No prediction	No prediction
Specific subject of the sentence	No prediction	No prediction	No prediction
Domain (procedure, behaviour or a physical item)*	Procedure	Procedure	Procedure

\*Dimensions predicted to be influenced by the respondent's job group

Table 2. Predicted responses for Managers  
Structure of counterfactual, prevention and causal sentences

Structural element	Counterfactual thinking	Prevention thinking	Causal thinking
Direction	Better outcome	N/A	N/A
Action or inaction	Inaction	Action	Inaction
Addition or subtraction	Addition	Addition	Subtraction
Exceptionality	Exceptional antecedent	Normal antecedent	Exceptional antecedent
Timescale*	Proximal to the accident. On the day of the accident	Proximal to the accident. On the day of the accident	Proximal to the accident. On the day of the accident
Did scenario actor have control?	Yes	Yes	Yes
Dynamic or static antecedent *	Active	Active	Active
Case specific / general antecedent *	Case Specific	Case Specific	Case Specific
Known or inferred antecedent*	Known	Known	Known
Personal / situational antecedent*	Personal	Personal	Personal
Spontaneous identification of scenario actor	No prediction	No prediction	No prediction
To whom did the sentence relate?	No prediction	No prediction	No prediction
Specific subject of the sentence	No prediction	No prediction	No prediction
Domain (procedure, behaviour or a physical item)*	Behaviour	Behaviour	Behaviour

\*Dimensions predicted to be influenced by the respondent's job group

Table 3. Predicted responses for Accident Subjects  
Structure of counterfactual, prevention and causal sentences

Structural element	Counterfactual thinking	Prevention thinking	Causal thinking
Direction	Better outcome	N/A	N/A
Action or inaction	Inaction	Action	Inaction
Addition or subtraction	Addition	Addition	Subtraction
Exceptionality	Exceptional antecedent	Normal antecedent	Exceptional antecedent
Timescale*	Proximal to the accident. On the day of the accident	Proximal to the accident. On the day of the accident	Proximal to the accident. On the day of the accident
Did scenario actor have control?	Yes	Yes	Yes
Dynamic or static antecedent *	Active	Active	Active
Case specific / general antecedent *	Case Specific	Case Specific	Case Specific
Known or inferred antecedent*	Known	Known	Known
Personal / situational antecedent*	Personal	Personal	Personal
Spontaneous identification of scenario actor	No prediction	No prediction	No prediction
To whom did the sentence relate?	Mary	Mary	Other person
Specific subject of the sentence	No prediction	No prediction	No prediction
Domain (procedure, behaviour or a physical item)*	Physical	Behaviour	Behaviour

\*Dimensions predicted to be influenced by the respondent's job group

# Methodology

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## **Participant Characteristics**

Six hundred and twelve (612) respondents were recruited from three real life groups between February 2002 and December 2003 and comprised 350 Safety Professionals, 129 Managers and 133 people who had been injured in an accident (Accident Subjects). All respondents received a postal invitation to participate along with the research scenario, questionnaire and a pre-paid reply envelope. Those respondents who completed the questionnaire did so voluntarily.

## **Sampling Procedure**

### **Recruitment of respondents**

The 350 Safety Professionals consisted of 193 local government health and safety inspectors and 157 commercial safety officers. Letters were written to 381 local government environmental health departments in England and Wales seeking agreement to their health and safety inspectors completing the research questionnaires. One hundred and two authorities agreed and 592 questionnaires were posted to them. One hundred and ninety three completed questionnaires were returned giving a response rate of 32.6%. Commercial safety officers were invited to participate by posting 569 questionnaires to branches of the Institute of Occupational Safety and Health (IOSH) and colleges offering the Diploma in Occupational Safety (NEBOSH). One hundred and fifty seven responded giving a response rate of 27.6%. Of the 350 Safety Professionals, 211 (60%) were male, 128 (37%) were female and 11 (3%) did not indicate their gender.

Managers were recruited using freely available local business directories from London Boroughs. Small and medium enterprises (SMEs) were identified and sent a letter inviting them to participate in the study and to pass the research scenario and questionnaire on to a manager to complete. In total 2,427 questionnaires were posted and 129 completed questionnaires were returned, giving a response rate of

5.3%. 67 (52%) Managers were males, 53 (41%) were females and 9 (7%) did not indicate their gender.

An 'Accident Subject' was defined as anyone who had been accidentally injured in any way. However accidents involving fatalities, people in care institutions or children less than 16 years were excluded. A number of different methods were used to identify potential Accident Subjects including: a) statutory occupational accident reports, b) local General Practitioners surgeries, c) local newspapers, d) the local hospital Accident and Emergency department and e) advertising in local libraries.

The vast majority of Accident Subjects were identified through the statutory occupational accident reporting system known as RIDDOR - Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (HMSO, 1995). These regulations require certain occupational accidents to be reported to the HSE, the national health and safety authority in the UK, or to the local environmental health department, depending on the nature of the work activity involved. I had access to both local and national RIDDOR accident reports because I was a local government safety inspector.

All accident reports received by my employing borough (London Borough of Bromley) were considered for inclusion in the research, subject to the exclusion criteria set out above. In addition the national RIDDOR database was searched on a monthly basis for reported slip or trip accidents. Those identified as meeting the selection criteria were invited to participate and an invitation letter including the research scenario, questionnaire and pre-paid reply envelope were posted to them.

A total of 688 questionnaires (228 locally reported and 460 nationally reported) were sent to people who had been involved in a reportable occupational accident. 133 Accident Subject questionnaires were returned giving a response rate of 19.3%. 78 (59%) Accident Subjects were female and 50 (38%) were males whilst 5 (3%) did not indicate their gender.

The identification and recruitment of Accident Subjects through local General Practitioners surgeries, the local hospital Accident and Emergency department and a request in a local newspaper were all implemented but were non-productive and abandoned in favour of using the RIDDOR accident database.

### **Sample Size and Power**

A-priori sample size calculations were undertaken using G\* Power 3 software (Faul, Erdfelder, Lang, & Buchner, 2007) to identify samples of sufficient size to differentiate medium-sized effects (0.3). The number of degrees of freedom (df) for the coding of the various different sentence dimensions was predicted to range from 2 to 20, and G\* Power indicated that the minimum sample size required was 108 for options with 2 degrees of freedom and 233 for those options with up to 20 degrees of freedom.

### **Measures**

#### **Materials**

No previous research had considered the use of counterfactual thinking in the context of a slip or trip accident, so appropriate stimulus material needed to be developed. A scenario was created inspired by Kahneman and Tversky's (1982) paper, in which Mr. Jones was involved in a fatal road traffic accident. In their study respondents were given one of two versions, in one version Mr. Jones left work early to do an errand for his wife and in the other version he took a more scenic route home. In both cases Mr. Jones was killed in an accident when a young man under the influence of drugs ran a red light and collided with him. Kahneman and Tversky informed their respondents that Mr. Jones' family and friends often thought and said 'if only...' in the days following his accident and asked respondents to write one or more likely completions to the 'if only...' sentence.

Two scenarios were developed for the current research, one for slips and one for trips. Each scenario mirrored the other as to the setting, antecedent events and the actions of the characters, the only difference being that in the slip version the

accident involved a slip on a spillage of milk and in the trip version the accident involved a trip over a box. The scenario described a typical scene in ABC Supermarket at about mid-morning when the checkout operators were taking their rest break. Mary (the subject of the scenario) was going for her break when she slipped on a spillage of milk or tripped over a box. In keeping with many previous scenario-based research studies the one developed for this study contained details of an exceptional event, in this case Mary had agreed to work an extra day on a Thursday to cover for her friend who was on holiday.

For each version of the scenario (slip or trip) details were manipulated including the level of background detail provided to the respondents (minimum detail and maximum detail versions). In addition the outcome of the accident was controlled, in the minor injury version respondents were informed that Mary strained her wrist and was off work for one day, whilst in the major injury version Mary broke her arm and was off work for three weeks.

The scenario opened with a brief background to Mary, the subject of the scenario:

“Mary is a lady of about 55 years of age who has worked for ABC Supermarkets as a part-time checkout operator for about eight years. She usually works Monday, Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.”

Respondents were then requested to answer the questions that followed, doing so as ‘a [Safety Professional], [Manager] or as [someone who has recently had an accident], responding in the same way as you would in your own workplace, and using your own knowledge or experience of slipping / tripping accidents to add to the information given about the accident’.

Respondents were then presented with a brief accident report to the Store Manager about Mary’s accident from Bill the Shop Floor Supervisor. The type of accident (slip / trip) and the outcome severity (minor / major injury) was manipulated in the report according to the questionnaire version required. Figure 1 accident report

Figure 1. Accident report provided in the written scenario

<b><u>ABC SUPERMARKET</u></b>		
<b><u>MESSAGE TO</u></b>	STORE MANAGER	
<b><u>FROM</u></b>	BILL SHOP FLOOR SUPERVISOR	
<b><u>DATE</u></b>	THURSDAY 10 AUGUST	<b><u>TIME</u></b> 11.30 HRS
<b><u>SUBJECT</u></b>	- ACCIDENT TO MARY	
<p>At about 10.30am Mary went for her rest break and slipped over on some spilt milk (tripped over a box) and hurt her arm. An ambulance was called to take her to hospital. She has broken her right arm, which has been plastered. She will be off work for at least 3 weeks [strained her wrist and will be off work for a day].</p>		

***Manipulation of background information***

In the minimum information version the scenario ended with Bill's report to the Store Manager (as in Figure 1). In the maximum information version (Figure 2) respondents were given further written details in the scenario booklet and were informed that the Store Manager had interviewed Bill the Shop Floor Supervisor and had also spoken to Jane one of the other checkout operators who witnessed the accident. The information was provided in a context which was appropriate for both the accident type (slip / trip), outcome severity (sprained wrist / broken arm) and the respondent's job group (Safety Professional, Manager or Accident Subject).



Figure 2.

Example of additional information provided in the maximum information and major injury scenario - Slip version

Mary does not usually work on Thursdays but was covering for a friend who was on holiday.

Mary closed her checkout at the usual time for her mid-morning break and waited for a friend on the checkout next to hers to serve her last customer and they both went to their break together as usual.

They were walking together past the checkout when Mary slipped over on some spilt milk and fell awkwardly on her right arm.

The First Aider attended and an ambulance was called to take Mary to hospital.

At hospital she was found to have a broken right arm. She will be off work for at least three weeks with her arm in plaster.

A customer had seen the milk and reported it to Bill the Supervisor.

Bill confirmed that the spillage had been reported by a customer and the Cleaner had been asked to clear it up five minutes before the accident but had not got round to dealing with it.

No warning signs had been put out.

It is not known how long the milk had been on the floor before it was reported by the customer.

Spillages around the checkouts are very common.

According to the Accident Book four other people had been injured in slipping accidents in the past six months.

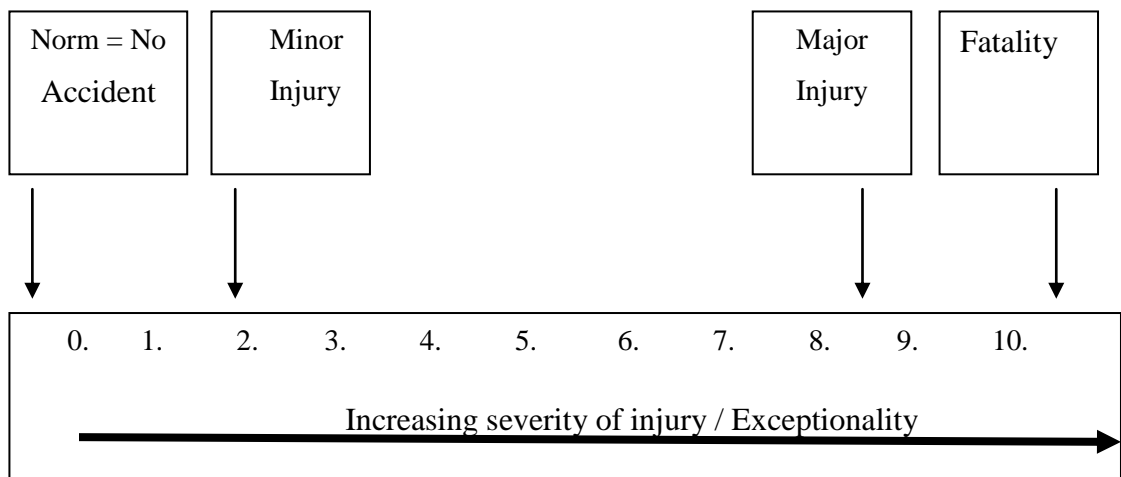
The scenario-based exceptional event was repeated and reinforced in the Maximum detail version as the fact that Mary was covering for her friend and did not usually work on Thursday was given twice, once in the general introduction and again in the additional information. More respondents selected the scenario exceptional event (Mary working on Thursday) under the minimum detail condition (22) than under the maximum detail condition (9) and this difference was significant ( $\chi^2(1) = 5.45$   $p = 0.20$ ). Notwithstanding this, Mary's decision to work on Thursday was not selected significantly frequently by any of three respondent groups. See Tables 15, 16 and 17 for details of frequency of the selection of the scenario exceptional event for the counterfactual, prevention and causal sentences.

### *Manipulation of injury severity*

The severity of the slip or trip injury was manipulated by having two levels of injury. In the major injury version Mary suffered a broken arm and a three week absence from work, whereas in the minor injury version she suffered a strained wrist and a day's absence from work. More extreme outcomes (death and no injury) were considered but they did not allow respondents the possibility of both upward and downward counterfactual alternatives as both were anchored at the extremes. It was important to maintain the ecological validity of the scenarios as the vast majority of reported slip and trip accidents actually result in strains or fractures.

Referring to Figure 3, if outcome severity is considered on a linear scale with 0 being no accident and 10 being a fatality, it is suggested that the minor injury suffered by Mary would be at about point 2 on the scale and the major injury (broken arm) would be around point 8 on the scale.

Figure. 3 Design of the scenario allowing for better and worse outcomes.



### **Piloting of the scenarios**

The research scenario and questionnaire were piloted with 10 local businesses and 10 Safety Professionals. As a result of the responses obtained the questionnaires were amended by improved formatting and layout, some questions were omitted and others refined. Piloting of the questionnaire indicated that the scenario actor was not often identified spontaneously in the completed sentences so a further question was added which asked the respondent to indicate from a list of scenario actors which of them their sentence referred to. The person identified in this question was later used to judge the degree of control they had over the specific subject referred to in the completed sentence.

After reading the scenario, respondents were asked to complete a questionnaire which included writing three sentences focusing on how the outcome of Mary's accident could have been different (counterfactual thoughts), how Mary's accident could have been prevented and what the cause of the accident was, and to complete a number of other questions and scales.

In order to enhance ecological validity respondents were asked to complete the questionnaire as they would respond to such an accident as a Safety Professional, a Manager or, in the case of an Accident Subject, to imagine themselves as being Mary.

The counterfactual sentence was prompted by the following statement – 'After Mary's accident you found yourself thinking 'If only...'. How would you continue this thought?' Respondents were requested to complete the counterfactual sentence – 'If only... things could have been different'. Respondents were then asked if they believed that Mary's accident could have been prevented. 95.8% of respondents considered the accident could have been prevented and they were then asked to complete the prevention sentence – 'Mary's accident could have been prevented...'. Finally all respondents were asked to say what the cause of Mary's accident was by completing the causal sentence – 'The cause of Mary's accident was...'. Respondents who received the longer questionnaire version were then

asked to complete a modified Consideration of Future Consequences (CFC) Scale based on Strathman et al. (1994).

The CFC Scale was developed to measure the consideration of future consequences in a broad way. This research focused on a specific aspect of respondents' consideration of future consequences, namely that of future safety, and the questions making up the scale were modified to reflect that aspect. The tone and structure of the questions was maintained to ensure the integrity of the scale. Strathman et al.'s (1994) original questions and the modified versions are shown in Table 4. The questions relating to the modified CFC Scale were coded and scored according to Strathman et al. (1994).

The modified 12 item CFC Scale gave a Cronbach's Alpha result of .651 but this was increased to .735 if item 8 was removed. Subsequent analysis of respondents' CFC scores was based on an 11 item scale.

### **Coding of responses**

As part of the questionnaire respondents were asked read a slip or trip scenario and then to complete sentences describing how the outcome might have been different (counterfactual), how the slip or trip might have been prevented and finally to describe the cause of the slip or trip. The individual responses were collated into a single Word document along with the Accident Subject's counterfactual thoughts relating to their own accident. I examined the sentences and identified the relevant aspects of their structure relevant to the research and these were coded in to SPSS statistical software. The coding scheme used for the respondents' sentences is contained in Appendix 1, and the respondents' completed sentences are contained in Appendix 5 .

Each completed counterfactual sentence was coded against 14 structural dimensions, whilst the prevention and causal sentences were coded against 13 structural dimensions. The structural dimension of direction was only applicable to the counterfactual sentence. All the coding options for the structural dimensions

produced categorical data, for example a sentence may relate to either an action or inaction. (Table 5 sets out the structural dimensions that this research considered).

### **Content analysis**

After reading the stimulus scenario, respondents completed three sentences to record their counterfactual, prevention and causal thoughts and these sentences were subject to conceptual content analysis in which the coders examined the wording to identify the presence of specific words, their meaning and the concepts contained within the sentence (Krippendorff, 1980; Weber, 1990).

Using a content analysis approach I examined each respondent's counterfactual, prevention and causal sentences against each of the structural descriptions set out in Table 5. Each respondent's completed sentence was copied from the hand written questionnaire and typed in to a Word document containing a table in which the respondent's number, job group and questionnaire version were recorded along with the text of their three sentences. For each sentence the scenario actor identified by the respondent as being associated with a particular sentence was also noted. An example of a single respondent's completed sentences is given in Figure 4. The full responses are provided in Appendix 5.

Table 4.

Original and modified Consideration of Future Consequences Scale questions

Original questions	Modified version used for consideration of safety in the future
1. I consider how things might be in the future, and try to influence those things with my day to day behavior.	I think about safety in the future and try to influence things by my day to day behaviour.
2. Often I engage in a particular behavior in order to achieve outcomes that may not result for many years.	I think about safety in the future and do things now to achieve safety in the years ahead.
3. I only act to satisfy immediate concerns, figuring the future will take care of itself.	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future.
4. My behavior is only influenced by the immediate (i.e. a matter of days or weeks) outcomes of my actions.	What I do about safety is only influenced by how things work out in the short term.
5. My convenience is a big factor in the decisions I make or the actions I take.	My convenience is a big factor in how I make decisions or take actions about safety.
6. I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.
7. I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years.	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.
8. I think it is more important to perform a behavior with important distant consequences than a behavior with less-important immediate consequences.	I think it is more important to do something about serious accidents in the future than minor accidents now.
9. I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level.	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happens.
10. I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.
11. I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date.	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date.
12. Since my day to day work has specific outcomes, it is more important to me than behavior that has distant outcomes.	I believe that safety today is more important than safety at some time in the future.

Figure 4.  
Example of a respondent's completed counterfactual prevention and causal sentences

Counterfactual sentence	If only Bill the Shop Floor Supervisor had taken immediate action when the spill was first reported things could have been different.
Prevention sentence	Mary's accident could have been prevented if Bill had taken immediate action... closed the checkout, placed a cone near the spill and stood by the spill until the Cleaner arrived.
Causal sentence	The cause of Mary's accident was the failure to have a procedure in place to deal with spillages.

Each sentence was examined by asking a series of questions about its contents to determine the relevant structural dimensions and entering the appropriate coding in to IBM SPSS Statistics 20 for analysis. The complete set of coding instructions is given in Appendix 1. All the structural dimensions that were identified and coded related to different categories of the various dimensions being tested, therefore this study relied on the use of appropriate non-parametric statistical tests.

#### **Data cleaning and coding checks**

The data set was checked for general coding errors and corrected by reference to the original responses contained in the questionnaire where necessary.

Specific cross-referencing was undertaken to check the respondents' group ( Safety Professional, Manager or Accident Subject) against the questionnaire version. The main purpose of this was to ensure that the data relating to Managers was not influenced by Safety Professionals who were also managers. Where there was any indication that the respondent was or had an element of being a Safety Professional they were recorded as such. For example, if a questionnaire indicated that the respondent was a Manager but the questionnaire was one sent to a Safety Professional it was coded as being a Safety Professional. When Safety Professional

questionnaires were sent to local authorities or colleges it is quite possible that a Safety Professional in a management position completed one. They might describe themselves as being a Manager but they are professional safety officers who are managing a team. It would have introduced a bias if these responses were coded alongside other Managers who had no specialist safety experience.

In 59 cases there was some uncertainty as to the appropriate coding for the respondent's group. Forty three questionnaires designed for Safety Professionals were returned by respondents who classified themselves as either Managers or Supervisors (40) or Accident Subjects (3). For each of these questionnaires the respondent group coding was cross-checked against the details provided regarding their employment sector and number of people they managed to ensure they were coded appropriately. Sixteen questionnaires designed for Managers were completed by respondents who indicated they were not Managers (15 Safety Professionals and 1 Accident Subject). It is likely that when a Manager's questionnaire was sent to a business who had a manager / supervisor with specific health and safety responsibility that it was directed internally to them as being the most suitable person to complete it. All such questionnaires were coded as Safety Professionals and the single questionnaire from an Accident Subject was coded as such. Managers do have accidents and the occupation of Accident Subjects was not requested in their questionnaire. There were no coding anomalies from the Accident Subjects' questionnaires, all the respondents indicated they were from that group.

In total the respondent's group could not be satisfactorily determined in a total of 19 cases and these were excluded from analysis.

### **Inter-rater reliability**

A 10% sample of randomly selected responses were coded by a work colleague who had been trained to identify the different structural dimensions from the completed sentences but who was blind to the research aims. Differences in coding were discussed and agreed. An inter-rater reliability analysis using the Kappa



statistic (Landis & Koch, 1977) was performed to determine consistency between the two raters. Details of the inter-rater reliability for the structural dimensions of each of the three sentences is given in full in Tables 86 and 87 in Appendix 2. The mean Kappa score for all parameters was .753  $p = < .001$  with a range from 0.634  $p = < .001$  to 0.903  $p = < .001$ .

### **Research design**

Eight versions of the scenario were produced in a 2 (slip / trip) x 2 (minimum / maximum detail) x 2 (minor injury / major injury) study, the versions of the scenario are summarized in Table 6. The questionnaires for each population were colour coded for ease of identification - green for Safety Professionals, yellow for Managers and pink for Accident Subjects. Examples of the scenario versions and full and short questionnaires can be found in Appendix 4.

### **Long and short questionnaire versions**

When the questionnaire was used for actual data collection the response rate from the Manager and Accident Subject populations was lower than anticipated. One possible reason for this was the length of the questionnaire, so a shortened and simplified questionnaire was produced for these two groups. Table 91 in Appendix 4 sets out the questions used in the full version completed by Safety Professionals and the shorter version completed by Managers and Accident Subjects.

Table 5. Structural dimensions of the counterfactual, prevention and causal sentences

Number		Counterfactual sentence	Prevention sentence	Causal sentence
1.	Direction (better or worse outcome)	Yes	Not applicable	Not applicable
2.	Action or inaction	Yes	Yes	Yes
3.	Addition or subtraction	Yes	Yes	Yes
4.	Exceptional or routine antecedent	Yes	Yes	Yes
5.	Antecedent timescale	Yes	Yes	Yes
6.	Locus of control	Yes	Yes	Yes
7.	Dynamic or passive antecedent	Yes	Yes	Yes
8.	Case specific or general	Yes	Yes	Yes
9.	Known or inferred antecedents	Yes	Yes	Yes
10.	Personal or situational	Yes	Yes	Yes
11.	Spontaneous identification of the scenario actor	Yes	Yes	Yes
12.	To whom did the sentence refer?	Yes	Yes	Yes
13.	The specific subject of the sentence	Yes	Yes	Yes
14.	The 'domain' of the specific subject	Yes	Yes	Yes

Table 6.  
Summary of questionnaire versions

Accident subject			Manager			Safety Professional		
Accident type	Outcome severity	Background information	Accident type	Outcome severity	Background information	Accident type	Outcome severity	Background information
Slip	Minor injury	Minimum information	Slip	Minor injury	Minimum information	Slip	Minor injury	Minimum information
Slip	Minor injury	Maximum information	Slip	Minor injury	Maximum information	Slip	Minor injury	Maximum information
Slip	Serious injury	Minimum information	Slip	Serious injury	Minimum information	Slip	Serious injury	Minimum information
Slip	Serious injury	Maximum information	Slip	Serious injury	Maximum information	Slip	Serious injury	Maximum information
Trip	Minor injury	Minimum information	Trip	Minor injury	Minimum information	Trip	Minor injury	Minimum information
Trip	Minor injury	Maximum information	Trip	Minor injury	Maximum information	Trip	Minor injury	Maximum information
Trip	Serious injury	Minimum information	Trip	Serious injury	Minimum information	Trip	Serious injury	Minimum information
Trip	Serious injury	Maximum information	Trip	Serious injury	Maximum information	Trip	Serious injury	Maximum information

## Results

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Previous research identified a number of different structural dimensions to the way that respondents record their counterfactual thoughts following an unwanted outcome. The unwanted outcome has usually been presented in the form of a vignette or scenario and respondents are asked to record their counterfactual thoughts by completing an ‘if only...’ type sentence. Counterfactual thoughts bring about an imagined alternative outcome by changing an antecedent prior to the unwanted outcome.

Seven of the most relevant dimensions were selected for inclusion in this research and they were:

1. The direction of the alternative outcome. Did the change bring about a better or worse outcome?
2. Was an action or inaction changed to bring about the alternative outcome?
3. Was the change brought about by adding a new antecedent or subtracting (deleting) an existing antecedent?
4. Was the antecedent changed unusual or exceptional or was it a routine or normal event?
5. Where in the sequence of antecedents leading up to the unwanted outcome was the one selected for change? Was it close to the outcome (proximal) or was it more distant (distal)?
6. Was the event being changed under the control of the scenario actor?
7. Was the antecedent dynamic or static?

Seven new dimensions were identified when analysing the counterfactual sentences generated in response to this research and they were:

8. Did the counterfactual thought relate to a specific aspect of the scenario or was it more general?

9. Was the antecedent selected for change something that had been specifically given in the scenario details (known) or was it something that had been inferred from the situation?
10. Did the counterfactual sentence refer to an antecedent which was personal to the scenario actor or was it related to the situation that the scenario actor found himself or herself in?
11. Was the scenario actor spontaneously identified in the counterfactual sentence?
12. To whom did the counterfactual sentence refer? A list of scenario actors was presented to respondents who were asked to select one that their counterfactual thoughts referred to.
13. What was the specific subject of the counterfactual sentence?
14. Did the specific subject of the counterfactual sentence relate to something physical, behavioural, was it an attitude or was it something that related to a system of work or a procedure? These are referred to as 'domains' in this study.

After reporting the results for these 14 structural dimensions I will report on the macro-analysis of the sentences, looking at whether the prevention or the causal sentences were most like the counterfactual sentences, and I will also report the score for the amended Consideration of Future Consequences Scale (Strathman et al., 1994) for the three respondent groups.

After reading about Mary, a checkout operator in a supermarket, who was involved in a slip or trip accident, respondents were asked to complete a questionnaire which included three different sentences. The first sentence was designed to record their counterfactual thoughts, i.e. how the outcome to Mary's accident could have been different, the second sentence asked them how Mary's accident could have been prevented and the third sentence asked respondents to identify the cause of Mary's accident.

In addition to applying the 14 point structural analysis to the counterfactual sentences this study extended the analysis to two new areas, namely the prevention

and causal sentences. Each sentence was examined to identify each of the structural dimensions listed above. Fourteen structural dimensions were identified in respect of each counterfactual sentence, however the element relating to direction (a better or worse alternative outcome) did not apply to either the prevention or causal sentences so they were analysed against 13 different structural dimensions.

For each dimension the results will be presented for the counterfactual, prevention and causal sentences and for each of these the responses by Safety Professionals, Managers and Accident Subjects will be shown for slips and trips separately. The results will be presented in the same order as the structural sentence dimensions (1 to 14) have been referred to above. For each dimension the specific subjects of the respondent's sentences will be mentioned and commented on.

Before presenting the detailed results for the structural analysis of the sentences I will make some general comments about the process of coding and analysis and present some broad results relating to the three population groups and the questionnaires.

### **General Results**

Preliminary analysis indicated that the necessary conditions for Chi Square ( $\chi^2$ ) tests were not met when the sentences were tested against the three variables used in the study (job group, accident type and the level of detail). For this reason the analysis presented in this section focuses only on the two main variables 'job group' and 'accident type'. The only exception being when the completed sentence was tested for a known or inferred antecedent where the influence of the level of detail provided was significant and a four-way interaction was tested for.

Sample sizes were sufficiently robust to distinguish medium-sized effects in 31 of the 40 sentence dimensions being examined (14 for each counterfactual sentence and 13 for the prevention and causal sentences). The sample sizes for the remaining 9 sentence dimensions were sufficient to identify large effects. The actual sample size achieved and the post hoc power calculations are reported for the structural element of each sentence in Tables 88, 89 and 90 in Appendix 2, in summary it can be reported here that the power ranged from 0.44 (for the scenario actor in the

prevention sentence) to 0.99 (for the timescale in the counterfactual sentence). The average power calculations were 0.87 for the counterfactual sentences, 0.78 for the prevention sentences and 0.84 for the causal sentences.

A 10% sample of the responses was coded by an independent coder and the mean inter-rater reliability for all 14 structural dimensions was Kappa .753  $p = < .001$ , with a range from 0.634  $p = < .001$  to 0.903  $p = < .001$ . The full results are in Appendix 2, Tables 86 and 87.

The results reported in this study are based on a total of 612 responses from 350 Safety Professionals, 129 Managers and 133 Accident Subjects.

### **Population results**

Respondents' age and gender are given in Table 7. The average age of male Safety Professionals was 40.9 years with females being younger at 34.4 years. The age range for both male and female safety officers was almost identical, 23-59 for males and 21-59 for females. The average age of the male Managers was 47.1 years and female Managers was 40.5 years. Male Managers showed a wider age range (22-73 years) than female Managers (22-60 years). 58.7% of Managers who completed a questionnaire were responsible for up to 10 staff, 25.5% of Managers had responsibility for 10-50 staff and 14.5% had over 50 staff. The average age for both male and female Accident Subjects was 46.1 years with almost identical age ranges, 19-78 for males and 17-78 for females.

The questionnaires presented the research scenario in different versions based on the type of accident (slip or trip), the level of detail provided to respondents (minimum or maximum) and the seriousness of the outcome (minor or major injury). The number of questionnaire versions completed by each of the respondent groups is presented in Table 8.

Table 7. Age and gender of respondents by job group

	Safety Professionals		Managers		Accident Subjects	
	Males	Females	Males	Females	Males	Females
Age group						
Under 20	0	0	0	0	1	3
20-29 yrs	33	45	5	8	5	8
30-39 yrs	52	49	15	18	9	14
40-49 yrs	84	27	14	17	13	21
50-59 yrs	42	7	28	8	14	15
60-69 yrs	0	0	4	2	5	12
70-79 yrs	0	0	1	0	3	5
Total =	211	128	67	53	50	78
	587					
Mean age	40.9	34.4	47.1	40.5	46.5	46.5
Range	36	38	51	38	59	61
Min and max age	23 -59	21 - 59	22 – 73	22 - 60	19 - 78	17 - 78
Standard deviation	9.6	8.3	11.2	10.1	13.9	14.9



Table 8. Responses by job group and accident type to the scenario versions

	Safety Professionals	Managers	Accident Subjects
Slips			
Minimum detail & minor injury	35	9	19
Minimum detail & major injury	45	14	15
Maximum detail & minor injury	46	11	17
Maximum detail & major injury	44	27	18
Total	170	61	69
Trips			
Minimum detail & minor injury	47	18	16
Minimum detail & major injury	47	13	13
Maximum detail & minor injury	45	21	19
Maximum detail & major injury	41	16	16
Total	180	68	64

### **The specific results for the structural analysis of the respondents' sentences**

In the sections that follow the results from the completed counterfactual, prevention and causal sentences for the three job groups are presented. In the first section the structural composition of the sentences is presented for the seven dimensions which have been identified in earlier counterfactual research, these being direction, which is outcome based and then six antecedent based dimensions including: action or inaction, addition or subtraction, normality, temporal order, locus of control and dynamic or static. In the second section the results for seven new outcome-based antecedent dimensions developed in this study will be presented. These are: specific or general, known or inferred, personal or situational, spontaneous identification of the scenario actor, which scenario actor was linked to the sentence, what was the specific subject of the sentence, and which of four domains (physical / environmental, behavioural, procedural or process and attitude) did the specific subject of the sentence relate to.

The structural dimension identified for counterfactual research was also applied to the prevention and causal sentences and are also reported here.

#### **Part 1 – results for previously identified structural dimensions**

##### ***The direction of the alternative outcome in the counterfactual sentence***

The analysis of the structural dimension describing the direction of the alternative outcome only applied to the counterfactual sentences as the prevention and causal sentences do not have directional alternatives. In the current study 100% of respondents in each of the three job groups completed the counterfactual sentence in a way which brought about a better alternative outcome to that presented in the scenario, and this was the same for both slip and trip accidents.

##### **Action or inaction**

The sentences were analysed to identify whether the alternative (counterfactual) outcome, the means to prevent Mary's accident and the cause of Mary's accident, were referred to as being an action or a failure to act (inaction).

### *Action or inaction in the counterfactual sentence*

For the counterfactual sentence a strong inaction effect was identified for all three job groups for both slips and trips (Table 9).

When completing the counterfactual sentence for slip accidents Safety Professionals, Managers and Accident Subjects changed an antecedent which was considered to represent a failure to act (inaction). All three job groups selected an inaction significantly more than they selected an action (Safety Professionals slips 98.3%  $\chi^2(1) = 158.366, p < .001$ , Managers slips 93.5%  $\chi^2(1) = 43.61, p < .001$  and Accident Subjects slips 82.4%  $\chi^2(1) = 25.94, p < .001$ ).

For Safety Professionals the inactions most commonly referred to in their counterfactual sentences after Mary's slip accident were the inadequate warnings (24.3%), failure to clear up the spillage (22.2%) and inadequate system of work (20.8%). Managers also referred to two of these three antecedents with the lack of warnings being the subject of 34.7% of Managers' counterfactual sentences along with the failure to clear up the spillage (20.4%). Accident Subjects also commonly referred to the lack of warnings (25.5%), but more interestingly 21.6% thought that had Mary paid more attention she might not have slipped over on the spilt milk.

Safety Professionals and Managers also brought about an alternative outcome to Mary's trip accident by changing inactions significantly more frequently than actions (Safety Professionals trips 85.2%  $\chi^2(1) = 83.72, p < .001$  and Managers trips 88.2%  $\chi^2(1) = 39.76, p < .001$ ). However whilst Accident Subjects also changed slightly more inactions (60%) than actions (40%) the difference in this case failed to reach statistical significance ( $\chi^2(1) = 2.97, p = .085$ ).

Quite different specific antecedents were used by Safety Professionals and Managers in their counterfactual sentences following Mary's trip accident. Both groups focused on the presence of the trip hazard (32.7% of Safety Professionals and 28.6% of Managers), but with 26.5% of Managers also referring to someone's inaction. Accident Subjects' counterfactual sentences reflected both actions and inactions, which of itself was a different approach from either Safety Professionals or Managers who focused on inactions, but Accident Subjects focused their

counterfactual sentences on Mary herself. Mary’s decision to work was referred to by 56.5% of Accident Subjects whose counterfactual sentences reflected an action, and to Mary’s lack of attention (37.9%) when their sentences focused on inactions.

Table 9.  
Proportion of respondents changing an action or inaction in their counterfactual sentence

	N	Action %	Inaction %
<b>Slips</b>			
Safety Professional	174	1.7	98.3
Manager	62	6.5	93.5
Accident Subject	68	17.6	82.4
	304		
<b>Trips</b>			
Safety Professional	169	14.8	85.2
Manager	68	11.8	88.2
Accident Subject	65	40	60
	302		

***Action or inaction in the prevention sentence***

Safety Professionals, Managers and Accident Subjects showed a strong action effect when completing the sentence about how Mary’s accident could have been prevented. All three groups showed a significant tendency to complete the sentence by referring to something that ‘if done’ would have prevented Mary’s slip and trip accident.

The use of an action to prevent Mary’s accident was in contrast to the use of an inaction to bring about a counterfactual outcome. All three job groups showed a

strong preference for preventing Mary's accident by using an action rather than an inaction and the results are shown in Table 10.

Safety Professionals were consistent in the specific antecedent they used when completing their prevention sentences, referring to improved systems of work following both Mary's slip (48.9%) and her trip (24.6%). Managers' responses differed according to the type of accident, with 33.3% believing that Mary's slip could have been prevented by better warnings, however they did not refer to warnings following Mary's trip accident but instead considered that improved systems of work (19.6%), improved housekeeping (17.9%) and the removal of the hazard (16.1%) would have prevented the accident. Similarly Accident Subjects' prevention sentences also referred to different antecedents for slips and trips. When they were completing their slip prevention sentences they were most likely to refer to improving the Cleaner's response time (18.7%) or to improved warnings (16.7%), whereas following Mary's trip accident they spread the subject of their prevention sentences over a wider range of antecedents including removing the hazard (19.5%), improving standards of housekeeping (17.1%) and improved systems of work, a quicker response by the Cleaner and someone's actions, all at 12.2%.

#### ***Action or inaction in the causal sentence***

The completion of the causal sentence (Table 11) closely reflected the pattern of responses for the counterfactual sentences (Table 9).

The cause of Mary's slip accident was attributed to inactions by Safety Professionals, Managers and Accident Subjects. (Safety Professionals 85.7%  $\chi^2(1) = 75.0$   $p < .001$ , Managers 89.4%  $\chi^2(1) = 29.13$   $p < .001$ , and Accident Subjects 90.4%  $\chi^2(1) = 33.92$   $p < .001$ ). Failure to implement an adequate safe system of work accounted for 52.6% of the causal antecedents referred to by Safety Professionals, with 29.4% of Managers attributing the cause to the Cleaner's slow response time and 26.5% to inadequate systems of work. The cause as far as Accident Subjects were concerned was the failure to clean up the spillage (32.6%).

Table 10.  
Proportion of respondents changing an action or inaction in their prevention sentence

	N	Action %	Inaction %
<b>Slips</b>			
Safety Professional	161	99.4	0.6
Manager	59	98.3	1.7
Accident Subject	70	100	0
	290		
<b>Trips</b>			
Safety Professional	164	96.3	3.7
Manager	65	93.8	6.2
Accident Subject	62	82.3	17.7
	291		

As with the counterfactual trip sentence, Accident Subjects did not show a significant preference between actions (60%) and inactions (40%) when identifying the cause of Mary's trip ( $\chi^2(1) = 2.0, p = .157$ ). This was in contrast to the responses of both Safety Professionals and Managers who recorded the cause of Mary's trip as being from an inaction (Safety Professionals 73.4%  $\chi^2(1) = 27.13, p < .001$  and Managers 76.6%  $\chi^2(1) = 13.31, p < .001$ ).

Failure to implement adequate safe systems of work was the most common antecedent selected by Safety Professionals (34.1%) and Managers (21.8%). Accident Subjects also referred to inadequate systems of work (22.2%), along with Mary's lack of attention (22.2%) as being inactive causes and to the presence of the hazard (75%) as being an active cause of the trip accident.

Table 11.  
Proportion of respondents changing an action or inaction in their causal sentence

	N	Action %	Inaction %
<b>Slips</b>			
Safety Professional	147	14.3	85.7
Manager	47	10.6	89.4
Accident Subject	52	9.6	90.4
	246		
<b>Trips</b>			
Safety Professional	124	26.6	73.4
Manager	47	23.4	76.6
Accident Subject	50	60.0	40.0
	221		

### **Addition or Subtraction**

The counterfactual sentence could be completed by either adding or subtracting an antecedent. The concept of addition and subtraction was extended to the prevention and causal sentences, where an addition might also be described as something that was more than expected with something which was less than expected being coded as a subtraction.

#### ***Addition or subtraction in the counterfactual sentence***

A strong addition effect was found with 83% of respondents completing their counterfactual sentence by adding in a new antecedent to bring about their alternative outcome (Safety Professionals 88%, Managers 89% and Accident Subjects 70.4%). The effect was constant for slips  $\chi^2(2) = 23.62 p < .001$  and trips  $\chi^2(2) = 14.03 p = .001$  and the results are presented in Table 12.

Respondents from all three job groups completed the slip scenario counterfactual sentence by adding in a new antecedent event significantly more than they removed one (Safety Professionals 98.3%  $\chi^2(1) = 162.21, p < .001$ , Managers 93.5%  $\chi^2(1) = 47.03, p < .001$  and Accident Subjects 81.2%  $\chi^2(1) = 26.79, p < .001$ ). Improved warnings were the most common antecedent selected for change by respondents from all three job groups (24.3% of Safety Professionals, 34.7% of Managers and 25.5% of Accident Subjects).

Safety Professionals and Managers also showed a strong tendency to add in a new antecedent when completing the counterfactual sentence for Mary's trip accident (Safety Professionals – trip 78.1%  $\chi^2(1) = 58.96, p < .001$  and Managers – trip 85.9%  $\chi^2(1) = 36.63, p < .001$ ). However Accident Subjects showed no preference for adding (59.7%) or subtracting (40.3%) an antecedent ( $\chi^2(1) = 2.52, p = .112$ ).

Safety Professionals (29.9%) and Managers (28.6%) both added an antecedent relating to the hazard in their trip counterfactual sentences, most commonly referring to a missing behaviour which would have removed the hazard. Accident Subjects' responses were quite different as they were as likely to have used an additive counterfactual as a subtractive counterfactual but whichever they used they were focused on Mary, with 37.9% suggesting Mary should have paid greater attention to where she was walking (additive counterfactual) or 54.2% saying she should not have agreed to cover for her friend's holiday (subtractive counterfactual).



Table 12.  
Proportion of respondents adding or subtracting an antecedent in their counterfactual sentence

	N	Addition %	Subtraction %
<b>Slips</b>			
Safety Professional	171	98.3	1.7
Manager	58	93.5	6.5
Accident Subject	56	81.2	18.8
	285		
<b>Trips</b>			
Safety Professional	146	78.1	21.9
Manager	61	85.9	14.1
Accident Subject	40	59.7	40.3
	247		

***Addition or subtraction in the prevention sentence***

A strong addition effect was identified for the completion of the sentences preventing Mary's slip and trip accident and the results are presented in Table 13. Overall 92% of respondents completed the prevention sentence by adding or increasing something to prevent Mary's accident (99% for slips and 85% for trips). The use of an addition in the prevention sentence was significantly higher than the use of a subtraction and Table 13 shows that trend for Safety Professionals (slips: 98.8%  $\chi^2(1) = 154.09, p < .001$  and trips: 91.3%  $\chi^2(1) = 117.23, p < .001$ ), Managers (slips: 98.3%  $\chi^2(1) = 56.07, p < .001$  and trips: 92.4%  $\chi^2(1) = 47.51, p < .001$ ) and for Accident Subjects (slips was 100% and trips was 72.3%  $\chi^2(1) = 12.94, p < .001$ ).

The antecedents most commonly referred to in the respondents' sentences to prevent Mary's slip accident were improved systems of work by 48.5% of Safety Professionals, improved warnings by 32.5% of Managers and clearing up the spillage was used by 23.3% of Accident Subjects. Safety Professionals also referred to improved systems of work when seeking to prevent Mary's trip accident (26.3%), but Managers and Accident Subjects were likely to use one of a number of possible preventative strategies, and for Managers these included improved systems of work (19.6%), housekeeping (17.9%) and the removal of the hazard (16.1%). Accident Subjects tended to select antecedents that related to the removal of the hazard (16.2%), improved housekeeping (13.5%), and improved response time (13.5%).

Table 13.  
Proportion of respondents who prevented the accident by adding or subtracting an antecedent

	N	Addition %	Subtraction %
<b>Slips</b>			
Safety Professional	160	98.8	1.2
Manager	59	98.3	1.7
Accident Subject	71	100	0
	293		
<b>Trips</b>			
Safety Professional	172	91.3	8.7
Manager	66	92.4	7.6
Accident Subject	47	72.3	27.7
	303		

### *Addition or subtraction in the causal sentence*

A significant majority of all respondents completed the causal sentence for both slip and trip accidents in a way which indicted the cause of Mary's accident was attributed to something which was subtractive or 'less than expected' (Table 14).

There was no divergence between any of the job groups when completing the causal sentence following a slip accident, all referred to the cause as being subtractive in nature - 84.5% of Safety Professionals ( $\chi^2(1) = 80.09, p < .001$ ), 81% of Managers ( $\chi^2(1) = 22.34, p < .001$ ) and 77.8% of Accident Subjects ( $\chi^2(1) = 19.44, p < .001$ ).

Safety Professionals (78.1%,  $\chi^2(1) = 57.97, p < .001$ ) and Managers (79.7%,  $\chi^2(1) = 22.56, p < .001$ ) also completed the trip scenario sentence by referring to something which was less than expected. There was no significant difference in the proportion of Accident Subjects who referred to the cause of Mary's accident as being something which was more than expected (43.3%) or less than expected (56.7%,  $\chi^2(1) = 1.06, p = .302$ ).

A wide range of antecedents were identified as being the cause of Mary's accident with no common approach being adopted by respondents or for different types of accidents. Safety Professionals selected inadequate systems of work as being the cause of Mary's slip (52.8%), whilst preferring to refer to poor standards of housekeeping (29.5%) or the presence of the box (hazard) for Mary's trip. Managers considered the slow response time by the Cleaner (30.6%) and inadequate systems of work to be the causes of Mary's slip accident, and inadequate systems of work (25.6%) as being the cause of her trip accident. As Accident Subjects considered antecedents which were both additive and subtractive to be causal they referred to the presence of the box (hazard) as being additive i.e. more than expected, and subtractive (less than expected) antecedents including inadequate systems of work (14.3%), the failure to remove the box, (14.3%) and a lack of care as being causal (14.3%).

Table 14.  
 Proportion of respondents identifying the cause of the accident as  
 being an addition or subtraction

Sentence element	N	Addition %	Subtraction %
<b>Slips</b>			
Safety Professional	168	15.5	84.5
Manager	58	19.0	81
Accident Subject	63	22.2	77.8
	289		
<b>Trips</b>			
Safety Professional	183	21.9	78.1
Manager	64	20.3	79.7
Accident Subject	60	43.3	56.7
	307		

### **Normal or exceptional events**

Norm Theory suggested that counterfactual thoughts focused on changing an unusual or exceptional antecedent to bring about the desired alternative outcome. The majority of previous research has confirmed this effect but a noteworthy exception was reported by Davis et al. (1995).

In the current study a new categorisation of exceptional antecedent event types was developed and applied to the respondents' sentences. In addition to the exceptional event described in the scenario (Mary's decision to work on a Thursday to cover for her friend), three other classes of exceptional event were found to have been used by respondents. In this study normal events were not selected for counterfactual change by any of the respondents. The four new classes of exceptional event used in this study were as follows:

### ***Scenario-based exceptions – first order exception***

Scenario-based exceptions arise when respondents select and mutate the exceptional event designed in to the scenario. In this study the sentence would have made reference to Mary's decision to work on Thursday.

### ***Exception to an existing rule – second order exception***

Exceptions to an existing rule arise when the counterfactual sentence indicated that the outcome would have been different had some expected behaviour, standard or rule been followed. For example 'If only I had been careful I might not have slipped'. In the prevention sentence the accident would not have occurred if existing rules and procedures were adhered to, and in the causal sentence an exception to an existing rule would have been indicated if the cause arose from a failure to follow an existing rule or procedure.

### ***New rule exception – third order exception***

A new rule exception arose when the counterfactual sentence created a new behaviour, standard or rule to bring about the alternative outcome. For example a counterfactual outcome would be achieved if only cleaning equipment had been provided in each aisle of the store, when this has not previously been the case. Similarly a new rule would be indicated in the prevention sentence where a completely new preventative approach is suggested. A causal sentence indicating that a previously unknown or novel cause had been identified would suggest a new set of rules applied to it.

### ***Improving an existing rule to increase the likelihood of the desired outcome – fourth order exception.***

This type of exception arose when the counterfactual sentence modified an existing behaviour, standard or rule in such a way that the desired outcome was more certain to be achieved than by simply applying the expected but unmodified behaviour, standard or rule (second order exception). If for example the Cleaner had a five minute response time to attend a spillage after it was reported, reducing this to two minutes would improve the prospect of preventing accidents. If an accident could have been prevented by improving an existing rule or procedure then that would be

an example of this type of exception. In a causal setting the failure to do something to a better or higher standard would be an exception of this type.

***The use of normal or exceptional events in the counterfactual sentence***

In the context of Mary's slip or trip accident the counterfactual sentence was most commonly completed by changing an antecedent in a way which increased the probability of the desired outcome being realised over and above the unaltered antecedent (fourth order exception). See Table 15.

Respondents who were given the slip scenario most commonly completed the counterfactual sentence in a way which made a change to an antecedent designed to improve the likelihood of their desired outcome being realised. This option was selected significantly more frequently than any of the other options with 63.2% of Safety Professionals ( $\chi^2(3) = 153.03, p < .001$ ), 67.2% of Managers ( $\chi^2(3) = 62.73, p < .001$ ) and 65.7% of Accident Subjects responding in this way ( $\chi^2(3) = 32.09, p < .001$ ). In the main respondents thought that improved warnings about the spilt milk would have been improved the probability of a better outcome being achieved (Safety Professionals 31.3%, Managers 38.2% and Accident Subjects 32.5%).

A different outcome to Mary's trip accident was also proposed by 65.8% of Safety Professionals ( $\chi^2(3) = 177.98, p < .001$ ) and 57.7% of Managers ( $\chi^2(3) = 47.50, p < .001$ ) by completing the counterfactual sentence in a way which sought to increase the probability of bringing about the desired alternative outcome. However no significant difference ( $\chi^2(1) = .020, p = .886$ ) was found between Accident Subjects' choices of rectifying a breach of an existing rule or norm (38.5% second order exception) or by changing the antecedent to be more sure that the desired outcome could be achieved (36.9%, fourth order exception).

The specific antecedents that respondents selected were influenced by the type of accident. A different outcome to Mary's slip accident was believed to be most likely if warnings were improved (Safety Professionals 31.3%, Managers 38.2% and Accident Subjects 32.5%), whereas it was the removal of the hazard for Safety Professionals (52.1%) and Managers (51.4%) for Mary's trip accident. Accident

Subjects selected Mary’s lack of attention (45%) when they brought about a different outcome based on an expectation to an expected norm. Clearly Accident Subjects expected Mary to have exercised care and attributed the trip to her failure to do so, however when Accident Subjects thought about improving the likelihood of the better outcome they also focused on the removal of the box (44.4%) in the same ways as Safety Professionals and Managers did.

Table 15.  
The proportion of respondents selecting types of exceptional event in their counterfactual sentence

	N	Scenario exception %	Existing rule exception %	New rule %	Improve likelihood of outcome %
<b>Slips</b>					
Safety Professional	174	1.1	12.1	23.6	63.2
Manager	61	1.6	21.3	9.8	67.2
Accident Subject	37	13.4	20.9	0	65.7
	<u>302</u>				
<b>Trips</b>					
Safety Professional	187	1.1	17.6	15.5	65.8
Manager	71	1.4	21.1	19.7	57.7
Accident Subject	65	20	38.5	4.6	36.9
	<u>323</u>				

***The use of normal or exceptional events in the prevention sentence***

Managers and Accident Subjects used a single strategy to prevent both Mary’s slip and her trip accident, which involved taking steps to improve the identification and management of hazards leading to a reduced risk of an accident (fourth order exception). It was noticeable that when seeking to prevent an accident Managers and Accident Subjects did not rely on existing rules but sought to improve on them to be more certain of avoiding accidents (Table 16).

For Mary's slip accident this approach was adopted by 60% of Managers ( $\chi^2 (2) = 20.80 p < .001$ ) and 78.3% of Accident Subjects ( $\chi^2 (2) = 65.30 p < .001$ ) and for her trip accident by 58% of Managers ( $\chi^2 (2) = 23.74 p < .001$ ) and 62.5% of Accident Subjects ( $\chi^2 (2) = 27.87 p < .001$ ).

Managers primarily sought to prevent Mary's slip accident by improved warnings (32.1%), whilst Accident Subjects prevention sentences generally referred to improved warnings (19.1%) and a quicker response by the Cleaner (19.1%). Different prevention antecedents were used for Mary's trip accident with 32.4% of Managers mentioning improved housekeeping whilst 30.6% of Accident Subjects removed the box from the scenario.

Safety Professionals were found to identify two types of exceptional event to change when seeking to prevent Mary's slip accident but one when preventing her trip accident. Following a slip accident 48.5% of Safety Professionals established a new rule (third order exception), which was mainly based on the system of work (42.9%), with 41.9% seeking an improvement to an existing rule (fourth order exception) which typically involved better warning signs (33.3%). A single approach was adopted for Mary's trip accident with 56.6% of Safety Professionals electing to improve an existing rule to prevent it (fourth order exception,  $\chi^2 (1) 8.10 p = .004$ ). The specific antecedent in this instance related to improved standards of housekeeping with 30.4% of Safety Professionals adopting this approach (Table 16).



Table 16.  
Proportion of respondents selecting types of exceptional events in their prevention sentence

	N	Scenario exception %	Existing rule exception %	New rule %	Improve likelihood of outcome %
<b>Slips</b>					
Safety Professional	167	0	9.6	48.5	41.9
Manager	60	0	13.3	26.7	60
Accident Subject	69	0	18.8	2.9	78.3
	<hr/> 296				
<b>Trips</b>					
Safety Professional	182	0	7.1	36.3	56.6
Manager	69	0	10.1	31.9	58.0
Accident Subject	64	0	28.1	9.4	62.5
	<hr/> 315				

***The use of normal or exceptional events in the causal sentence***

Safety Professionals differentiated between slips and trips when completing their causal sentences identifying two types of cause for slips and one for trips (Table 17). The causes of slips were either an exception to an existing rule (second order exception 38.6%) or failing to do something more effective to reduce the risk (fourth order exception 39.2%). There was no difference in the proportion of Safety Professionals who chose either of these type of cause ( $\chi^2(1) = 7.686 p = .006$ ). On the other hand the cause of Mary's trip accident was seen by Safety Professionals as having its origin in failing to do something more effective to reduce the risk (fourth order exception 50.3% ,  $\chi^2(1) = 3.834 p = .05$ ). The presence of the hazard (spillage of milk) was the specific antecedent most often referred to by Safety

Professionals (45.1%) in their causal sentences as being an exception to an existing rule, and to inadequate safety systems of work (53.5%) when the causal exception was one where it related to failing to do more.

Managers used two main approaches (Table 17) when completing the causal sentence for Mary's accident. They identified exceptions to existing rules (second order exceptions) and failures to take steps to improve the management of the situation (fourth order exceptions), in other words failing to prevent the accident by doing something more effective to reduce the risk, but they used these options in different ways depending on the type of accident. The cause of Mary's slip accident was predominately identified as arising from an exception to an existing rule (52.5%), that is to say something that was expected to be done wasn't or something unexpected was done, and this was identified significantly more often than the other causes in Table 17 ( $\chi^2(2) = 18.03$   $p < .001$ ). This most often referred to the presence of the spillage (40%).

Mary's trip accident was attributed to two types of exceptional event, namely an exception to an existing rule (second order exception 44.6%) and failing to prevent the accident by doing something more effective to reduce the risk (fourth order exception 44.6%). There was no significant difference in the rate that Managers identified these causes ( $\chi^2(2) = 12.98$ ,  $p = .002$ ). Managers clearly expected Mary to have been paying attention as her lack of attention was identified by 40% of Managers as being an exception to an existing rule (second order exception). Not having a quick enough response by the Cleaner was the antecedent used by 29.4% of Managers when expressing the cause as failing to have done more to stop the accident (fourth order exception).

Accident Subjects used a single approach when identifying the cause of Mary's accident, that being an exception to an existing rule (second order exception). 61.7% of Accident Subjects completed the causal sentence in this way for Mary's slip accident and 62.3% for her trip accident. In both cases this related to the presence of the hazard and was selected significantly more than the second choice causal antecedent in Table 17 (slips  $\chi^2(1) = 5.786$   $p = .016$ , and trips  $\chi^2(1) = 6.33$   $p = .012$ ).

Table 17.  
Proportion of respondents selecting types of exceptional events in their causal sentence

	N	Scenario exception %	Existing rule exception %	New rule %	Improve likelihood of outcome %
<b>Slips</b>					
Safety Professional	166	0	38.6	22.3	39.2
Manager	59	0	52.5	8.5	39.0
Accident Subject	60	0	61.7	6.7	31.7
	285				
<b>Trips</b>					
Safety Professional	187	0	36.9	12.8	50.3
Manager	67	0	44.6	10.8	44.6
Accident Subject	61	0	62.3	6.6	31.1
	315				

### **Temporal position of the antecedent**

The temporal position of the antecedent leading up to Mary’s accident was identified from the respondents’ sentences and coded against 11 stages. Full details of all the stages used in this study is given in Table 82 in Appendix 1, but a brief summary of the 11 antecedent stages is given here in Table 18 for ease of reference.

Table 18.  
Summary of antecedent events leading to Mary's accident

Before	Mary agrees to cover for her friend.
Stage A	
Stage A	Mary goes for her usual mid-morning rest break.
Stage B	Mary waited for her friend on the next checkout and they both walked along the front of the checkouts towards the staff room.
Stage C	Milk had been spilt on the floor / A box had been left on the floor.
Stage D	The spillage / box had been reported five minutes ago. The Cleaner had been requested to clear up but had not got round to it.
Stage E	Mary did not see the milk / box on the floor.
Stage F	Mary stepped on the milk / box.
Stage G	Mary slipped on the milk / tripped on the box.
Stage H	Mary lost her balance and fell over.
Stage I	Mary fell awkwardly, hurting her right arm.
Stage J	Mary was taken to hospital - (her wrist was strained and she will be off work for one day), [her arm was x-rayed and found to be broken. She will be off work for three weeks].

***Temporal position of the antecedent in the counterfactual sentence***

Not all 11 stages in the accident sequence were identified by respondents and some were only used very infrequently. To ensure that the  $\chi^2$  test assumptions were met some stages were excluded from the analysis. Data analysed for slip accidents accounted for 96.7% of all responses with Stage A - Mary going for her break (0.3%) - and Stage E - Mary not seeing the hazard (3%) - being excluded. The trip accident data used in the analysis accounted for 91.8% of all the responses with Stage B - Mary waiting for her friend (1.5%) - and Stage D - the point where the hazard had been reported but before the Cleaner dealt with it (6.7%) - being excluded.

The counterfactual sentences were found to relate to two main antecedent stages, those that occurred before the day of the accident (Before Stage A), and those at the point where the hazard had been reported but before the Cleaner dealt with it (Stage

D) and this pattern of responses was consistent across all three job groups (Table 19).

The tendency of respondents to focus on two main antecedent stages raised a question whether this might have been influenced by the experimental manipulation of the level of detail (minimum and maximum detail). It is possible that respondents with less information about Mary's accident might have focused their attention on Mary's decision to cover for her friend and change things that happened earlier in the sequence of events (Before Stage A), whilst the additional information contained in the maximum detail versions of the scenarios might have allowed a greater opportunity to select an antecedent later in the sequence, for example at Stage D - the point where the hazard had been reported but before the Cleaner dealt with it. Further tests indicated that the level of detail had no effect on the respondents' choice of antecedent stage. When selecting a stage in the sequence of events leading up to Mary's slip accident respondents from all three job groups were most likely to focus their counterfactual attention at events happening at Stage D - the point where the hazard had been reported but before the Cleaner dealt with it. Respondents referred to antecedents at Stage D significantly more than they referred to antecedents that occurred before the day of the accident - 56.2% of Safety Professionals ( $\chi^2(1) = 7.803 p = .005$ ), 69.5% of Managers ( $\chi^2(1) = 13.255 p < .001$ ) and 65.5% of Accident Subjects ( $\chi^2(1) = 10.796 p = .001$ ).

Following Mary's slip accident respondents from all three job groups referred most commonly to inadequate warnings specifically (32.3% of Safety Professionals, 42.5% of Managers and 31.4% of Accident Subjects).

The counterfactual sentences for Mary's trip accident revealed a different picture. There was no difference in the frequency with which Managers or Accident Subjects selected events that happened before the day of the accident (Before Stage A) or at Stage D - the point where the hazard had been reported but before the Cleaner dealt with it (Managers  $\chi^2(1) = 1.42 p = .233$ , Accident Subjects  $\chi^2(1) = 1.78 p = .182$ ) - but Safety Professionals showed a clear preference ( $\chi^2(1) = 4.56 p = .033$ ) to select an antecedent that occurred before the day of the accident (Before Stage A) which most frequently related to inadequate systems of work.

Managers' and Accident Subjects' counterfactual sentences at Stage D (the point where the hazard had been reported but before the Cleaner dealt with it) related to the presence of the hazard with 50% of Managers and 36.4% of Accident Subjects doing so. However different antecedents were selected by Managers and Accident Subjects when their counterfactual sentences related to the time before the day of the accident (Before Stage A), with 38% of Managers mutating an action or an inaction of someone, whilst 81.3% of Accident Subjects mutated Mary's decision to cover for her friend.

### ***Temporal position of the antecedent in the prevention sentence***

When asked how Mary's accident could have been prevented respondents focused on three stages, before the day of the accident (Before Stage A), the hazard on the floor (Stage C) and the point where the hazard had been reported but before the Cleaner dealt with it (Stage D). These stages accounted for 96.7% of responses for slips and 94.5% for trips

Table 20 presents the prevention sentence results for the three stages. For Mary's trip accident the most common stage selected, irrespective of job group, was Before Stage A (before the day of the accident). This was selected by 81.5% of Safety Professionals, 71% of Managers and 40.4% of Accident Subjects. For Safety Professionals and Managers this choice was made significantly more frequently than their respective second choices – Stage D for Safety Professionals (the point where the hazard had been reported but before the Cleaner dealt with it,  $\chi^2(1) = 101.54 p < .001$ ) and at Stage C for Managers (the hazard on the floor,  $\chi^2(1) = 27.58 p < .001$ ). Accident Subjects also selected an antecedent occurring before the day of the accident (Before Stage A) most commonly, but this stage was no more frequently used than either Stage C (the hazard on the floor) or Stage D - the point where the hazard had been reported but before the Cleaner dealt with it. ( $\chi^2(2) 1.68 p = .431$ ).

Table 19.

Proportion of respondents selecting antecedent stages in their counterfactual sentences

	N	Before Stage A %	Stage C %	Stage D %
<b>Slips</b>				
Safety Professional	171	35.7	8.2	56.2
Manager	59	23.7	6.8	69.5
Accident Subject	55	23.6	10.9	65.5
	285			
<b>Trips</b>				
Safety Professional	183	44.3	25.1	30.6
Manager	68	48.5	16.2	35.3
Accident Subject	49	44.9	26.5	28.6
	300			

Where the sentences referred to antecedents temporally located before the day of the accident (Before Stage A), all three job groups focused on the same two specific subjects, which were improved standards of housekeeping and improved systems of work, but the rate of selection differed slightly (Safety Professionals: housekeeping 30.5%, improved systems of work 28.9%; Managers: housekeeping 20.9%, improved systems of work 25.6%; and Accident Subjects: housekeeping 28.6%, improved systems of work 23.8%). Accident Subjects also identified prevention opportunities at Stage C (the hazard on the floor) where 70.6% of sentences referred to the hazard and its removal and Stage D (where the hazard had been

reported but before the Cleaner dealt with it) where the prevention sentences were most likely to reflect the inadequate response time by the Cleaner (35.7%).

A different pattern emerged for the selection of antecedent stages for the prevention of Mary's slip accident. Safety Professionals selected events that happened before the day of the accident (Before Stage A) significantly more frequently than those at Stage D ( $\chi^2 (1) = 24.96$   $p < .001$ ). These sentences were likely to refer to improvements in the implementation of safe systems of work (65.9%).

There was no significant difference in the proportion of Managers who selected an antecedent before the day of the accident (Before Stage A) or an antecedent at Stage D - the point where the hazard had been reported but before the Cleaner dealt with it, both these stages were selected by 46.4% of Managers. Their prevention sentences focused on improvements to the systems of work when temporally located before the day of the accident and on improved warnings when located at Stage D.

For Accident Subjects there was only one real point in the antecedent chain where Mary's slip accident could be prevented, and that was at Stage D - the point where the hazard had been reported but before the Cleaner dealt with it. 73.5% of Accident Subjects chose this point to prevent the accident and this was significantly more than either Stage C (the hazard was on the floor ) or Before Stage A (before the day of the accident) -  $\chi^2 (2) = 49.44$   $p < .001$ . 26.1% of Accident Subjects mentioned that Mary's accident could have been prevented had the hazard (spillage or box) been cleaned up.



Table 20.  
Proportion of respondents selecting antecedent stages in their prevention sentences

	N	Before Stage A %	Stage C %	Stage D %
<b>Slips</b>				
Safety	167	64.7	7.8	27.5
Professional				
Manager	56	46.4	7.1	46.4
Accident	68	13.2	13.2	73.5
Subject				
	291			
<b>Trips</b>				
Safety	184	81.5	8.2	10.3
Professional				
Manager	69	71	15.9	13
Accident	57	40.4	33.3	26.3
Subject				
	310			

***Temporal position of the antecedent in the causal sentence***

Respondents' causal sentences focused on three stages for Mary's slip accident but on four stages for Mary's trip accident. A very small number of respondents focused on other stages but these were discarded to ensure that the  $\chi^2$  test assumptions were met. For Mary's slip the results presented in Table 21 represented 92.3% of all responses (the discarded data covered Stage B 0.3%, Stage E 3.9%, Stage F 0.3%, Stage G 2.6% Stage H 0.3% and Stage I 0.3%). For Mary's trip accident the results presented in Table 21 are for 98.8% of all responses (discarded data was for Stage B 0.6%, Stage G 0.3% and Stage J 0.3%).

Safety Professionals were consistent in locating the cause of Mary's accident at a point that occurred before the day on which it happened (Before Stage A) for both slips and trips (60.1% for slips  $\chi^2 (2) = 54.46 p < .001$  and 66.5% for trips  $\chi^2 (3) =$

187.36  $p < .001$ ). Nearly seventy per cent (69.6%) of Safety Professionals referred to inadequate systems of work as causing Mary's slip accident, whilst only 33.3% referred to inadequate systems of work as being a cause of Mary's trip accident, along with inadequate housekeeping (34.3%).

Managers were more likely to have referred to the cause of Mary's slip accident as being at one of two stages. Over fifty per cent (52.5%) of Managers completed their slip scenario sentence focusing on events at Stage D (the point where the hazard had been reported but before the Cleaner dealt with it), whilst 33.9% of Managers focused on a events that occurred before the day of the accident (Before Stage A). There was no statistical difference in the proportion of Managers who selected these two stages ( $\chi^2 (1) = 2.378 p = .123$ ). In contrast 55.7% of Managers completed the causal sentence for Mary's trip by referring to events that occurred before the day of the accident (Before Stage A). This was significantly more than the 27.1% who selected Stage C ( $\chi^2 (1) = 6.90 p = .009$ ). When Managers' causal sentences were temporally located before the day of the accident (Before Stage A) they were most likely to relate to inadequate systems of work for both slips (58.3%) and trips (33.3%). However when Managers located the cause of Mary's slip at Stage D (the point where the hazard had been reported but before the Cleaner dealt with it) the sentence most commonly made reference to the inadequate response time by the Cleaner (38.5%) or to the presence of the milk on the floor (34.6%).

When Accident Subjects completed the causal sentences for Mary's slip accident two stages were used equally frequently, 40% used Stage C (hazard on the floor) and 41.5% used Stage D - the point where the hazard had been reported but before the Cleaner dealt with it ( $\chi^2 (1) = .019, p = .891$ ) but for the trip accident it was Stage C, where the hazard was on the floor, that was used by 51.6% of Accident Subject and this was a significantly greater proportion than the 26.6% who selected events occurring before the day of the accident (Before Stage A) ( $\chi^2 (1) = 5.12 p = .024$ ). When Accident Subjects selected a causal antecedent at Stage C (the hazard was on the floor) their sentences most commonly referred to the hazard itself for both slips (70.8%) and trips (74.2%). Stage D (the point where the hazard had been reported but before the Cleaner dealt with it) was only used by Accident Subjects in

connection with Mary’s slip accident and in 40% of cases their causal sentences referred to the failure to clear up the spillage.

Table 21.  
Proportion of respondents selecting antecedent stages in their causal sentences

	N	Before Stage A %	Stage C %	Stage D %	Stage E %
<b>Slips</b>					
Safety Professional	158	60.1	13.9	25.9	N/A
Manager	59	33.9	13.6	52.5	N/A
Accident Subject	65	18.5	40.0	41.5	N/A
	282				
<b>Trips</b>					
Safety Professional	191	66.5	20.9	8.9	3.7
Manager	70	55.7	27.1	8.6	8.6
Accident Subject	64	26.6	51.6	9.4	12.5
	325				

### **Control over the selected antecedent**

Previous counterfactual literature has explored the role of control, with many studies showing that people make changes to events over which they had personal control. This study extended the idea that in real life situations, such as are experienced in the working environment and particularly where there has been an accident or other unwanted outcome, different degrees of control are reflected in the structure of people’s counterfactual thoughts.

In the current study control is expressed from two different perspectives, the first being a personal perspective adopted by Accident Subjects, and the second being a public perspective that was adopted by both Managers and Safety Professionals. These different roles were expected to highlight different control strategies. Three coding options were developed to analyse the structure of the sentences - direct control, indirect control and uncontrollable. Direct control related to sentences where the focal actor had personal control over the antecedent which was changed. For example Mary had direct control over her decision to cover for her friend's holiday leave. The other coding used for control was indirect control and was used to identify changes where the focal actor had influence over an antecedent but could not have made changes to it directly or personally. For example the Store Manager would have had responsibility for, and therefore indirect control over, the development and implementation of safe systems of work. In the context of this study indirect control is analogous to having a legal responsibility. The law often places duties on people to achieve a stated objective or standard but that is only achieved through the actions of others in the organisation. The third coding option related to uncontrollable antecedents where the focal actor had no possibility of exercising control either directly or indirectly.

***The degree of control exercised by the scenario actor in the counterfactual sentence***

Table 22 sets out the responses from the three job groups. In general the counterfactual sentences followed previous research as they involved making changes to antecedents which were controllable by the focal actor (both directly or indirectly) more than they focused on completely uncontrollable antecedents.

When completing the counterfactual sentence for Mary's slip accident 46.1% of Safety Professionals changed an antecedent over which the focal actor had direct control, whilst 40.7% made a change to an antecedent over which the focal actor had indirect control. There was no significant difference in the proportion of Safety Professionals using either of these options ( $\chi^2(1) = .559$   $p = .455$ ). The specific antecedent that was selected by Safety Professionals was related to the type of control. For example, inadequate response times were more often associated with

direct control (57%) than indirect control (29%), whereas as antecedent relating to inadequate systems of work was more usually associated with indirect control (65%) than direct control (21%).

For some unknown reason when Safety Professionals were thinking about counterfactual control and Mary's trip accident they were as likely to attribute counterfactual control equally to directly controllable, indirectly controllable and uncontrollable antecedents ( $\chi^2(2) = 2.06 p = .356$ ). On further examination of these results it was found that Safety Professionals were most likely to judge the presence of the hazard to be uncontrollable when the focal actor was the company safety officer. Whilst this is a realistic view it is nevertheless unexpected. Safety Professionals had the freedom to select the counterfactual antecedent and then attribute it to a number of possible scenario actors, so it is difficult to explain why they should link a perfectly sensible antecedent to a person who had no control over it. When Safety Practitioners selected a directly controllable antecedent it was most likely to relate to inadequate warnings and be under the control of the Store Supervisor, whilst indirectly controllable antecedents were most likely to be attributed to the Employer and relate to systems of work, both of which appear to be in keeping with Safety Professionals' expectations based on the law and good practice.

Managers made changes to controllable events (direct or indirect) more than they changed uncontrollable ones, but there were differences between slips and trips. Fifty nine per cent of Managers who completed the counterfactual sentence following a slip accident made a change to an event over which the focal actor had direct control and this was significantly more than the 26.2% who selected an event over which the focal actor had indirect control ( $\chi^2(1) = 7.70 p = .006$ ). Managers typically attributed direct control to the Store Supervisor over specific antecedents such as the inadequate response time and inadequate warnings.

However when Managers undid the outcome of Mary's trip accident they were equally likely to select events over which the focal actor had direct control (47.1%) or indirect control (35.7%) ( $\chi^2(1) = 1.10 p = .294$ ). The selection of two types of control was consistent with the specific antecedent being changed to bring about the

alternative outcome. For example, Managers selecting an antecedent relating to the presence of the hazard believed the Store Supervisor had direct control, however when Managers referred to standards of housekeeping this was usually associated with either the Store Manager or the Supervisor, who had indirect control over the matter.

Accident Subjects chose to change antecedents over which their focal scenario actor had direct control following both Mary's slip accident (52.3%) and trip accident (84.1%). Direct control was selected significantly more frequently than indirect control for both types of accident (slips  $\chi^2(1) = 6.48$   $p = .011$  and trips  $\chi^2(1) = 41.67$   $p < .001$ ). Accident Subjects most commonly changed Mary's decision to work on that day and that was something Mary had direct control over.

***The degree of control exercised by the scenario actor in the prevention sentence***

Table 23 presents the results for the type of control exercised by the scenario actor in the respondents' prevention sentences.

Safety Professionals selected antecedents which were under indirect control most frequently for both Mary's slip and trip accidents. Fifty eight per cent (58.8%) attributed indirect control to the scenario actor following Mary's slip accident and this was significantly higher than the proportion (31.3%) who attributed direct control ( $\chi^2(1) = 13.44$   $p < .001$ ), similarly 63.6% of Safety Practitioners attributed indirect control to the scenario actor following Mary's trip accident and this was significantly greater than the 26.1% who thought the scenario actor had direct control over the means to prevent the accident ( $\chi^2(1) = 27.57$   $p < .001$ ). Safety Professionals most commonly completed the slip accident prevention sentence by referring to indirectly controllable antecedents such as improving safe systems of work (55.3%) being attributed to the Employer as the scenario actor. For trip accidents they focused strongly on improving systems of work (26%), but also on improved standards of housekeeping (25%) both of which relate to the Employer and Store Manager as the focal actors. The focus of Safety Professionals on prevention through indirect control by the Employer and Store Manager of safe

systems of work and housekeeping is predictable given their role under the Health & Safety at Work etc. Act 1974 (HMSO, 1974).

Table 22.  
Type of control attributed to the scenario actor by respondents in their counterfactual sentence

	N	Direct control %	Indirect control %	No control %
<hr/>				
Counterfactual sentence for slips				
<hr/>				
Safety Professional	167	46.1	40.7	13.2
Manager	61	59.0	26.2	14.8
Accident Subject	65	52.3	24.6	23.1
	<hr/>			
	293			
<hr/>				
Counterfactual sentence for trips				
<hr/>				
Safety Professional	183	36.6	35.0	28.4
Manager	70	47.1	35.7	17.1
Accident Subject	65	84.1	7.7	7.7
	<hr/>			
	318			
<hr/>				

Managers' prevention strategies were equally likely to be under the direct control of the scenario focal actor as they were to be under indirect control, and this was the same for both Mary's slip accident as it was for her trip accident. For slips Managers attributed direct control in 48.2% of cases and indirect control for 42.9% of cases ( $\chi^2 (1) = .176 p = .674$ ). The position was much the same for Mary's trip

accident with 34.4% of Managers attributing direct control to the scenario actor and 51.6% selecting indirect control ( $\chi^2 (1) = 2.20 p = .138$ ).

Following Mary's slip accident Managers believed the Cleaner (41%) had direct control over the response time (35.3%), and where there was indirect control (40.0%) felt that improved warnings were under the Store Manager's (50%) indirect control.

Managers seeking to prevent Mary's trip accident considered that improvements to the working procedures (30%) were directly controllable by the Store Supervisor (45%). Where Managers referred to improved housekeeping (25.8%) that was under the indirect control of the Store Manager (32.3%).

Accident Subjects also selected direct and indirect controllable antecedents to prevent Mary's slip accident (direct control 52.2%, indirect control 32.8%,  $\chi^2 (1) = 2.0 p = .157$ ).

Accident Subjects' slip prevention sentences were most likely to refer to the Cleaner as having direct control over cleaning up the milk more quickly (20.0%), whilst the need for better warnings (25.0%) was associated with the indirect control of the Store Supervisor.

Accident Subjects were most likely to prevent Mary's trip accident by selecting antecedents over which the scenario actor had direct control (60.9% direct control, 25.0% using indirect control  $\chi^2 (1) = 9.62 p = .002$ ). The Store Supervisor was selected by 25.9% of Accident Subjects as having direct control over the presence of the box.



Table 23.  
Type of control attributed to the scenario actor by respondents  
in their prevention sentence

	N	Direct control %	Indirect control %	No control %
<b>Slips</b>				
Safety Professional	160	31.3	58.8	10
Manager	56	48.2	42.9	8.9
Accident Subject	67	52.2	32.8	14.9
	283			
<b>Trips</b>				
Safety Professional	176	26.1	63.6	10.2
Manager	64	34.4	51.6	14.1
Accident Subject	64	60.9	25.0	14.1
	304			

***The degree of control exercised by the scenario actor in the causal sentence***

Table 24 presents the results for the type of control exercised by the scenario actor over the specific causal antecedent. According to Safety Professionals the cause of Mary's slip accident was subject to indirect control by the scenario actor. Just over half of Safety Professionals (57.2%) completed the causal sentence in this way, as compared to 24.7% who responded with direct control over the causal antecedent ( $\chi^2 (1) = 21.44 p < .001$ ). Safety Professionals most frequently referred to the presence of the hazard (spilt milk) as being the cause (30.0%) and Mary as the scenario actor having indirect control (30.0%). A more balanced approach was taken by Safety Professionals when identifying the cause of Mary's trip accident, with 49.7% referring to an antecedent subject to indirect control and 36.5% direct

control ( $\chi^2 (1) 3.70 p = .055$ ). Safety Professionals directed their attention towards the presence of the hazard (box) (31.5%) and another worker as having direct control, and to standards of housekeeping (32.5%) and systems of work (32.5%) as being subject to indirect control by the Store Supervisor and the employer.

Managers' responses indicated both direct and indirect control over the causes of Mary's slip and trip accident. Following Mary's slip accident there was no significant difference in the proportion of Managers referring to indirect control over causal antecedents (49.2%) and those referring to direct control (35.6%) ( $\chi^2 (1) = 1.28 p = .258$ ). Similar proportions were observed for trips, with 45.5% of Managers referring to direct control and 36.4% to indirect control ( $\chi^2 (1) = .667 p = .414$ ).

Typically direct control by the Cleaner or Supervisor was associated with the presence of the hazard for slip accidents (40%), whilst for the slip accident, indirect control by the Supervisor was seen by 34.8% of Managers to relate to response times .

Managers considered Mary's trip accident was due to a lack of attention which was under direct control (28%), or to systems of work (28.6%) or housekeeping (28.6%) which were under the indirect control of the Store Manager.

Accident Subjects responding to Mary's slip accident completed the causal sentence by referring to an antecedent which was equally likely to be under direct control (41.9%) as it was to be under indirect control (30.6%  $\chi^2 (1) = 1.09 p = .297$ ). The antecedents most often referred to by Accident Subjects as being under direct control were the failure to clear up the milk (33.%) and the Cleaner's slow response (28.6%). Where the antecedents were under indirect control they most commonly related to the presence of the hazard (28%) and the failure to clear up the milk (28%) with the Store Supervisor.

Over half (56.9%) of Accident Subjects inferred that the scenario actor had direct control over the causal antecedent for Mary's trip accident, with only 20% associating the scenario actor as having indirect control over the causal antecedent

( $\chi^2 (1) = 11.52$   $p < .001$ ) and were most likely to refer to the presence of the hazard (box) 41.4% and another worker.

Table 24.  
Type of control attributed to the scenario actor by respondents in their causal sentence

	N	Direct control %	Indirect control %	No control %
<b>Slips</b>				
Safety Professional	166	24.7	57.2	18.1
Manager	59	35.6	49.2	15.3
Accident Subject	62	41.9	30.6	27.4
	287			
<b>Trips</b>				
Safety Professional	181	36.5	49.7	13.8
Manager	66	45.5	36.4	18.2
Accident Subject	65	56.9	20	23.1
	312			

### **Dynamic or Static Antecedents**

Previous research identified that dynamic antecedents, i.e. those that were in motion or varying, were more usually selected to be changed to bring about an alternative outcome than those that were static (passive, unchanged or still). In this study an antecedent which was observable was coded as being dynamic, whereas something which was not observable was coded as being static, so for example any reference to the milk, box or warning signs were coded as being dynamic, whereas the existence or otherwise of a documented safe system of work was coded as being

static because it was not observable or could not be established or verified without further enquiries.

***The use of dynamic or static antecedents in the counterfactual sentence***

The use of a dynamic or static antecedent when completing the counterfactual sentence was influenced by both the respondents' job group and the type of accident, as shown in Table 25.

For slip accidents a strong dynamic effect was identified for all three job groups (59.8% for Safety Professionals  $\chi^2(1) = 6.644$   $p = .010$ , 73% for Managers  $\chi^2(1) = 13.35$   $p < .001$  and 75.4% for Accident Subjects  $\chi^2(1) = 17.75$   $p < .001$ ). Dynamic antecedents included the lack of adequate warnings and the failure to clear up the spilt milk. Inadequate warnings were referred to by 30.8% of Safety Practitioners, 37% of Managers and 25% of Accident Subjects, whilst the failure to clear up the spilt milk was referred to by 29.8% of Safety Practitioners, 21.7% of Managers and 19.2% of Accident Subjects.

Safety Professionals (64.9%,  $\chi^2(1) = 16.68$   $p < .001$ ) continued to select dynamic antecedents when they completed their counterfactual sentences after Mary's trip accident mainly referring to the presence of the hazard.

In contrast there was no significant difference in the use of dynamic and static antecedent by Managers or Accident Subjects after Mary's trip accident (Managers: 54.9% dynamic and 45.1% static,  $\chi^2(1) = 690$   $p = .406$ ; Accident Subjects: 55.2% dynamic and 44.8% static,  $\chi^2(1) = 731$   $p = .392$ ). Their counterfactual sentences were most likely to refer to the presence of the hazard (box) as being dynamic (59.0% Managers and 43.2% Accident Subjects), with the most likely static antecedents being an action or inaction by another person for 28.1% of Managers, with Mary's lack of attention being used by 36.7% of Accident Subjects.

Table 25.  
Proportion of respondents selecting a dynamic or static antecedent in their counterfactual sentence

	N	Dynamic %	Static %
<b>Slips</b>			
Safety Professional	174	59.8	40.2
Manager	63	73.0	27.0
Accident Subject	69	75.4	24.6
	306		
<b>Trips</b>			
Safety Professional	188	64.9	35.1
Manager	71	54.9	45.1
Accident Subject	67	55.2	44.8
	326		

***The use of dynamic or static antecedents in the prevention sentence***

Each job group adopted a different approach to the use of static and dynamic antecedents when seeking to prevent Mary's accident.

After Mary's slip accident Safety Professionals used more static antecedents (dynamic 40.2% & static 59.8%,  $\chi^2(1) = 6.44$   $p = .01$ ) whilst Accident Subjects used more dynamic antecedents' (dynamic 74.6% & Static 25.4%  $\chi^2(1) = 17.25$   $p < .001$ ). Managers showed no preference for either dynamic or static antecedents (dynamic 45.1% & static 54.1%  $\chi^2(1) = .410$   $p = .522$ ). The results are presented in Table 26.

Safety Professionals' static antecedents focused on improving systems of work (67.5%). Accident Subjects used dynamic antecedents when completing their prevention sentences and referred to better clearing up of spills (20%), a quicker

response time (15.7%) and better warning (14.3%). Managers referred to improved warnings as being both dynamic (44%) and static antecedents (31.7%).

Following Mary's trip accident an identical pattern of responses was used, with Safety Professionals preferring static antecedents (59.8%  $\chi^2 (1) = 4.98$   $p = .027$ ), Accident Subjects using more dynamic antecedents (62.1%  $\chi^2 (1) = 3.88$ ,  $p = .049$ ) and Managers using both dynamic and static antecedents equally (51.4% dynamic, 48.6% static,  $\chi^2 (1) = .057$   $p = .811$ ).

Safety Professionals referred to improved work practices (system of work 36.9%) and improved training (28.6%) as being static antecedents. Managers referred to the presence of the hazard (38.9%) as being a dynamic antecedent and improved work practices (system of work 33.3%) and to improved training (25.9%) as being static. The presence of the hazard (box) was the dynamic antecedent referred to by 44.7% Accident Subjects whilst inadequate training was the most commonly used static antecedent (25%).

#### ***The use of dynamic or static antecedents in the causal sentence***

Respondents showed a general tendency to complete the causal sentence following Mary's slip or trip accident using both dynamic or static antecedents equally often, however the exception was Safety Professionals who identified the cause of Mary's slip accident as arising from a static antecedent (59.4% ) more often than a dynamic one ( $\chi^2 (1) = 6.22$   $p = .013$ ).

Table 26.  
Proportion of respondents selecting an dynamic or static antecedent in their prevention sentence

	N	Dynamic %	Static %
<hr/>			
Slips			
<hr/>			
Safety Professional	169	40.2	59.8
Manager	61	45.9	54.1
Accident Subject	71	74.6	25.4
	<hr/>		
	301		
<hr/>			
Trips			
<hr/>			
Safety Professional	184	41.8	58.2
Manager	70	51.4	48.6
Accident Subject	66	62.1	37.9
	<hr/>		
	320		
<hr/>			

Managers and Accident Subjects completed the causal sentence for Mary's trip using both dynamic and static antecedents equally (Managers – trip 43.7% dynamic 56.3% static  $\chi^2(1) = 1.14 p = .285$  and Accident Subjects – trip 57.6% dynamic 42.4% static  $\chi^2(1) = 1.51 p = .218$ ). The results are presented in Table 27.

The presence of the hazard was referred to as being a dynamic cause of both Mary's slip and trip accident. It was used by 50% of Managers and 46.3% of Accident Subjects in connection with her slip and by 40.8% of Safety Professionals, 36.7% of Managers and 65.8% of Accident Subjects in connection with her trip.

Safety Professionals and Managers referred to inadequate systems of work as being static causes of both Mary’s slip and trip accident (Safety Professionals 65% slip and 41.8% trip, Managers 35.5% slip and 37.9% trip). Static causes used by Accident Subjects tended to focus on a lack of staff ownership for health and safety (poor safety culture) 25% for Mary’s slip accident and to Mary’s lack of attention (22.2%) and the action or inaction of another person (22.5%) for her trip accident.

Table 27.  
Proportion of respondents selecting a dynamic or static antecedent in their causal sentence

	N	Active (dynamic) %	Passive (static) %
<b>Slips</b>			
Safety Professional	175	40.6	59.4
Manager	64	54.7	45.3
Accident Subject	70	60.0	40.0
	309		
<b>Trips</b>			
Safety Professional	191	51.8	48.2
Manager	71	43.7	56.3
Accident Subject	66	57.6	42.4
	328		



## **Part 2 – results for the newly identified structural dimensions**

The results presented here are for the seven new dimensions of the counterfactual, prevention and causal sentences that were developed for this research.

They were:

1. Did the counterfactual thought relate to a specific aspect of the scenario or was it more general?
2. Was the antecedent selected for change something that had been specifically given in the scenario details or was it something that had been inferred from the situation?
3. Did the counterfactual sentence refer to an antecedent which was personal to the scenario actor or was it related to the situation that the scenario actor found himself or herself in?
4. Was the scenario actor spontaneously identified in the counterfactual sentence?
5. To whom did the counterfactual sentence refer? A list of scenario actors was presented to respondents who were asked to select one that their counterfactual thoughts referred to.
6. What was the specific subject of the counterfactual sentence?
7. Did the specific subject of the counterfactual sentence relate to something physical, behavioural, was it an attitude or was it something that related to a system of work or a procedure?

### **Did the sentence relate to a specific or general aspect of the scenario?**

#### ***Was the counterfactual sentence specific or general to the scenario?***

The means to bring about a different outcome to Mary's accident could be expressed in a way which was specific to the particular circumstances set out in the scenario or it could be expressed in a more general and non-specific way. Table 28 sets out the results for this element of counterfactual thinking and shows a strong

case specific effect across all respondents and for both types of accident. Case specific antecedents were used significantly more than general ones for both slips and trips (Slips - Safety Professionals 66.1%  $\chi^2(1) = 18.02, p < .001$ , Managers 85.4%  $\chi^2(1) = 32.14, p < .001$  and Accident Subjects 94.2%  $\chi^2(1) = 53.93, p < .001$  and for trips - Safety Professionals 70.2%  $\chi^2(1) = 30.72, p < .001$  Managers 66.2%  $\chi^2(1) = 7.45, p = .006$  and Accident Subjects 95.5%  $\chi^2(1) = 55.53, p < .001$ ).

Having identified that all respondents preferred to use case specific antecedents further analysis identified some interesting consistencies in the nature of the specific subjects of the counterfactual sentences. For slip accidents the most frequently antecedent related to inadequate warnings (Safety Practitioners 31.1%, Managers 37.8% and Accident Subjects 21.3%). Whereas respondents in all three groups selected the presence of the hazard most commonly when undoing Mary's trip accident (Safety Practitioners 54.3%, Managers 51.1% and Accident Subjects 30.8%).

Table 28.  
Proportion of respondents selecting a case specific or general antecedent in their counterfactual sentence

	N	Case specific %	General %
<b>Slips</b>			
Safety Professional	174	66.1	33.9
Manager	63	85.7	14.3
Accident Subject	69	94.2	5.8
	306		
<b>Trips</b>			
Safety Professional	188	70.2	29.8
Manager	71	66.2	33.8
Accident Subject	67	95.5	4.5
	326		

***Was the prevention sentence specific or general to the scenario?***

No consistent pattern of responses were identified for the use of case specific or general antecedents for the prevention of Mary's accident, with the exception of Accident Subjects who used case specific antecedents for both types of accident (84.5% for slips  $\chi^2(1) = 33.82, p < .001$  and 71.2% for trips  $\chi^2(1) = 11.88, p = .001$ ). Safety Professionals were equally likely ( $\chi^2(1) = 2.61, p = .106$ ) to use a case specific antecedent (43.8%) as a general one (56.2%) when completing the prevention sentence for Mary's slip accident, but not for her trip where they were more likely to use a general antecedent (72%,  $\chi^2(1) = 36.15, p < .001$ ). Managers showed the reverse pattern, preferring to use a specific antecedent for Mary's slip accident (62.9%  $\chi^2(1) = 4.13, p = .042$ ) but both a general antecedent (52.9%) and a specific antecedent (47.1%) for Mary's trip accident ( $\chi^2(1) = .229, p = .633$ ). Table 29 presents the responses for the use of general and specific antecedents in the prevention sentences.

Safety Professionals used both case specific and general antecedents when completing their prevention sentences following Mary's slip accident, most commonly referring to improved systems of work both specifically (41.3%) and generally (54.3%). The specific antecedent referred to most commonly in relation to Mary's trip accident was the need for improved standards of housekeeping (26.1%) and to improved systems of work in a more general way (37.23%).

Managers used specific antecedents more than general ones when considering Mary's slip accident and these related in the main to improved warnings (33.3%). Specific and general antecedents were used equally by Managers preventing Mary's trip accident. The specific antecedent was most likely to refer to the presence of the hazard (25.6%) and the general antecedent to improved staff training (26.3%).

Accident Subjects used specific antecedents significantly more often than general antecedents, referring to cleaning up the spillage following a slip (20%) and to removing the tripping hazard following a trip (34%).

Table 29.

Proportion of respondents selecting a case specific or general antecedent in their prevention sentence

	N	Case specific %	General %
<b>Slips</b>			
Safety Professional	169	43.8	56.2
Manager	62	62.9	37.1
Accident Subject	71	84.5	15.5
	302		
<b>Trips</b>			
Safety Professional	186	28.0	72.0
Manager	70	52.9	47.1
Accident Subject	66	71.2	28.8
	322		

***Was the causal sentence specific or general to the scenario?***

Table 30 shows that Accident Subjects were consistent when they completed the causal sentences using case specific antecedents for both slips (75.7%  $\chi^2(1) = 18.51, p < .001$ ) and trips (70.6%,  $\chi^2(1) = 11.53, p = .001$ ). Managers were also consistent in selecting case specific and general antecedents equally frequently for both slips and trips (slips - case specific 53.1% , general 46.9% ,  $\chi^2(1) = .250, p = .617$  ; trips - case specific 47.9%, general 52.1%,  $\chi^2(1) = .127, p = .722$ ). Safety Professionals were found to use specific (45.4%) and general (54.6%) antecedents equally frequently ( $\chi^2(1) = 1.47, p = .255$ ) when completing the causal sentence for Mary's slip accident, but to concentrate on general antecedents (65.3%,  $\chi^2(1) = 18.03, p < .001$ ) for Mary's trip accident.

There was little variation in the selection of the specific antecedents by Safety Professionals or Managers with both groups selecting the hazard (spillage of milk or the box on the floor) as being the specific cause of the accident (Safety Professionals - slips 47.7%, trips 54.7%; Managers - slips 45.4%, trips 33.3%).

Both groups also referred to inadequate system or procedures when referring to the cause more generally (Safety Professionals - slips 64.7%, trips 32.4%; Managers - slips 36.8%, trips 31.0%). Accident Subjects also followed this pattern of responses referring to the specific cause as being the presence of the hazard (slips 38.8% and trips 60.5%) and the inadequate systems of work as being the general cause of Mary's slip accident (33.3%). However Accident Subjects referred to three causal antecedents for Mary's trip accident, those being the inadequate systems of work (23.1%), someone being careless or reckless (23.1%) and some action or inaction by a someone (23.1%).

Table 30.  
Proportion of respondents selecting a case specific or general antecedent in the causal sentence

Sentence element	N	Case specific %	General %
<b>Slips</b>			
Safety Professional	174	45.4	54.6
Manager	64	53.1	46.9
Accident Subject	<u>70</u>	75.7	24.3
	308		
<b>Trips</b>			
Safety Professional	193	34.7	65.3
Manager	71	47.9	52.1
Accident Subject	<u>68</u>	70.6	29.4
	332		

**Did the sentence refer to an antecedent which was known to the respondent from the scenario or to an inferred antecedent ?**

Scenarios cannot give a contextually rich picture of all the circumstances in which an accident occurred. In this study respondents were asked to react to the accident in the same way that they would in their own workplace and to bring to bear their own personal experiences of slips and trips when completing the counterfactual, prevention and causal sentences, in addition two levels of detail were presented to respondents (minimum or maximum detail versions). These factors suggested that it would be interesting to examine the completed sentences to see if people were restricting themselves to the facts given in the scenario, or were bringing other sources of information in to play when completing the sentences. The specific antecedents referred to in the counterfactual, prevention and causal sentences were identified and coded as being either 'known' if they were specifically mentioned in the scenario or 'inferred' from their knowledge or experience.

***Was the subject of the counterfactual sentence known or inferred?***

The results for the completion of the counterfactual sentence are presented in Tables 31 (slips) and 32 (trips) showing how the type of accident and the level of detail influenced the way in which the three different job groups responded. What is most noticeable is that for slips the level of detail correlated directly with the use of a known or inferred antecedent, with each of the job groups showing the same response to the manipulation of the level of detail. Where respondents were only given the minimal level of detail they consistently preferred to complete the counterfactual sentence following a slip accident using an antecedent that they inferred to have existed. This pattern of responses was statistically significant ( $\chi^2(1) = 9.78, p = .002$  or higher). This is in strong contrast to the responses where maximum detail was provided which led respondents to use a 'known' antecedent most commonly ( $\chi^2(1) = 6.72, p = .01$  or higher). This pattern of responses was not repeated for trip accidents where there was a greater tendency for respondents to use known and inferred antecedents regardless of the level of detail, the only exception being Safety Professionals when they were mutating Mary's trip accident based on minimum details and this led to them using inferred antecedents significantly more commonly ( $\chi^2(1) = 4.167, p = .041$ ).

A further analysis of the completed counterfactual sentences was undertaken to try to establish if the specific antecedent was also influenced by the level of detail provided to the respondents. When respondents were given the minimum detail scenario were they just mentally filling in the gaps that the maximum detail scenario version provided, so that the manipulation of the level of detail had no effect on the specific antecedent being selected, or did the level of detail influence the choice of antecedents?

The inferred antecedents that were most commonly changed were more varied than those that were known, for example Safety Professionals selected from three antecedents (failing to clear up 27.3%, inadequate systems of work 25%, and hazard reporting 22.7%), Managers also selected from three antecedents (inadequate systems of work 19%, inadequate warnings 19%, and failing to clear up the spillage 19%), but Accident Subjects were most likely to complete their counterfactual sentence about the failure to clear up (26%).

***Was the subject of the prevention sentence known or inferred?***

Safety Professionals and Managers adopted the same approach as in their counterfactual sentence to the completion of the prevention sentence when presented with the minimum detail scenario, but a different approach in the maximum detail version of the scenarios (Tables 33 slips and 34 trips). Under minimum detail conditions both groups completed the prevention sentence for slips and trips by referring to an inferred antecedent (Safety Professionals - slips 93.5%,  $\chi^2(1) = 58.3$ ,  $p < .001$ ; trips 88.5%,  $\chi^2(1) = 57.04$ ,  $p < .001$ . Managers - slips 95.8%,  $\chi^2(1) = 20.17$ ,  $p < .001$ ; trips 80.6%,  $\chi^2(1) = 11.64$ ,  $p = .001$ ).

However when Managers were given the maximum detail scenario they then shifted their prevention focus and used both known and inferred antecedents equally (slips - known 48.6% and inferred 51.4%,  $\chi^2(1) = .027$ ,  $p = .869$ ; trips - known 41.0% and inferred 59.0%,  $\chi^2(1) = 1.25$ ,  $p = .262$ ) but Safety Professionals still maintained a significant focus on inferred antecedents (slips - inferred 71.7%, known 28.3%,  $\chi^2(1) = 17.39$ ,  $p < .001$ ; trips - inferred 77.8%, known 22.2%,  $\chi^2(1) = 27.78$ ,  $p < .001$ ).

Accident Subjects showed a different pattern of responses depending on the type of accident. For slips they preferred to use an inferred antecedent when given the minimum level of detail (inferred 91.2%, known 8.8%,  $\chi^2(1) = 23.06, p < .001$ ) and a known antecedent when they were given the maximum detail scenarios (known 70.3%, inferred 29.7%,  $\chi^2(1) = 6.08, p = .014$ ). When Accident Subjects were considering how to prevent Mary's trip accident they still preferred to use an inferred antecedent when they were given minimum details (inferred 93.1%, known 6.9%,  $\chi^2(1) = 5.88, p = .015$ ) but when the scenario contained maximum details they were equally likely to use a known or inferred antecedent (known 56.4%, inferred 43.6%,  $\chi^2(1) = .641, p = .423$ ).

Further analysis was undertaken to explore the specific subject of the prevention sentences and to see if this was influenced by the level of detail and whether the antecedent was known or inferred.

Safety Professionals presented with either minimum or maximum detail in their scenarios responded to slip and trip scenarios by selecting an inferred antecedent. For slips the inferred antecedent related to improved systems of work for both levels of detail (minimum detail 51.7%, and 62.3% for maximum detail). When Safety Professionals considered how to prevent Mary's trip accident and were given minimum details they referred to improved housekeeping (29.9%), but when they were given maximum details they referred to systems of work in their prevention sentence (29.9%).



Table 31.  
 Proportion of respondents using known or inferred antecedents in  
 their counterfactual sentences (Slips)

	N	Known antecedent  %	Inferred antecedent  %
<b>Slips</b>			
Safety Professional (all)	173	46.2	53.8
Safety Professional  (minimum detail)	80	26.3	73.8
Safety Professional  (maximum detail)	93	63.4	36.6
Manager	63	58.7	41.3
Manager  (minimum detail)	23	17.4	82.6
Manger  (maximum detail)	40	82.5	17.5
Accident Subject	66	56.1	43.9
Accident Subject  (minimum detail)	32	27.3	72.7
Accident Subject  (maximum detail)	34	77.1	22.9
132			

Table 32.  
 Proportion of respondents using known or inferred antecedents in their counterfactual sentences (Trips)

	N	Known antecedent %	Inferred antecedent %
<b>Trips</b>			
Safety Professional	186	49.5	50.5
Safety Professional (minimum detail)	96	39.6	60.4
Safety Professional (maximum detail)	90	60.0	40.0
Manager	71	39.4	60.6
Manager (minimum detail)	31	35.5	64.5
Manger (maximum detail)	40	42.5	57.5
Accident Subject	66	56.1	43.9
Accident Subject (minimum detail)	29	51.7	48.3
Accident Subject (maximum detail)	37	59.5	40.5
	132		

Managers presented with minimum details prevented both slip and trip accidents by selecting an inferred antecedent. For slips that was to improve the response time (23.1%), but after a trip accident they were most likely to refer to improved systems of work (22.7%) or improved training (22.7%). However when Managers were given maximum details there was no difference in their use of known or inferred antecedents for either slips or trips. The known antecedents were improved

warnings (60%) for slip accidents and the removal of the hazard (35.3%) for trip accidents. The inferred antecedents related to improved systems of work (25%) following a slip accident and for trip accidents systems of work were referred to by 21% of Managers along with improved housekeeping (21%).

The type of accident and the level of information influenced the selection of known and inferred antecedents for Accident Subjects. For slip accidents minimum details led to the use of inferred antecedents relating to improved clearing up of the spillage (33.3%), whilst maximum details led Accident Subjects to use a known antecedent most commonly relating to improved response times (28%). The prevention of Mary's trip accident was also influenced by the level of detail. Minimum detail again being associated with an inferred antecedent, this time relating to the presence of the hazard (35%), but under maximum detail conditions Accident Subjects used known and inferred antecedents. The known antecedent was the presence of the hazard (35.3%), whilst the inferred antecedent was most likely to refer to improved housekeeping (25%).

***Was the subject of the causal sentence known or inferred?***

The cause of Mary's trip accident was commonly inferred by all three job groups under both minimum and maximum levels of detail in the scenarios. (See Tables 35 slips and 36 trips).

Safety Professionals inferred the cause of Mary's slip accident under both minimum and maximum levels of detail (Maximum detail 65.2%,  $\chi^2(1) = 8.52, p = .004$  and Minimum detail 79.5%,  $\chi^2(1) = 28.93, p < .001$ ). Managers were most likely to infer the cause of Mary's slip accident when they were given minimum levels of detail (79.2%,  $\chi^2(1) = 8.16, p = .004$ ) but used both known and inferred antecedents when given maximum details (Table 35). On the other hand Accident Subjects showed a clear difference based on the level of detail provided. Under minimum levels of detail Accident Subjects were most likely to infer the cause of Mary's slip accident (84.8%,  $\chi^2(1) = 16.03, p < .001$ ) whereas when they were given the maximum detail scenario they were then most likely to describe the cause as being something that was known to them (69.3%,  $\chi^2(1) = 5.44, p = .020$ ).

Table 33.  
 Proportion of respondents using known or inferred antecedents in their prevention sentences (Slips)

	N	Known antecedent %	Inferred antecedent %
<b>Slips</b>			
Safety Professional (all)	169	18.3	81.7
Safety Professional (minimum detail)	77	6.5	93.5
Safety Professional (maximum detail)	92	28.3	71.7
Manager (all)	61	31.1	68.9
Manager (minimum detail)	24	4.2	95.8
Manager (maximum Detail)	37	48.6	51.4
Accident Subject (all)	71	40.8	59.2
Accident Subject (minimum detail)	34	8.8	91.2
Accident Subject (maximum detail)	37	70.3	29.7
	142		

Table 34.  
 Proportion of respondents using known or inferred antecedents in  
 their prevention sentences (Trips)

	N	Known antecedent %	Inferred antecedent %
<hr/>			
Trips			
<hr/>			
Safety Professional (all)	186	16.7	83.3
Safety Professional (minimum detail)	96	11.5	88.5
Safety Professional (maximum detail)	90	22.2	77.8
Manager (all)	70	31.4	68.6
Manager (minimum detail)	31	19.4	80.6
Manager (maximum detail)	39	41.0	59.0
Accident Subject (all)	68	35.3	64.7
Accident Subject (minimum detail)	29	6.9	93.1
Accident Subject (maximum detail)	39	56.4	43.6
	136		
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With only three exceptions respondents selected an inferred antecedent when completing their causal sentences for both slips and trips (Tables 35 slips and 36 trips). Considering slip accidents first, Safety Professionals' sentences referred to inadequate systems of work or procedures when given minimum levels of detail (53.1%) and maximum levels of detail (65.1%). Under minimum detail conditions Managers' slip accident causal sentences most commonly inferred the presence of the hazard (27.3%), but both known and inferred antecedents were used when Managers were presented with maximum detail scenarios. The sentences containing known antecedents most often referred to the slow response time, whereas inferred antecedents were most likely to refer to inadequate systems of work.

Accident Subjects' causal sentences following a slip accident displayed a clear relationship between the use of inferred antecedents when presented with minimum details and the use of known antecedents when given maximum details. Their inferred antecedents related to the failure to clear up the spillage (27.3%), whilst their known antecedents related to the presence of the hazard (50%).

With the exception of Accident Subjects, who were presented with maximum detail scenarios, the cause of Mary's trip accident was attributed to inferred antecedents (Safety Professionals - minimum detail 82.8%,  $\chi^2(1) = 42.68, p < .001$ , maximum detail 66.7%,  $\chi^2(1) = 10.33, p = .001$ ; Managers - minimum detail 77.4%,  $\chi^2(1) = 9.32, p = .002$ , maximum detail 72.5%,  $\chi^2(1) = 8.10, p = .004$ ; Accident Subjects - minimum detail 79.3%,  $\chi^2(1) = 9.97, p = .002$ ), maximum detail known 47.4%, inferred 52.6%,  $\chi^2(1) = 105, p = .746$ ).

When given a trip scenario containing minimum details, 31.4% of Safety Professionals inferred poor housekeeping caused the accident, 23.8% of Managers inferred the cause to be inadequate systems of work, whilst 38.1% of Accident Subjects inferred the presence of the hazard caused the accident. However when respondents were given a maximum detail scenario, 32.7% of Safety Professionals continued to infer that poor housekeeping was the cause and 30% of Managers continued to infer the cause arose from inadequate systems of work. Accident Subjects used both known and inferred antecedents, attributing the inferred cause of

the trip accident to poor housekeeping (25%) and the presence of the hazard as the known cause (70.6%).

Table 35.  
Proportion of respondents using known or inferred antecedents in their causal sentences (Slips)

	N	Known antecedent %	Inferred antecedent %
<b>Slips</b>			
Safety Professional (all)	175	28.0	72.0
Safety Professional (minimum detail)	83	20.5	79.5
Safety Professional (maximum detail)	92	34.8	65.2
Manager	64	39.1	60.9
Manager (minimum detail)	24	20.8	79.2
Manager (maximum detail)	40	50.0	50.0
Accident Subject	69	43.5	56.5
Accident Subject (minimum detail)	33	15.2	84.8
Accident Subject (maximum detail)	36	69.4	30.6
	138		

Table 36.  
 Proportion of respondents using known or inferred antecedents in their  
 causal sentences (Trips)

	N	Known antecedent %	Inferred antecedent %
<hr/>			
Trips			
Safety Professional (all)	192	25	75
Safety Professional (minimum detail)	99	17.2	82.8
Safety Professional (maximum detail)	93	33.3	66.7
Manager (all)	71	25.4	74.6
Manager (minimum detail)	31	22.6	77.4
Manager (maximum detail)	40	27.5	72.5
Accident Subject (all)	67	35.8	64.2
Accident Subject (minimum detail)	29	20.7	79.3
Accident Subject (maximum detail)	38	47.4	52.6
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	134		
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### **Did the sentence refer to a personal or situational antecedent?**

In this study Safety Professionals and Managers viewed Mary's accident from a public or third party perspective, looking in from the outside, and with different roles and from different emotional / psychological distances than Accident Subjects, who were asked to view the accident from the perspective of Mary who was the injured person and would have been thinking about her accident from a personal (first person) perspective. These different positions could have influenced the ways in which the respondent groups approached the completion of the sentences, one of which is through the use of an antecedent which reflected a personal characteristic of the scenario actor identified as being the subject of the sentence, or through a situational antecedent based on the circumstances that the scenario actor was in at that time.

### ***Did the counterfactual sentence relate to a personal or situational antecedent?***

Safety Professionals showed a significant tendency to complete the counterfactual sentence after both Mary's slip and trip accident by referring to a situational antecedent (slip 92.7% ,  $\chi^2(1) = 67.97$ ,  $p < .001$  and trip 75.5% ,  $\chi^2(1) = 38.26$ ,  $p < .001$ ). Managers were found to use personal antecedents as often as they used situational ones (slip personal 43.1% and slip situational 56.9%,  $\chi^2(1) = .961$ ,  $p = .327$ , trip personal 37.3% and trip situational 62.7%,  $\chi^2(1) = 3.31$ ,  $p = .069$ ). See Table 37.

For Accident Subjects the type of accident influenced the choice of a personal or situational antecedent. Following Mary's slip accident they were as likely to use a personal antecedent as they were a situational one (slip personal 47.6% and slip situational 52.4%.  $\chi^2(1) = 143$ ,  $p = .705$ ), but personal antecedents when they were undoing Mary's trip accident (68.8%,  $\chi^2(1) = 9.00$ ,  $p = .003$ ).

The specific antecedents that respondents used were found to be influenced by both the type of accident and the respondent's job group. Safety professionals used situational antecedents for both slips and trips but different specific ones; systems of work were most often used for slips (30.7%) and the presence of the hazard for trips (48.5%). Managers used both personal antecedents (response time 27.8%) and

situational antecedents (inadequate warnings 39.1%) for slips, but just situational ones (the presence of the hazard 42.6%) for trips. On the other hand Accident Subjects used both personal antecedents (Mary's lack of attention 46.2%) and situational antecedents (inadequate warnings 33.3%) for slips, but only personal antecedents relating to Mary's lack of attention (40%) for trips.

Table 37.  
Proportion of respondents referring to personal or situational antecedents in their counterfactual sentences

	N	Personal antecedent %	Situational antecedent %
<b>Slips</b>			
Safety Professional	130	13.8	92.7
Manager	51	43.1	56.9
Accident Subject	63	47.6	52.4
	244		
<b>Trips</b>			
Safety Professional	147	24.5	75.5
Manager	51	37.3	62.7
Accident Subject	64	68.8	31.3
	262		

***Did the prevention sentence relate to a personal or situational antecedent?***

The type of accident had no effect on the way respondents sought to prevent Mary's accident (Table 38).

Safety Professionals and Managers considered Mary's accident could have been prevented though changing the situation rather than a personal characteristic (Safety Professionals - slip 89.7%,  $\chi^2(1) = 92.16, p < .001$  and trip 92.3%,  $\chi^2(1) = 120.02,$

$p < .001$ ; Managers - slip 75.0%  $\chi^2(1) = 13.00$ ,  $p < .001$  and trip 78.7%,  $\chi^2(1) = 20.82$ ,  $p < .001$ ). Accident Subjects completed the prevention sentences for both Mary's slip and trip accident with reference to a personal antecedent as often as they did to a situational one (slip accident - personal antecedent 42.6%, situational antecedent 57.4%,  $\chi^2(1) = 1.47$ ,  $p = .220$ , trip accident - personal antecedent 41.5%, situational antecedent 58.5%,  $\chi^2(1) = 1.86$ ,  $p = .172$ ).

The specific antecedents used in the prevention sentences were not consistent for job group or accident type. Safety Professionals referred to systems of work (55.5%) as the situational antecedent following Mary's slip and to housekeeping (29%) as the situational antecedent following Mary's trip accident. Managers also used situational antecedents for both Mary's slip and trip referring to improved warnings to prevent the slip accident (39.3%) and improved housekeeping (23.9%) to prevent her trip accident.

Accident Subjects used both personal and situational antecedents to prevent slips as well as trips. The personal antecedent used to prevent Mary's slip accident was to improve the Cleaner's response time (22.7%) whilst the situational antecedent was to improve the warnings of the hazard (20%). Different antecedents were used to prevent Mary's trip accident; the personal antecedent related to someone actions or inactions (26.7%) whilst the situational antecedent referred to was the removal of the hazard (40.5%).

***Did the causal sentence relate to a personal or situational antecedent?***

The type of accident had no effect on the responses of either Safety Professionals or Accident Subjects when they completed the causal sentence, but there was a difference for Managers, see Table 39.

Over 80% of Safety Professionals (82.1% for slips,  $\chi^2(1) = 62.31$ ,  $p < .001$  and 80.2% for trips  $\chi^2(1) = 61.08$ ,  $p < .001$ ) considered the cause of Mary's accident to be situational in origin. Accident Subjects were equally likely to have identified the cause as having a personal origin and a situational one for both slips and trips (38.5% slips personal and 61.5% slips situational,  $\chi^2(1) = 3.46$ ,  $p = .063$ ; 57.6% trips personal and 42.4% trips situational,  $\chi^2(1) = 1.51$ ,  $p = .218$ ).

Table 38.  
Proportion of respondents referring to personal or situational antecedents in their prevention sentences

	N	Personal antecedent	Situational antecedent
		%	%
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Slips			
<hr/>			
Safety Professional	146	10.3	89.7
Manager	52	25.0	75.0
Accident Subject	68	42.6	57.4
	<hr/>		
	266		
<hr/>			
Trips			
<hr/>			
Safety Professional	168	7.7	92.3
Manager	61	21.3	78.7
Accident Subject	65	41.5	58.5
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	294		
<hr/>			

Managers' selection of the cause was influenced by the type of accident. When considering Mary's slip accident Managers were as likely to have identified the cause as having a personal origin (37.7%) as a situational one (62.3%  $\chi^2 (1) = 3.69$   $p = .055$ ), however the cause of Mary's trip accident was more likely to have a situational antecedent (65.1%) than a personal one (34.9%  $\chi^2 (1) = 5.73$   $p = .017$ ).

The specific antecedents associated with the personal and situational dimension were identified. Safety Professionals were most likely to complete their causal sentences for Mary's slip accident with situational antecedents referring to improved systems of work (53.2%) whilst it was improved housekeeping (28.6%) for trips. Managers identified one main situational cause of Mary's trip accident, the trip hazard itself - the box (29.7%) - but found two major causes for her slip accident, with the situational cause being the slip hazard - spilt milk (42.4%) - and

the personal cause being the slow response to the reported spillage (35.7%). Accident Subjects identified both situational and personal antecedents in their completed sentences for both slips and trips. The personal causes of Mary's slip were identified as a lack of staff ownership of safety (31.6%), whilst the personal causes of her trip were a lack of care on her part (29.6%). The situational causes were the presence of the hazard, the milk, in the case of Mary's slip (44.7%) or the box where Mary tripped (70.4%).

Table 39.  
Proportion of respondents referring to personal or situational antecedents in their causal sentences

	N	Personal antecedent %	Situational antecedent %
<b>Slips</b>			
Safety Professional	151	17.9	82.1
Manager	61	37.7	62.3
Accident Subject	65	38.5	61.5
	277		
<b>Trips</b>			
Safety Professional	167	19.8	80.2
Manager	63	34.9	65.1
Accident Subject	66	57.6	42.4
	296		

**Was a scenario actor spontaneously identified in the sentences?**

When coding the completed counterfactual, prevention and causal sentences it was noted that some respondents made a clear and specific reference to a person (the scenario actor) in the sentence and that this person was in some way able to influence the outcome or was responsible for it. For example a counterfactual

sentence might have been completed in a way in which the person was named e.g. ‘If only Mary had looked where she was going’, or it may have referred to a person by a reference to their job e.g. ‘If only the Cleaner had cleared up the spillage sooner’. The other way that a sentence could have been completed is by making no reference to anyone at all such as ‘If only housekeeping had been better’.

***Was the scenario actor spontaneously identified in the counterfactual sentence?***

Respondents showed no significant tendency to make spontaneous references to a particular scenario actor (Table 40), except for Accident Subjects’ counterfactual sentences following Mary’s trip accident where 62.8% spontaneously identified a scenario actor ( $\chi^2(1) = 5.628, p = .018$ ).

Following Mary’s slip accident there was no significant difference in proportion of respondents from any of the job groups who spontaneously identified a scenario actor from those that did not (Safety Professionals  $\chi^2(1) = .089, p = .766$ , Managers  $\chi^2(1) = 1.25, p = .264$  and Accident Subjects  $\chi^2(1) = .012, p = .914$ ). A similar pattern of responses was also found from Safety Professionals and Managers following Mary’s trip accident (Safety Professionals  $\chi^2(1) = .621, p = .431$  and Managers  $\chi^2(1) = .123, p = .725$ ).

Table 40.  
Proportion of respondents who spontaneously identified the scenario actor in their counterfactual sentence

	N	Actor identified	No actor identified
<b>Slips</b>			
Safety Professional	180	48.9	51.1
Manager	65	56.9	43.1
Accident Subject	85	49.4	50.6
	330		
<b>Trips</b>			
Safety Professional	195	47.2	52.8
Manager	73	52.1	47.9
Accident Subject	80	62.8	37.2
	348		

***Was the scenario actor spontaneously identified in the prevention sentence?***

Safety Professionals and Managers did not identify a scenario actor following either a slip or trip accident (Table 41).

When completing their prevention sentences following Mary's slip accident 80.5% of Safety Professionals ( $\chi^2 (1) = 62.77, p < .001$ ) and 69.4% of Managers ( $\chi^2 (1) = 9.29, p < .001$ ) made no spontaneous identification of a scenario actor, however Accident Subjects were as likely to refer to a scenario actors as not. For slip accidents 46.5% of Accident Subjects referred to a scenario actor, with 53.5% not doing so ( $\chi^2 (1) = .352, p = .553$ ).

An identical pattern of responses was found for the completion of the prevention sentence following Mary's trip accident, with 80.6% of Safety Professionals ( $\chi^2 (1) = 69.87, p < .001$ ) and 75.7% of Managers ( $\chi^2 (1) = 18.51, p < .001$ ) not making a

specific reference to a scenario actor in their prevention sentence. Again there was no difference in the proportion of Accident Subjects who identified a scenario actor and those who did not, 47.1%, specified an actor in their prevention sentence whilst 52.9% did not ( $\chi^2(1) = .235, p = .628$ ).

Table 41  
Proportion of respondents who spontaneously identified the scenario actor in their prevention sentence

	N	Actor identified	No actor identified
<b>Causal sentence for slips</b>			
Safety Professional	169	19.5	80.5
Manager	62	30.6	69.4
Accident Subject	71	46.5	53.5
	302		
<b>Causal sentence for trips</b>			
Safety Professional	186	19.4	80.6
Manager	70	24.3	75.7
Accident Subject	68	47.1	52.9
	324		

***Was the scenario actor spontaneously identified in the causal sentence?***

Table 42 indicates that after Mary's slip accident none of the respondent job groups showed a tendency to identify a scenario actor in their causal sentences - no actor identified by 79.1% of Safety Professionals ( $\chi^2(1) = 59.94, p < .001$ ), 76.6% for Managers ( $\chi^2(1) = 18.06, p < .001$ ) and 74.3% for Accident Subjects ( $\chi^2(1) = 16.51, p < .001$ ).

Safety Professionals and Managers showed the same response for the completion of the causal sentence following Mary's trip (no actor identified by 77.7% of Safety



Professionals  $\chi^2(1) = 59.32$ ,  $p < .001$ , and 83.1% of Managers  $\chi^2(1) = 31.11$ ,  $p < .001$ ), however Accident Subjects were as likely to refer to an actor as not in their causal sentences where 46.4% referred to an actor and 53.6% did not ( $\chi^2(1) = .362$ ,  $p = .547$ ).

Table 42.  
Proportion of respondents who spontaneously identified the scenario actor in their causal sentence

	N	Actor identified	No actor identified
<b>Slips</b>			
Safety Professional	177	20.9	79.1
Manager	64	23.4	76.6
Accident Subject	70	25.7	74.3
	311		
<b>Trips</b>			
Safety Professional	193	22.3	77.7
Manager	71	16.9	83.1
Accident Subject	69	46.4	53.6
	333		

### Which scenario actor was referred to?

The pilot study identified that about half of all completed sentences made no specific reference to a scenario actor, so the questionnaire was amended to include a further question to elicit from the respondents which scenario character (actor) the sentence best related to. They were given a list of actors from which to choose.

The purpose was to identify any particular trends in the association of scenario actors to the type of accident (slip or trip) or by respondents' group (Safety Professionals, Managers or Accident Subjects). Respondents were able to select from a list of nine possible scenario actors, however some actors were rarely or never selected and these were excluded in the analysis to ensure that the Chi Square

test assumptions were met. For the analysis of the counterfactual sentences for slips 79.8% of possible responses were included and 87.7% for trips. The prevention sentences included 95.6% of cases for Mary's slip accident and 97.8% for her trip. For the causal sentences the responses covered 83.4% for Mary's slip and 83.6% for her trip.

***Which scenario actor was most often referred to in the counterfactual sentence?***

The Supervisor was selected by Safety Professionals and Managers most frequently when completing the counterfactual sentences following both Mary's slip and trip accident. The modal responses shown in Table 43 indicate that the Supervisor was selected by 42.1% of Safety Professionals after Mary's slip accident ( $\chi^2(4) = 75.15, p < .001$ ) and 34.3% after her trip accident ( $\chi^2(4) = 38.07, p < .001$ ), with broadly similar responses by Managers who selected the Supervisor in 41.9% of responses after a slip ( $\chi^2(4) = 32.94, p < .001$ ) and 40.3% after a trip ( $\chi^2(4) = 27.35, p < .001$ ). Whilst Accident Subjects' modal response to the slip accident was also to select the Supervisor (39.3%,  $\chi^2(4) = 28.10, p < .001$ ), they made a clearly different selection following Mary's trip accident where they were most likely to select her own role to change (53.7%,  $\chi^2(4) = 41.74, p < .001$ ).

The modal choice of scenario actor most often referred to in the counterfactual sentences was in each case selected significantly more often than their second choice of actor - Safety Professionals selected the Supervisor more than the Employer (slips  $\chi^2(1) = 9.19, p = .002$  and trips  $\chi^2(1) = 2.0, p = .157$ ), Managers also selected the Supervisor over Store Manager (slips  $\chi^2(1) = 45.96, p < .001$ , and trips  $\chi^2(1) = 4.33, p = .037$ ), and following a trip Accident Subjects selected Mary more often than they did the Store Supervisor ( $\chi^2(1) = 32.98, p < .001$ ), but after a slip accident there was no significant difference between the rate that the Supervisor or Mary were selected ( $\chi^2(1) = .40, p = .527$ ).

Table 43.  
Proportion of scenario actors referred to by respondents in their counterfactual sentence

	N	Mary %	Supervisor %	Manager %	Employer %	Cleaner %	Other worker %
<b>Slips</b>							
Safety Professional	133	4.5	42.1	18.0	31.6	3.8	N/A
Manager	53	9.4	49.1	24.5	7.5	9.4	N/A
Accident Subject	56	32.1	39.3	5.4	3.6	19.6	N/A
	242						
<b>Trips</b>							
Safety Professional	169	8.9	34.3	23.1	23.7	N/A	10.1
Manager	62	11.3	40.3	30.6	4.8	N/A	12.9
Accident Subject	54	53.7	18.5	9.3	3.7	N/A	14.8
	285						

***Which scenario actor was most often referred to in the prevention sentence?***

Based on the modal responses each respondent group showed a consistent approach to the completion of the prevention sentence across accident type, but Safety Professionals selected different scenario actors from Managers and Accident Subjects (Table 44).

Safety Professionals selected the Employer as having the opportunity to have prevented Mary's slip (36.9%,  $\chi^2 (6) = 103.25, p < .001$ ) and her trip accident (30.9%,  $\chi^2 (6) = 117.34, p < .001$ ). Managers and Accident Subjects selected the Supervisor for both types of accident (Managers – slips: 31.7%,  $\chi^2 (6) = 25.86, p$

< .001 and trips: 34.4%,  $\chi^2(6) = 32.47$ ,  $p < .001$  and Accident Subjects – slips: 47.7%,  $\chi^2(6) = 67.57$ ,  $p < .001$  and trips: 24.2%,  $\chi^2(6) = 13.33$ ,  $p = .038$ ).

The frequency with which first and second choice of scenario actor were referred to was explored using chi square test to determine if there was a significant difference between them.

For the prevention of Mary's slip accident there was no significant difference between Managers' first and second choice of scenario actors and they were equally likely to have referred to the Supervisor or the Store Manager ( $\chi^2(1) = .471$ ,  $p = .493$ ), but for both Safety Professionals and Accident Subjects one scenario actor was selected above all the others. Safety Professionals selected the role of the Employer more frequently than the Supervisor ( $\chi^2(1) = 6.26$ ,  $p = .012$ ), whilst Accident Subjects selected the Supervisor more frequently than the Cleaner ( $\chi^2(1) = 7.36$ ,  $p = .007$ ).

For Mary's trip accident there was no significant difference in the frequency which any of the job groups selected their first and second choice scenario actors, so that for each job group two actors could be said to have been selected equally often. For Safety Professionals these were the Employer 30.9% and the Store Manager 29.8% ( $\chi^2(1) = .037$ ,  $p = .847$ ), for Managers it was the Supervisor 34.4% and the Manager 20.3% ( $\chi^2(1) = 2.314$ ,  $p = .128$ ), and for Accident Subjects it was the Supervisor 24.2% and Mary herself 22.7% ( $\chi^2(1) = .032$ ,  $p = .857$ ).

Table 44.  
Proportion of scenario actors referred to by respondents in their prevention sentence

	N	Accident Subject %	Supervisor %	Manager %	SO* %	Employer %	Other Worker %	Cleaner %
<hr/>								
Slips								
Safety Professional	157	1.9	21.7	17.8	11.5	36.9	8.9	1.3
Manager	60	10.0	31.7	25.0	5.0	8.3	6.7	13.3
Accident Subject	65	6.2	47.7	6.2	6.2	3.1	10.8	20.0
	<hr/>	282						
<hr/>								
Trips								
Safety Professional	178	2.8	19.7	29.8	9.0	30.9	7.3	0.6
Manager	64	4.7	34.4	20.3	17.2	10.9	10.9	1.6
Accident Subject	66	22.7	24.2	7.6	13.6	6.1	12.1	13.6
	<hr/>	308						

\*SO = Safety Officer

***Which scenario actor was most often referred to in the causal sentence?***

Table 45 presents the scenario actors associated with respondents' causal sentences. Only Safety Professionals were consistent in their selection of the Employer as being the subject of their causal sentence for both slips (53.2% ,  $\chi^2(4) = 118.01$ ,  $p < .001$ ) and trips (37.1%,  $\chi^2(4) = 40.18$ ,  $p < .001$ ). Both Managers and Accident Subjects selected different scenario actors for slips and trips. 46.9% of Managers referred to the Supervisor ( $\chi^2(4) = 29.29$ ,  $p < .001$ ) when they completed their causal sentence following Mary's slip accident and to the Store Manager (36.5%  $\chi^2(4) = 10.88$ ,  $p = .028$ ) when they were writing about Mary's trip accident. Accident Subjects were also found to have referred to the Supervisor most frequently following Mary's slip accident (54.2%,  $\chi^2(4) = 37.83$ ,  $p < .001$ ) but referred to another worker most frequently in their trip sentence (31.3%,  $\chi^2(4) = 5.33$ ,  $p = .255$ ).

As with the counterfactual and prevention sentences, further analysis of the results was undertaken to compare the frequency of responses between respondents' first and second choice of scenario actor. This analysis revealed differences between slips and trips and between respondent groups.

For slip accidents each job group selected one scenario actor over all the others. Safety Professionals selected the Employer significantly more than the Supervisor ( $\chi^2(1) = 26.51, p < .001$ ). Managers and Accident Subjects both selected the Store Supervisor significantly more often than other scenario actors. Managers selected the Store Supervisor more than the Store Manager ( $\chi^2(1) = 3.45, p = .063$ ). Whilst Accident Subjects selected the Supervisor over both the store Safety Officer and another worker ( $\chi^2(1) = 9.53, p = .002$ ).

The causal sentences following Mary's trip accident indicated that Safety Professionals selected the Employer significantly more frequently than the Store Supervisor ( $\chi^2(1) = 7.36, p = .007$ ). Managers and Accident Subjects were found to select their first and second choice of scenario actors equally frequently following Mary's trip accident. Managers selected the Store Manager and other workers ( $\chi^2(1) = 1.58, p = .209$ ) whilst Accident Subjects selected other workers and the Store Supervisor equally frequently ( $\chi^2(1) = 1.00, p = .317$ ).

#### **What was the specific antecedent referred to in the sentence?**

This study considered how Safety Professionals, Managers and Accident Subjects thought about slip and trip accidents specifically and asked them to record their thoughts by completing a counterfactual, prevention and causal sentence, and because there was an explicit focus on slips and trips there was a particular interest in examining the specific antecedents that were selected for each type of sentence to see if their selection was influenced by the type of accident or the respondents' social role (job group).

Seventeen different categories of antecedent were identified from the respondents' completed sentences and used to code their responses. One of the categories used was 'other' but it contained a diverse range of responses each of which was used by a very small number of respondents and this was excluded in the final analysis.

Table 45.  
Proportion of scenario actors referred to by respondents in their causal sentence

	N	Supervisor %	Manager %	Safety Officer %	Employer %	Other worker %
<hr/>						
Slips						
Safety Professional	154	18.2	16.9	8.4	53.2	3.2
Manager	49	46.9	24.5	6.1	18.4	4.1
Accident Subject	48	54.2	8.3	16.7	4.2	16.7
	<hr/>					
	251					
<hr/>						
Trips						
Safety Professional	170	21.2	20.0	8.2	37.1	13.5
Manager	52	13.5	36.5	15.4	11.5	23.1
Accident Subject	48	20.8	18.8	18.8	10.4	31.3
	<hr/>					
	270					
<hr/>						

Some categories were used more frequently than others and those with the least number of responses were excluded systematically from the  $\chi^2$  tests (smallest response rate first) until the test assumptions for the minimum cell count were met. The antecedent categories that remained are presented in Table 46 for the counterfactual sentence, Table 47 for the prevention sentence and Table 48 for the causal sentence.

***What was the specific subject of the counterfactual sentence?***

Table 46 presents the results for the counterfactual sentence. Six categories of antecedent event were used in the completion of the sentence for Mary's slip accident and these represented 82.7% of all responses. The counterfactual sentence for Mary's trip accident was also completed using six categories and this accounted for 86.2% of all responses. Of the six categories used for each type of accident only three were common to both slips and trips, and these were systems of work, lack of attention by Mary and Mary's decision to work. The remaining categories were

only used to any significant degree in respect of either Mary's slip accident (lack of warnings, response time and failing to clean up) or trip accident (the presence of the hazard, poor housekeeping and a personal action / inaction).

Safety Professionals responding to Mary's slip accident most often referred to inadequate warnings (28.9%) when completing a counterfactual sentence, but their second choice was failing to clean up (26.4%) and very close (at 24.8%) was systems of work. There was no significant difference in the frequency with which Safety Professionals used these three antecedents ( $\chi^2 (2) = .392, p = .822$ ).

Managers completing their counterfactual sentence following Mary's slip accident were most likely to refer to inadequate warnings (39.5%). Their second choice of antecedent event was the failure to clean up (23.3%) and the inadequate response time (20.9%), and there was no significant difference in the frequency with which Managers used these three antecedents ( $\chi^2 (2) = 3.167, p = .205$ ).

Accident Subjects' responses focused on five antecedent events as shown in Table 46 (inadequate warning 25.5%, slow response time 13.7%, Mary's lack of attention 23.5%, Mary's decision to work 17.6%, and failing to clean up 19.6%) and again there was no significant difference in the frequency of their use ( $\chi^2 (4) = 2.23, p = .693$ ).

Safety Professionals and Managers responded in a different way to Mary's trip accident, choosing to bring about a different outcome through the use of one main antecedent, that being the presence of the tripping hazard which was referred to by 51.6% of Safety Professionals and 43.4% of Managers. Accident Subjects continued to select three main antecedent events when completing their trip counterfactual sentences, namely the presence of the hazard (34.8%), a lack of attention by Mary (30.4%) and Mary's decision to work (28.3%) ( $\chi^2 (2) = .326, p = .850$ ).



### ***What was the specific subject of the prevention sentence?***

The results presented in Table 47 for the specific subject of the prevention sentence account for 75.6% of the possible results from respondents who received a slip scenario and 75.5% for those respondents who received a trip scenario.

The means by which Mary's accident could have been prevented differed depending on the type of accident and the respondent's job group. When preventing Mary's slip accident 60.2% of Safety Professionals focused the specific subject of their sentences on improving systems of work and working procedures ( $\chi^2 (3) = 75.78, p < .001$ ), whereas both the other groups were found to focus their prevention sentences on a wider range of antecedent events. Managers and Accident Subjects were most likely to refer to one of three antecedents to prevent Mary's slip accident - improved warnings, improved response time by the Cleaner or better cleaning (Managers  $\chi^2 (2) = 2.214, p = .331$ ; Accident Subjects  $\chi^2 (2) = .743, p = .690$ ).

The prevention of Mary's trip accident presented a different pattern of responses with 50% of Accident Subjects tending to focus on a single antecedent, the presence of the hazard ( $\chi^2 (1) = 3.0, p = .083$ ) whilst both Safety Professionals and Managers associated prevention with one of three antecedents, which were the removal of the hazard, improved system of work and better housekeeping (Safety Professionals  $\chi^2 (2) = 2.96, p = .227$  and Managers  $\chi^2 (2) = .500, p = .779$ ).

### ***What was the specific subject of the causal sentence?***

The results presented in Table 48 for the cause of Mary's accident represent 77.6% of responses for respondents who were given a slip scenario and 64.6% of those given a trip scenario.

The failure to implement a safe system of work was the most common subject of Safety Professionals' causal sentences (53.3%) following Mary's slip accident and was used significantly more often than their second choice of cause which was the presence of the hazard (32.4%,  $\chi^2 (1) = 5.378, p = .02$ ). Managers were most likely to attribute the cause of Mary's slip accident to one of three antecedents ( $\chi^2 (1) =$

1.167,  $p = .558$ ), those being the presence of the hazard (40.5%), the inadequate response time (29.7%) and inadequate systems of work / procedures (27.0%). According to Accident Subjects the causes for Mary's accident were as likely to relate to the presence of the hazard (44.4%) or the failure to clear up the spillage (33.3%,  $\chi^2 (1) = .714$ ,  $p = .398$ ).

Safety Professionals drew their causal antecedents from a wider range of options after Mary's trip accident. As with Mary's slip accident Safety Professionals referred to the failure to implement a safety system of work (31.6%), but also to the presence of the hazard (36.8%) and to poor standards of housekeeping (31.6%). None of these causes was found to be used significantly more often than the other ( $\chi^2 (1) = .615$ , (2)  $p = .735$ ). Managers completed the trip accident causal sentence in a similar way to the slip accident referring to three antecedent events in preference to the others, these being the presence of the hazard 36.7%, inadequate systems of work 36.7% and poor housekeeping 26.7% ( $\chi^2 (2) = .60$ ,  $p = .741$ ). In the case of Mary's trip, 76.5% of Accident Subjects focused on the presence of the hazard ( $\chi^2 (2) = .28.47$ ,  $p < .001$ ).

### **What was the 'domain' of the specific subject (antecedent) of the sentence?**

Analysis of the completed sentences revealed that the specific antecedents could be grouped in to one of four 'domains'. These domains are described as being physical, behavioural, attitudinal or procedural. The content of each completed sentence was coded against these four domains. To ensure that the Chi Square ( $\chi^2$ ) test assumptions (minimum expected cell count) were met, the very few results coded as being attitudinal were excluded in each section that follows.

### ***Which 'domain' did the counterfactual antecedent belong to?***

The results for the counterfactual sentences are presented in Table 49 and represent 98% of all responses for slips and 95.7% for trips.

For Mary's slip accident a strong behavioural effect was identified, with each of the respondent groups' counterfactual sentences referring to someone's behaviour

significantly more frequently than they referred to either of the other two domains (Safety Professionals  $\chi^2 (2) = 49.70, p < .001$ , Managers  $\chi^2 (2) = 28.75, p < .001$ , Accident Subjects  $\chi^2 (2) = 51.21, p < .001$ ).

The same behavioural effect was also found in the counterfactual sentences of all three respondent groups for Mary's trip accident (Safety Professionals  $\chi^2 (2) = 28.23, p < .001$ , Managers  $\chi^2 (2) = 19.44, p < .001$ , Accident Subjects  $\chi^2 (2) = 75.41, p < .001$ ).

Table 46.

Specific subject of the counterfactual sentence

	N	Presence of the hazard %	Inadequate systems of work %	Inadequate warnings %	Poor housekeeping %	Slow response time %	Lack of attention by Mary %	Mary's decision to work %	Personal action / inaction %	Failing to clean up %
<b>Slips</b>										
Safety Professional	121		24.8	28.9		16.5	1.7	1.7		26.4
Manager	43		9.3	39.5		20.9	4.7	2.3		23.3
Accident Subject	51		0.0	25.5		13.7	23.5	17.6		19.6
	<u>215</u>									
<b>Trips</b>										
Safety Professional	126	51.6	15.9		15.1		5.6	4.0	7.9	
Manager	53	43.4	11.3		13.2		5.7	1.9	24.5	
Accident Subject	46	34.8	0.0		2.2		30.4	28.3	4.3	
	<u>225</u>									

Table 47.

Specific subject of the prevention sentence

	N	Presence of the hazard %	Inadequate systems of work %	Inadequate training %	Inadequate warnings %	Poor housekeeping %	Inadequate response time %	Failing to clean up %
Safety Professional	108		60.2		21.3		11.1	7.4
Manager	33		15.2		39.4		24.2	21.2
Accident Subject	42		16.7		23.8		26.2	33.3
	183							
Trips								
Safety Professional	103	20.8	30.0	18.5		30.8		
Manager	29	32.6	25.6	16.3		25.6		
Accident Subject	18	50	13.9	11.1		25.0		
	150							

Table 48.  
Specific subject of the causal sentence

	N =	Presence of the hazard %	Inadequate systems of work %	Poor housekeeping %	Inadequate response time %	Failing to clean up %
<b>Slips</b>						
Safety Professional	105	32.4	53.3	N/A	6.7	7.6
Manager	37	40.5	27.0	N/A	29.7	2.7
Accident Subject	<u>45</u>	44.4	11.1	N/A	11.1	33.3
	187					
<b>Trips</b>						
Safety Professional	117	36.8	31.6	31.6	N/A	N/A
Manager	30	36.7	36.7	26.7	N/A	N/A
Accident Subject	<u>34</u>	76.5	11.8	11.8	N/A	N/A
	181					

Table 49.  
 Proportion of respondents' chosen antecedents by domain for the  
 counterfactual sentence

	N	Physical item %	Behaviour %	Procedure or process / system of work %
<b>Slips</b>				
Safety Professional	170	11.8	55.9	32.4
Manager	61	19.7	65.6	14.8
Accident Subject	69	23.2	72.5	4.3
	300			
<b>Trips</b>				
Safety Professional	180	21.1	51.7	27.2
Manager	68	14.7	57.4	27.9
Accident Subject	64	10.9	84.4	4.7
	312			

***Which 'domain' did the prevention antecedent belong to?***

97% of all the slip scenario responses are accounted for in Table 50 and 94.7% for the trip scenario.

Different domains were used in the prevention sentences to those used in the counterfactual sentences and no overall effect was identified. The domain that was selected was influenced by the respondent's job group rather than the type of accident.

Safety Professionals considered that improving or implementing safe systems of work and procedures was the best way to have prevented Mary's accident irrespective of whether that was a slip or a trip (60.2% for slips  $\chi^2(2) = 58.78$ ,  $p < .001$  and 69.5% for trips  $\chi^2(2) = 109.89$ ,  $p < .001$ ). Managers' prevention sentences focused equally on two domains for both Mary's slip and for her trip accident. A behaviour was referred to by 48.3% of Managers when preventing Mary's slip accident and 44.1% when she had tripped; with 35% referring to safe systems of work as preventing her slip and 47.1% thought that improved safe systems of work would have prevented her trip accident (slips  $\chi^2(1) = 1.28$ ,  $p = .258$ , trips  $\chi^2(1) = .065$ ,  $p = .799$ ).

Accident Subjects were most likely to complete their prevention sentence by referring to a single domain, that of someone's behaviour for both Mary's slip accident (74.6%  $\chi^2(2) = 54.62$ ,  $p < .001$ ) and her trip accident (55.6%  $\chi^2(2) = 14.09$ ,  $p = .001$ ).

***Which 'domain' did the causal antecedent refer to?***

The results for the completion of the causal sentences are presented in Table 51 and account for 92.1% of responses for slips and 87.3% for trips. Safety Professionals identified inadequate systems of work in their causal sentences following both Mary's slip accident (49.7%) and following her trip accident (55.1%) and these were significantly more likely to be referred to than antecedents in the behavioural domain which was their second choice (slip  $\chi^2(1) = 5.48$ ,  $p = .019$ , and trip  $\chi^2(1) = 16.94$ ,  $p < .001$ ).



The cause identified by Managers through their completed sentences was influenced by the type of accident. When it was Mary's slip accident their sentences referred to someone's behaviour most frequently (50.9%,  $\chi^2 (2) = 7.89, p = .019$ ) but when they were considering the cause of Mary's trip accident there were no significant differences in the frequency that Managers used three domains, a physical item 23.0%, someone's behaviour 37.7% or inadequate systems of work 39.3% ( $\chi^2 (2) = 2.98, p = .225$ ).

Table 50.  
Proportion of respondents' chosen antecedents by domain for the prevention sentence

	N	Physical item %	Behaviour %	Procedure or process / system of work %
<b>Slips</b>				
Safety Professional	161	11.8	28.0	60.2
Manager	60	16.7	48.3	35.0
Accident Subject	71	11.3	74.6	14.1
	292			
<b>Trips</b>				
Safety Professional	174	6.9	23.6	69.5
Manager	68	8.8	44.1	47.1
Accident Subject	63	20.6	55.6	23.8
	305			

Accident Subjects also referred to the same domain for both slips and trips. In this case they completed their causal sentences with reference to someone's behaviour most frequently (slips 58.1%  $\chi^2(2) = 20.54, p < .001$  and trips 57.1%  $\chi^2(2) = 16.00, p < .001$ ). Accident Subjects' second choice of causal domain referred to a physical item, but they referred to these significantly less often than they did to someone's behaviour (slips  $\chi^2(1) = 5.25, p = .002$ , trips  $\chi^2(1) = 5.33, p = .021$ ).

Table 51.  
Proportion of respondents' chosen antecedents by domain for the causal sentence

	N	Physical item %	Behaviour %	Procedure or process / system of work %
<b>Slips</b>				
Safety Professional	161	17.4	32.9	49.7
Manager	55	21.8	50.9	27.3
Accident Subject	62	30.6	58.1	6.9
	278			
<b>Trips</b>				
Safety Professional	167	18.6	26.3	55.1
Manager	61	23.0	37.7	39.3
Accident Subject	56	28.6	57.1	14.3
	284			

### **Comparing the counterfactual sentences with the prevention and causal sentences**

There has been some debate as to whether counterfactuals identify a causal relationship between the mutated antecedent and the outcome or identify a missed opportunity to prevent the unwanted outcome. This was explored in this study by simply comparing each respondent's prevention and causal sentences to their counterfactual sentence and making a judgement as to which were more alike.

I will illustrate this approach by way of an example using a Safety Professional's three completed sentences following Mary's slip accident (Figure 4).

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Figure 4.

Example of comparing a respondent's counterfactual sentence to their prevention and causal sentences

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Counterfactual sentence	If only Bill the Shop Floor Supervisor had taken immediate action when the spill was first reported things could have been different.
Prevention sentence	Mary's accident could have been prevented if Bill had taken immediate action... closed the checkout, placed a cone near the spill and stood by the spill until the Cleaner arrived.
Causal sentence	The cause of Mary's accident was the failure to have a procedure in place to deal with spillages.

---

Using these three sentences as examples the prevention sentence is more like the counterfactual sentence than the causal sentence.

Based on this approach the counterfactual and prevention sentences were found to be most closely associated. In total 532 respondents' sentences were assessed to see whether the prevention or causal sentences were more alike the counterfactual sentence. In 316 of cases (59.3%) the counterfactual and prevention sentences were judged to be more alike, whereas 216 respondents' (40.0%) causal and counterfactual sentences were judged to be alike. Further analysis by job group and accident type (Table 52) supported the general interpretation that the prevention and counterfactual sentences were much more alike than were the counterfactual and causal sentences. Whilst the counterfactual and prevention sentences are

generally more alike, when this relationship is considered by accident type and job group it is clear that this is so only in a little over half the cases. Again trip accidents did not follow the general trend in that less than half of the comparison cases was the counterfactual sentence more like the prevention sentence.

Table 52.  
Proportion of respondents whose counterfactual sentences were comparable to the prevention sentences or the causal sentences

	Yes alike	No not alike
	%	%
<hr/>		
Counterfactual and prevention sentences		
Slip	58.2	41.8
Trip	45.5	54.5
Safety Professional	53.0	47.0
Manager	55.1	44.9
Accident Subject	52.2	47.8
<hr/>		
Counterfactual and causal sentences	34.3	65.7
Slip	35.7	64.3
Trip	33.0	67.0
Safety Professional	33.8	66.2
Manager	37.9	62.1
Accident Subject	32.3	67.7
<hr/>		

**How did the respondents' job group or the type of accident affect the Consideration of Future Consequences score?**

The respondents' scores for the modified Consideration of Future Consequences (CFC) Scale were calculated in accordance with the method developed by Stratham et al. (1994). The mean scores are shown in Table 53.

Table 53.  
Consideration of Future Consequences (CFC) scores

Grouping	Mean CFC score
Safety Practitioners	20.41
Managers	21.60
Accident Subjects	23.34
Slips	21.50
Trips	20.94

Accident Subjects' CFC scores were the highest (mean score 23.34) and this score was tested against the mean scores for Safety Professionals and Managers and was found to be significantly higher in both cases (Safety Professionals  $t(126) = -6.83$   $p < .001$ , Managers  $t(123) = -2.97$   $p = .004$ ). The type of accident had no effect on the mean CFC score.

## DISCUSSION

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The results will be discussed in several sections. After summarising the research aims and objectives and the key findings, I will briefly compare the results obtained with those that I predicted for six of the sentence structural dimensions and make comments on the other eight. This will be followed by a more detailed consideration of each of the structural dimensions in which I will expand and develop the meaning of the results, compare them to previous relevant research and comment on their theoretical and practical relevance to counterfactual thinking and accident prevention.

### **Research Aims**

This study explored the counterfactual, prevention and causal thoughts of three respondent groups (Safety Professionals, Managers and Accident Subjects) following an occupational slip or trip accident to Mary, a supermarket checkout operator. The accident was presented to the respondents in the form of a scenario and their counterfactual, prevention and causal thoughts were captured through the completion of appropriate stimulus sentence stems, for example the counterfactual thought was recorded by asking the respondent to complete an ‘if only...’ sentence. Previous research identified a number of different structural dimensions to counterfactual thought, and this study has applied seven of the most relevant ones and seven new ones to an occupational slip or trip accident. Thirteen of these 14 dimensions have also been extended for the first time to two closely allied areas associated with occupational accidents, namely how respondents thought the accident could have been prevented and what the cause of the accident was. One dimension, that of the direction of the alternative outcome, was only relevant to the counterfactual sentence.

Safety Professionals were considered likely to have had greater experience in the investigation of slip and trip accidents and they should have been more aware of the appropriate legal requirements than Managers or Accident Subjects, therefore I anticipated that Safety Professionals' counterfactual, prevention and causal thoughts would differ from those of Managers or Accident Subjects, being based more closely on the application of legal duties and responsibilities.

## **Key findings**

### **Summary of the key results for the counterfactual sentences**

- Respondents' job group was a key factor in determining the type of antecedent associated with counterfactual, prevention and causal thoughts.
- The type of accident appeared to have a bigger influence on the counterfactual completion than did the level of detail or the severity of injury.
- The 'specific subject' of the counterfactual sentence was influenced by both the Respondents' job group and the type of accident.
- Based on the modal responses Accident Subjects focused on Mary's lack of attention whereas both Safety Professionals and Managers referred to the presence of the hazard. Slip accidents focused on a lack of warnings, while trips accidents were more likely to refer to the presence of the hazard.
- The counterfactual sentences changed people's behaviours more than they changed physical aspects of the environment / situation or procedures / processes.
- All respondents completed the counterfactual sentence to bring about a better outcome, described as an upward counterfactual.
- Different outcomes were most likely to be attained by improving the likelihood that the desired outcome being achieved (fourth order exception).
- Inactions were changed by the addition of a new antecedent by all respondents irrespective of job group or accident type.

- The level of detail provided to respondents was directly related to the selection of an antecedent which was ‘known’ to or ‘inferred’ to have been by the respondent. Minimum detail led to the use of an ‘inferred’ antecedent whilst maximum detail led to the selection of a ‘known’ antecedent.
- Items which were either directly observable or changing were used most commonly by all respondents.
- Matters ‘specific’ to the accident were changed more than ‘general’ matters.
- The type of accident influenced the temporal location of the antecedent selected to be changed. Antecedents relating to the day of the accident (proximal) were selected for Mary’s slip accident whereas antecedents relating to events prior to the day of the accident (distal) were selected for Mary’s trip.
- Safety Professionals and Managers focused their counterfactual sentence on ‘situational’ antecedents whereas Accident Subjects focused on ‘personal’ antecedents.
- Accident Subjects were more likely than Safety Professionals or Managers to spontaneously identify the actor from the scenario in their counterfactual sentence.
- Antecedents over which the scenario actor had some degree of control were used in the counterfactual sentence more frequently than uncontrollable ones.

### **Comparing the predicted and actual results obtained for the existing structural dimensions**

Safety Professionals, Managers and Accident Subjects were expected to show differences in the way that they completed the counterfactual, prevention and causal sentences and this was based on their different roles and involvement with the scenario accident. These differences were expected to be focused on six of the 14 structural dimensions as set out in Tables 1,2 and 3.



These six antecedents were (1) the temporal location of the selected antecedent (timescale), (2) whether the antecedent was static or dynamic, (3) whether it was general or specific to the scenario, (4) whether it was known to exist by the respondent or was inferred to have existed, (5) whether it was personal or situational and was (6) either a procedure, a behaviour or a physical item (domain).

Full comparisons of the predicted responses against those actually obtained from the respondents are set out in Tables 54 to 59 with a brief comment. Predictions were not made in respect of all 14 structural dimensions, only those six where it was anticipated that there would be a difference between the respondents' job groups or the type of sentence (counterfactual, prevention or causal).

In summary, as predicted the structural dimensions of the sentences were influenced not only by the respondents' job group but also by the type of accident, however there was little previous research to suggest how this might manifest itself. The initial predictions in Tables 1, 2 and 3 were based on the respondents' job groups and did predict differences based on the type of accident so were expected to apply to both slips and trips. As can be seen from Tables 54 to 59 the influence of the accident type is partially strong for certain structural dimensions, such as temporal location and the use of known or inferred antecedents, but the effect is not constant across respondents' job group or the type of sentence, which makes it more complex to interpret the overall effects.

#### **Safety Professionals - Predicted and actual results**

The predicted responses for Safety Professionals were based on the expected influence of the legal framework on their thinking which would tend to focus their counterfactual thoughts on safe systems of work and procedures, which in turn would lead them to make changes to antecedents which were temporally distal to the accident, be more general and static in nature, be based on the situation, and the antecedent would be inferred to have existed rather than be known from the scenario details provided as part of the study.

These counterfactual predictions were only supported in Tables 54 to 59 for both slips and trips in respect of being based on situational antecedents. The predicted

results were present for either slips or trips (but not both) for the temporal location of the antecedent and whether it was known or inferred, whereas the predicted structural element was not found at all for three dimensions, those being (1) the use of a general (2) static antecedent based on (3) procedures.

The structure of Safety Professionals' preventive thinking was found to fully match that predicted in Tables 54 to 59 in respect of its focus on systems of work / procedures and using situational antecedents. The predicted structural element was present for either slips or trips (but not both) for the use of static, general and known antecedents. The prediction that Safety Professionals would select preventative antecedents proximal to the accident (related to the day the accident occurred) was not supported by the results.

The predicted results for Safety Professionals causal sentences was found for both slips and trips in respect of the temporal location being distal to the accident, situational and related to systems of work. Whilst the predicted structural element was present for slip or trips (but not both) for the antecedents being static, general and inferred.

Table 54. Safety Professionals  
 Predicted and actual results for the temporal location of the antecedent (timescale)

Sentence type	Predicted results	Actual results for slip accident	Actual results for trip accident
Counterfactual sentence	Distal to the accident. Before the day of the accident	Proximal Stage D hazard on the floor, Cleaner notified but not removed	Distal Before Stage A - before the day of the accident
Prevention sentence	Proximal to the accident. On the day of the accident	Distal Before Stage A - before the day of the accident	Distal Before Stage A - before the day of the accident
Causal Sentence	Distal to the accident. Before the day of the accident	Distal Before Stage A - before the day of the accident	Distal Before Stage A - before the day of the accident

Table 55. Safety Professionals  
 Predicted and actual results for the use of dynamic or static antecedents

Sentence type	Predicted Results	Actual results for slip accident	Actual results for trip accident
Counterfactual sentence	Static	Dynamic	Dynamic
Prevention sentence	Static	Both dynamic and static	Both dynamic and static
Causal sentence	Static	Static	Both dynamic and static

Table 56. Safety Professionals  
 Predicted and actual results for the use of case specific or general antecedents

Sentence type	Predicted results	Actual results for slip accident	Actual results for trip accident
Counterfactual sentence	General	Specific	Specific
Prevention sentence	Specific	Both specific & general	General
Causal sentence	General	Both specific & general	General

Table 57. Safety Professionals  
 Predicted and actual results for the use known or inferred antecedents

Sentence type	Predicted results	Level of detail provided	Actual results for slip accident	Actual results for trip accident
Counterfactual sentence	Inferred	Minimum	Inferred	Inferred
	Inferred	Maximum	Known	Known
Prevention sentence	Inferred	Minimum	Inferred	Inferred
	Inferred	Maximum	Inferred	Inferred
Causal sentence	Inferred	Minimum	Inferred	Inferred
	Inferred	Maximum	Inferred	Inferred

Table 58. Safety Professionals  
 Predicted and actual results for the use of personal / situational antecedents

Sentence type	Predicted results	Actual results for slip accidents	Actual results for trip accidents
Counterfactual sentence	Situational	Situational	Situational
Prevention sentence	Situational	Situational	Situational
Causal sentence	Situational	Situational	Situational

Table 59. Safety Professionals  
 Predicted and actual results for the domain of the specific subject of the sentence

Sentence type	Predicted results	Actual results for slip accident	Actual results for trip accident
Counterfactual sentence	System of work / procedure	Behaviour	Behaviour
Prevention sentence	System of work / procedure	System of work / procedure	System of work / procedure
Causal sentence	System of work / procedure	System of work / procedure	System of work / procedure

### **Managers - Predicted and actual results**

Managers' responses were predicted based on them having some knowledge of the legal requirement for occupational accidents, not as much as Safety Professionals but more so than Accident Subjects. The predicted and actual results for Managers are presented in Tables 60 to 65.

In their counterfactual sentences the predicted structures were found for both slips and trips in selecting antecedents which were specific to the accident and related to the behavioural domain, whilst the predicted structural element was present for one or other of the accident types for the use of antecedents which were proximal to the time of the accident, were dynamic and personal. The results did not support the predicted structural dimensions for the use of known antecedents under minimal levels of detail but did for maximum detail scenarios.

None of the predictions relating to the structure of Managers' preventative thinking were supported fully by the results. There was some degree of support (either for slips or trips) for five of the six predicted dimensions, those being the use of proximal, dynamic, known, case specific and behavioural antecedents.

There was no support for the prediction that Managers would use personal antecedents as they were most likely to use situational ones when preventing Mary's accident.

Similarly the predicted structure of Managers' causal sentences were not found in their results for both slips and trips. Personal antecedents were predicted to be used but situational ones dominated. For the other structural dimensions the predicted dimension was used for one or other of the accident types, or was used along with other options. The level of detail provided to Managers influenced the use of known or inferred antecedents, such that when minimal detail was provided inferred antecedents were selected most commonly.

Table 60. Managers  
 Predicted and actual results for the temporal location of the antecedent  
 (timescale)

Sentence type	Predicted results	Actual results for slip accident	Actual results for trip accident
Counterfactual sentence	<b>Proximal</b> to the accident. (On the day of the accident)	<b>Proximal</b> Stage D hazard on the floor, Cleaner notified but not removed	Both <b>Proximal</b> and <b>distal</b>
Prevention sentence	<b>Proximal</b> to the accident. (On the day of the accident)	Both <b>Proximal</b> and <b>distal</b>	<b>Distal</b> Before Stage A - before the day of the accident
Causal sentence	<b>Proximal</b> to the accident. (On the day of the accident)	<b>Proximal</b> Stage D hazard on the floor, Cleaner notified but not removed	<b>Distal</b> Before Stage A - before the day of the accident

Table 61. Managers  
 Predicted and actual results for the use of dynamic or static antecedents

Sentence type	Predicted results	Actual results for slip accident	Actual results for trip accident
Counterfactual sentence	Dynamic	Dynamic	Dynamic and static
Prevention sentence	Dynamic	Dynamic and static	Dynamic and static
Causal sentence	Dynamic	Dynamic and static	Dynamic and static

Table 62. Managers  
 Predicted and actual results for the use of case specific / general antecedents

Sentence type	Predicted results	Actual results for slip accident	Actual results for trip accident
Counterfactual sentence	Specific	Specific	Specific
Prevention sentence	Specific	Specific	Both specific and general
Causal sentence	Specific	Both specific and general	Both specific and general

Table 63. Managers  
 Predicted and actual results for the use of known or inferred antecedents

Sentence type	Predicted results	Level of detail	Actual results for slip accident	Actual results for trip accident
Counterfactual sentence	Known	Minimum	Inferred	Inferred
	Known	Maximum	Known	Known
Prevention sentence	Known	Minimum	Inferred	Inferred
	Known	Maximum	Both inferred & known	Both inferred & known
Causal sentence	Known	Minimum	Inferred	Inferred
	Known	Maximum	Both inferred & known	Inferred



Table 64. Managers  
 Predicted and actual results for the use of personal or situational antecedents

Sentence type	Predicted results	Actual results for slip accident	Actual results for trip accident
Counterfactual sentence	Personal	Both personal & situational	Both personal & situational
Prevention sentence	Personal	Situational	Situational
Causal sentence	Personal	Situational	Situational

Table 65. Managers  
 Predicted and actual results for the domain of the specific subject of the sentence

Sentence type	Predicted results	Actual results for slip accident	Actual results for trip accident
Counterfactual sentence	Behaviour	Behaviour	Behaviour
Prevention sentence	Behaviour	Behaviour & system of work	Behaviour & system of work
Causal sentence	Behaviour	Behaviour	Behaviour, system of work & physical item

### **Accident Subjects - Predicted and actual results**

Accident Subjects' responses were predicted on the basis that they were least likely to be influenced by legal considerations and would respond in ways that might reflect the more typical counterfactual approaches identified in earlier literature.

Accident Subjects' predicted and actual results are presented in Tables 66 to 71.

In their counterfactual sentences Accident Subjects' results supported the predicted structural approach across both types of accident in selecting specific and behavioural antecedents. The predicted counterfactual structure was used for one or other of the accident types in respect of using proximal, dynamic and personal antecedents. Accident Subjects demonstrated an interesting response to the manipulation of the level of detail provided in the scenario. They selected an inferred antecedent for slip accidents under both minimum and maximum levels of detail.

The results of Accident Subjects' prevention sentences were as predicted in respect of three of the structural dimensions, those being the use of antecedents which were dynamic, specific and behavioural. For the other three structural dimensions the predicted results were found for one type of accident or at least included in one or both of the accident types. The minimum level of detail resulted in inferred antecedents being used for both slips and trips but this was not the predicted result.

Accident Subjects' causal results matched the predictions for three structural dimensions, those being the use of proximal, specific and behavioural antecedents. Again the remaining three dimensions (dynamic, known and personal) were used in connection with one or both types of accident but usually in combination with other options. As with their prevention sentences inferred antecedents were preferred under minimal detail conditions.

Table 66. Accident Subjects  
 Predicted and actual results for the temporal location of the antecedent  
 (timescale)

Sentence type	Predicted results	Actual results for slip accident	Actual results for trip accident
Counterfactual sentence	<b>Proximal</b> to the accident. On the day of the accident	<b>Proximal.</b> Stage D hazard on the floor, Cleaner notified but not removed	<b>Distal</b> Before Stage A - before the day of the accident
Prevention sentence	<b>Proximal</b> to the accident. On the day of the accident	<b>Proximal.</b> Stage D hazard on the floor, Cleaner notified but not removed	Both <b>Distal</b> & <b>Proximal.</b> Before the day of the accident at Stage C & D
Causal sentence	<b>Proximal</b> to the accident. On the day of the accident	<b>Proximal.</b> Stage C hazard on floor, D hazard on the floor, Cleaner notified but not removed	<b>Proximal</b> Stage C hazard on floor

Table 67. Accident Subjects  
 Predicted and actual results for the use of dynamic / static antecedents

Sentence type	Predicted results	Actual results for slip accident	Actual results for trip accident
Counterfactual sentence	Dynamic	Dynamic	Both dynamic & static
Prevention sentence	Dynamic	Dynamic	Dynamic
Causal sentence	Dynamic	Both dynamic & static	Both dynamic & static

Table 68. Accident Subjects  
 Predicted and actual results for the use of case specific / general antecedents

Sentence type	Predicted results	Actual results for slip accident	Actual results for trip accident
Counterfactual sentence	Specific	Specific	Specific
Prevention sentence	Specific	Specific	Specific
Causal sentence	Specific	Specific	Specific

Table 69. Accident Subjects  
 Predicted and actual results for the use of known or inferred antecedents

Sentence type	Predicted results	Level of detail	Actual results for slip accidents	Actual results for trip accidents
Counterfactual sentence	Known	Minimum	Inferred	Both known & inferred
	Known	Maximum	Inferred	Both known & inferred
Prevention sentence	Known	Minimum	Inferred	Inferred
	Known	Maximum	Known	Both known & inferred
Causal sentence	Known	Minimum	Inferred	Inferred
	Known	Maximum	Known	Both known & inferred

Table 70. Accident Subjects  
 Predicted and actual results for the use of personal / situational antecedents

Sentence type	Predicted results	Actual results for slip accidents	Actual results for trip accidents
Counterfactual sentence	Personal	Both personal & situational	Personal
Prevention sentence	Personal	Both personal & situational	Both personal & situational
Causal sentence	Personal	Both personal & situational	Both personal & situational

Table 71. Accident Subjects  
 Predicted and actual results for the domain of the specific subject of the sentence

Sentence type	Predicted results	Actual results for slip accidents	Actual results for trip accidents
Counterfactual sentence	Behaviour	Behaviour	Behaviour
Prevention sentence	Behaviour	Behaviour	Behaviour
Causal sentence	Behaviour	Behaviour	Behaviour

**General comments on the results of the other structural dimensions of the sentences**

The results for the remaining structural dimensions referred to in Tables 1, 2 and 3 (predicted responses for Safety Professionals, Managers and Accident Subjects) and not covered in the preceding section will be briefly reviewed.

### **Counterfactual direction**

As predicted all respondents completed their counterfactual sentences in an upward direction, irrespective of the respondents' job group, the type of accident, the severity of the injury or the level of detail provided.

### **Addition or subtraction**

It was predicted that each of the respondent job groups would add antecedents to the event sequence for their counterfactual and prevention sentences and subtract antecedents for their causal sentence, and the results in Tables 12, 13 and 14 support this. The only subtle difference was found in Accident Subjects' responses to the counterfactual and causal trip sentences where the modal responses were as predicted but their use was not statistically significant.

### **Exceptionality**

The use of exceptional or normal antecedents was predicted to be constant across the respondents' job groups but to vary according to the type of sentence being considered, with counterfactual and causal thinking utilising exceptional antecedents and more normal antecedents being used in connection with preventative thinking.

Norm Theory has been refined in this study by developing a classification for the type of exceptional event that the respondents changed in their counterfactual thoughts. Exceptional events are selected for counterfactual mutation over routine or normal events so the antecedent selected by respondents in this study must be considered to be unusual or exceptional in some way. The exceptional event designed in to the scenario (Mary's decision to work) was not the one selected most commonly (Tables 15 and 46), but some other antecedent in the sequence of events that led to her slip or trip accident. It is those other antecedents that have been analysed to identify different categories of exceptional events. These are presented as a refinement of Norm Theory and a classification scheme for exceptional events has been developed. This is discussed more fully when I review the results of the normality of the sentences later in the discussion section.

In light of the above definition of what is normal or exceptional the predicted results for the counterfactual and causal sentences were both supported to some degree by the actual results, but not exactly as anticipated. Mary's decision to work and cover for her friend who was on holiday, which was the exceptional event designed into the scenario, was not selected routinely as expected and predicted by previous research. Other aspects of the situation were changed in keeping with the extended definition of exceptional events developed for this study. With regard to the prediction that the prevention sentences would be associated with normal or routine antecedents, the result did not support this. It would seem that respondents sought to prevent Mary's accident by improving an existing situation.

### **Spontaneous identification of the scenario actor and to whom the sentence referred**

When the research scenario was piloted the initial results indicated that about 50% of respondents made a spontaneous reference to a scenario actor in their sentences. From a functional perspective it was anticipated that a greater number of respondents would have been specific about who was in a position to have brought about a different outcome, prevent the accident or be identified with the cause. Of the three respondent groups this was perhaps most likely by Safety Professionals, whose role as enforcement officers can involve attribution of responsibility from a legal perspective. The results in Tables 40, 41 and 42 show that respondents did not make a spontaneous reference to a scenario actor.

No predictions were made as to which of the scenario actors would be selected but the results indicate some interesting patterns. Safety Professionals referred to the Supervisor most commonly in their counterfactual sentences but to the Employer in their prevention and causal sentences. Managers referred to the Supervisor most commonly in all three types of sentence, whilst Accident Subjects referred to Mary in their counterfactual sentences, the Supervisor and Mary when completing their prevention sentence, and to other workers as being causally connected to the accident.

### **The specific subject of the sentence**

No predictions were made as to what the specific subject of the sentences might relate to.

The results in Tables 46, 47 and 48 indicate that Safety Professionals' prevention and causal sentences related mainly to systems of work and procedures whereas their counterfactual sentences tended to refer to inadequate warnings, failing to clear up, and the presence of the hazard. Managers showed an overall tendency to refer to either a lack of warnings or the presence of the hazard in their sentences. Accident Subjects' responses tended to refer to broadly similar antecedents as Safety Professionals and Managers for their prevention and causal sentences, but it was in their counterfactual sentences that Accident Subjects selected different antecedents referring to Mary's lack of attention or her decision to work on that day covering for her friend.

### **Discussion on the results of the structural dimensions of the sentences**

I will now discuss in more detail the results for the 14 structural dimensions and will expand and develop the meaning of the results, comparing these with previous relevant research and comment on their theoretical and practical relevance to counterfactual thinking and accident prevention. I will start by making some general comments applicable to this study and then make some specific comments on each of the structural dimensions in turn.

#### **General comments**

There has been some debate in the counterfactual literature as to whether counterfactual thoughts identify a causal relationship between the antecedent and the outcome or whether they represent a missed opportunity to have prevented the outcome. Both are possible but the actual use may be context dependent. In this study the context was one of an occupational accident in which people naturally seek to understand the cause and prevent similar accidents in the future. On that basis counterfactual thoughts might be used equally to identify a cause and prevent future occurrences, but the role that people play might also influence the way that they use counterfactual thoughts and this would be reflected in their structure.



Three real life roles associated with an occupational accident were tested in this study, Safety Professionals, Managers and Accident Subjects.

Figure 4 illustrates the method used for a simple analysis of the subject of respondents' sentences. In that example the counterfactual and prevention sentences were more comparable than were the counterfactual and causal sentences. After an accident it would seem that the respondents think about its causes in a different way to how it could have been prevented or how it could have been different. When it is expressed in that way the similarity in the purpose of counterfactual thoughts and prevention thoughts is more apparent. Although bringing about a different outcome has two possible directions, only an upward direction was used in this study and bringing about a better outcome equates to preventing an accident. Preventing something from happening has as its aim the complete suppression of all risks of the unwanted outcome from occurring, and this was found in the counterfactual sentences which sought to completely undo the outcome of Mary's accident irrespective of its seriousness (degree of injury).

Counterfactual and prevention thinking are more alike in their overall purpose. After looking back at the antecedent sequence and selecting a suitable one, they both utilise a forward looking simulation heuristic to evaluate the power of that antecedent to bring about a different outcome or prevent the outcome. It is in this way that I suggest they differ from causal thinking. Whilst this also involves a backward look at the antecedent sequence its purpose remains backward looking and is limited to the identification of the most suitable causal antecedent. Whilst there must be some forward looking element to ensure there is a cause effect link between the antecedent and the outcome, I suggest that is more of a feedback loop than a forward looking simulation. It is as though identifying a cause is half of the process necessary to make a counterfactual or prevention thought. These concepts are illustrated in Figures 5, 6, 7 and 8.

Figure 5. Schematic representation of counterfactual thinking

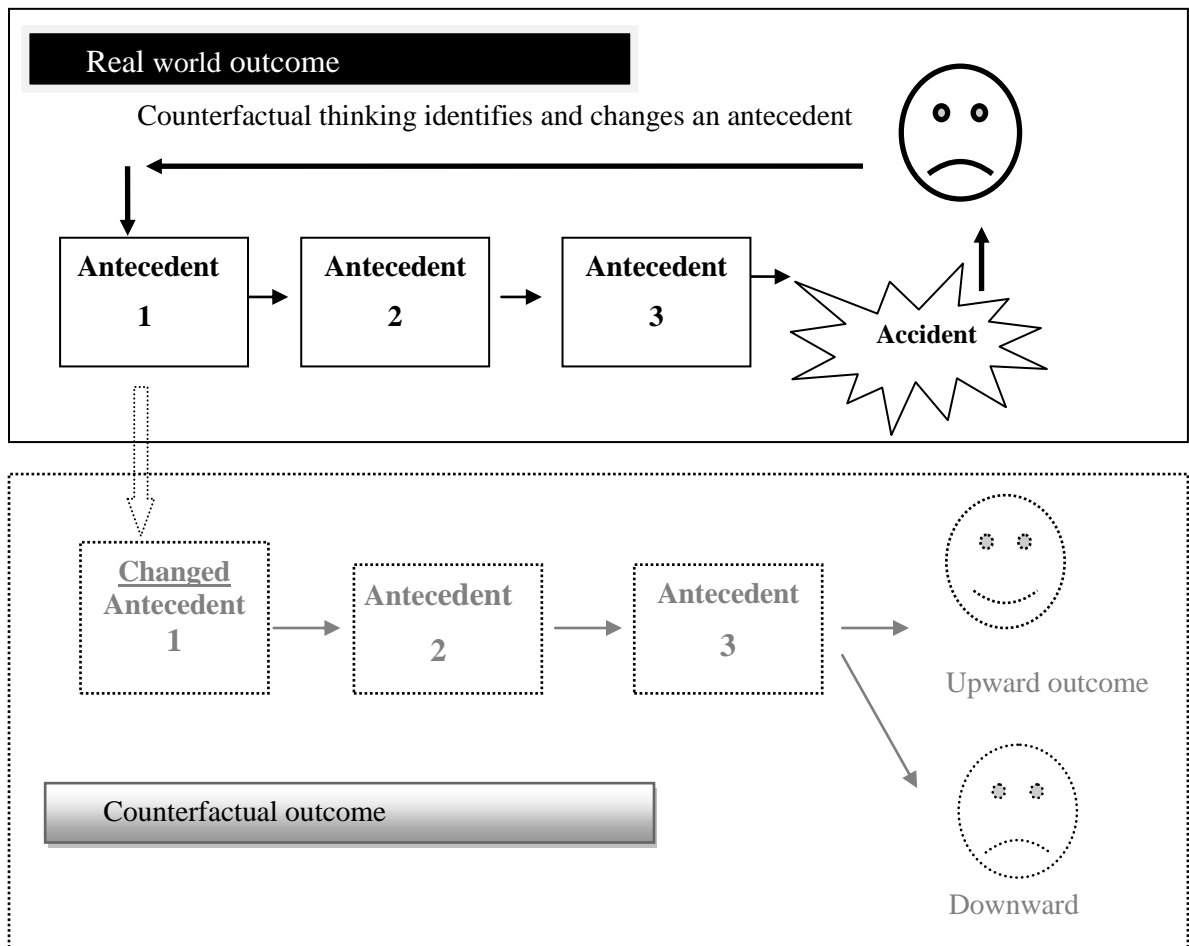


Figure 6. Schematic representation of outcome based preventative thinking

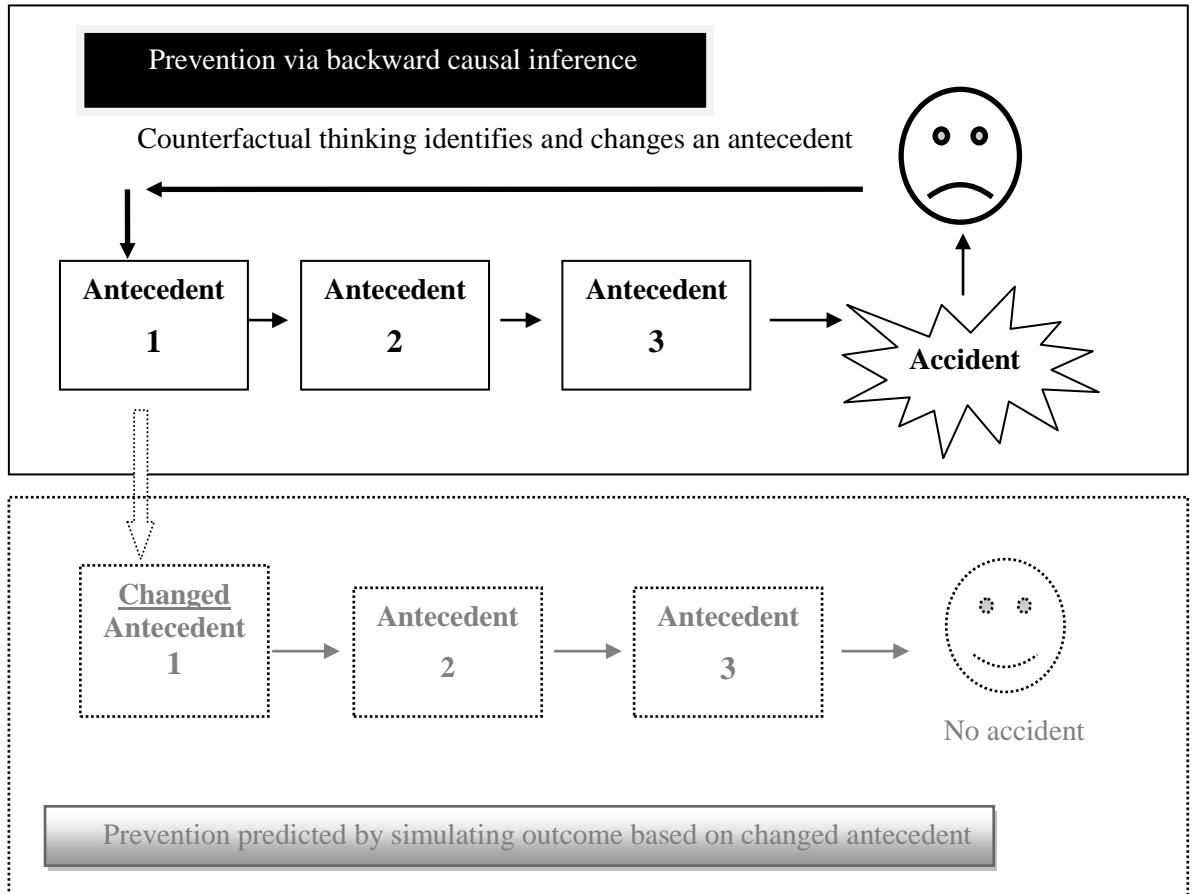


Figure 7. Schematic representation of antecedent based preventative thinking

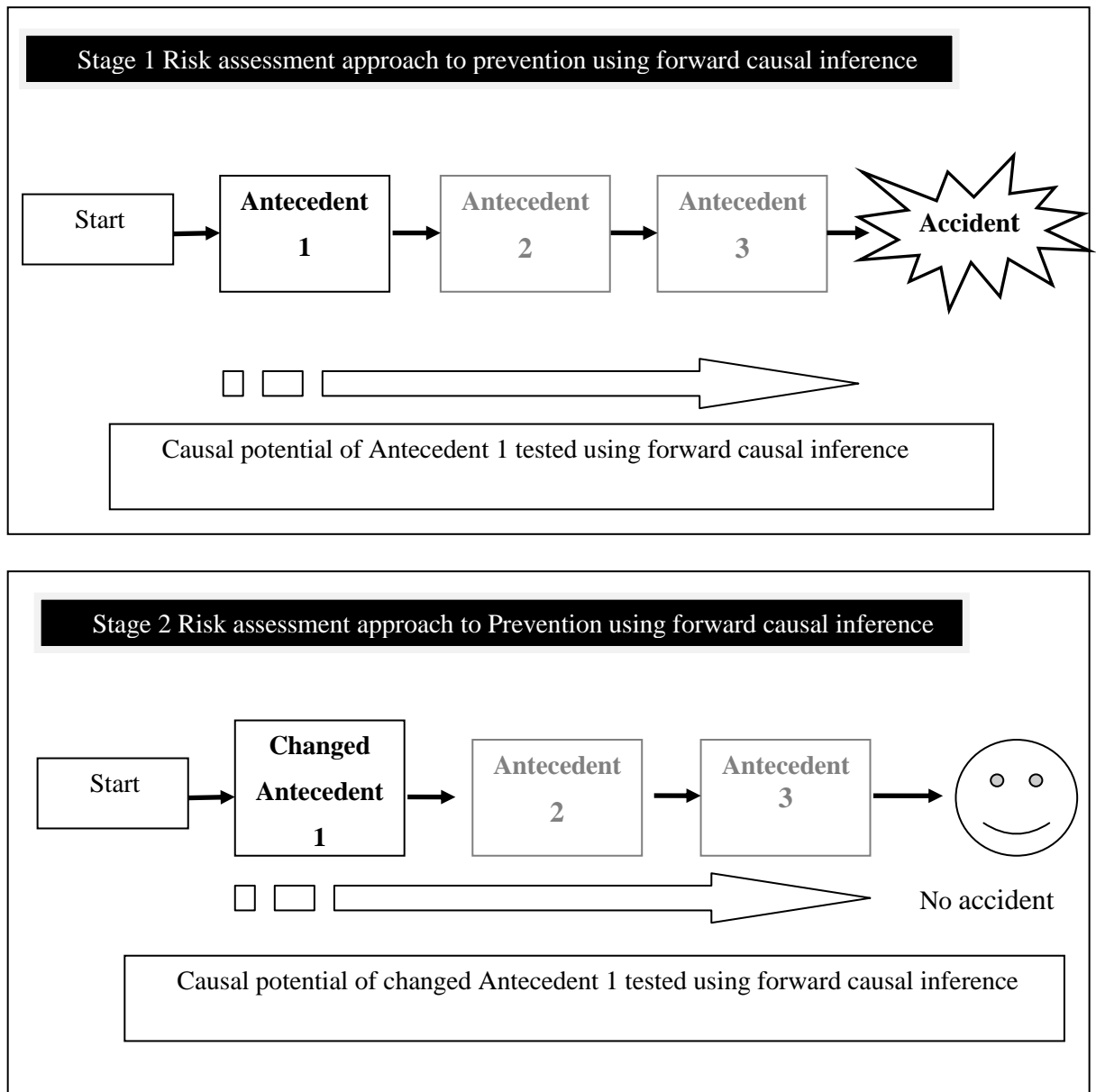
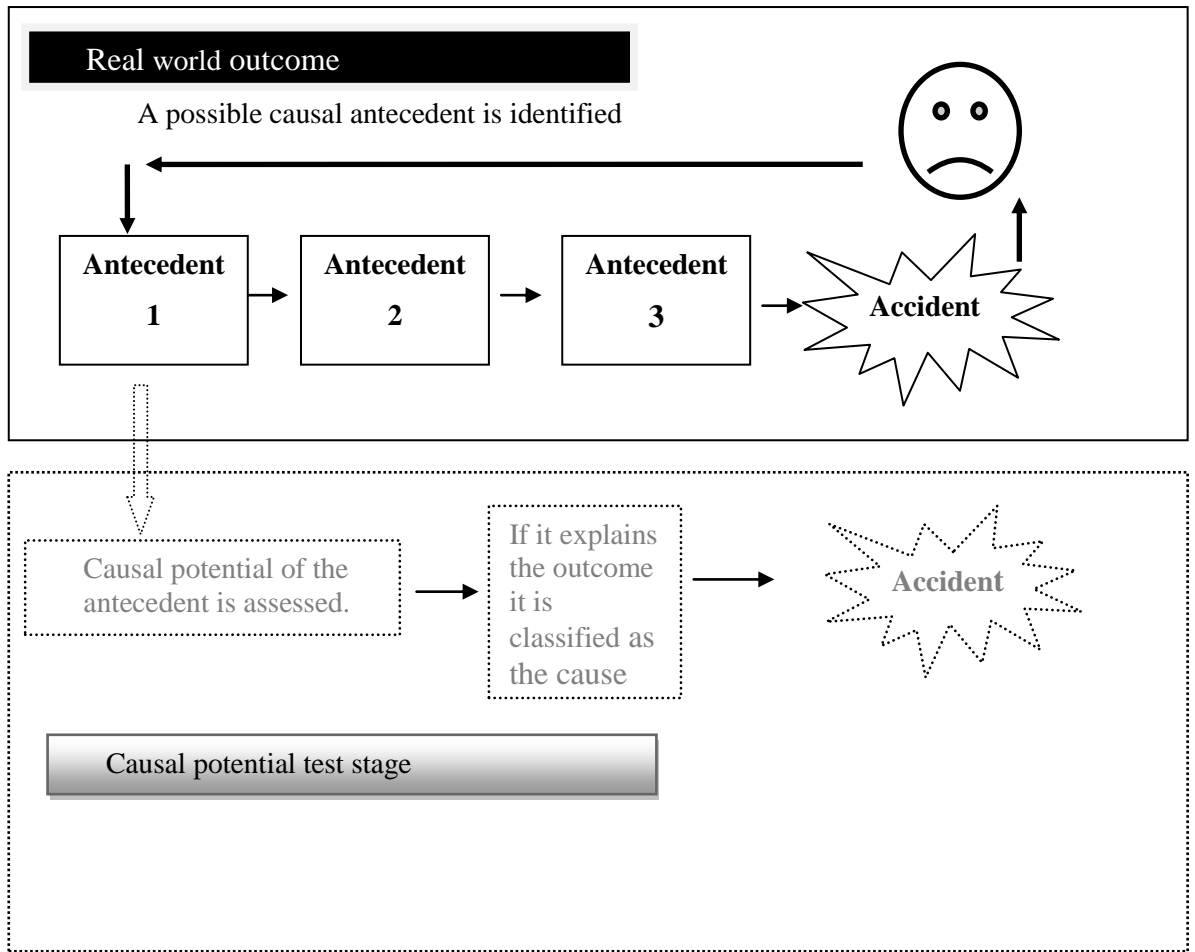


Figure 8. Schematic representation of causal thinking



## **Specific comments on the existing structural dimensions**

### ***Counterfactual direction***

The directional dimension of the sentence was only relevant to the counterfactual sentences as they are the only ones in which an alternative outcome could vary by being better or worse than the original outcome. The prevention sentence starts with an assumption that a better outcome will be achieved, whereas the causal sentence does not address the future outcome at all but simply looks back as the antecedents and seeks to identify the cause. The remaining 13 structural dimensions were applicable to all three types of sentence.

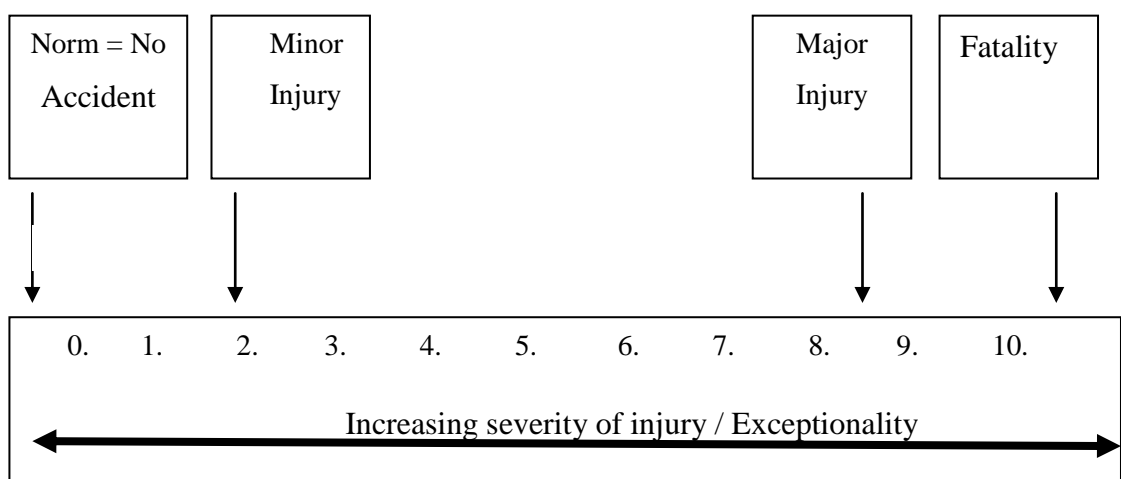
Counterfactual ‘if only...’ thoughts are said to offer the potential for two alternative outcomes, either changing things for the better or worse outcome. Better outcomes are referred to as having an upward direction, whereas counterfactual thoughts bringing about a worse outcome are referred to as having a downward direction. It was with that in mind that the study was designed to ensure that a better or worse outcome could be made for both the minor or serious injury versions of the scenario (see Figure 3), theoretically a counterfactual sentence could leave the outcome unchanged and these types thoughts are often illustrated as using the phrase ‘Even if...’ but this type of thought was not included in this study.

Counterfactual thoughts tend to restore unusual or unexpected events to their default or normal status. Unwanted outcomes such as being injured in a slip or trip accident should be changed in such a way that the outcome (accident) is either avoided or the effect (injury) is minimised. Although slips and trips are commonly reported to the HSE and local authorities, and are the most frequent cause of major injuries such as fractures (HSE, 2013a), they are very rare occurrences in relation to the number of working people and the number of steps taken in an occupational setting. The rarity of the event and the unwanted injury are sufficient to invoke people’s counterfactual thought processes and in this study all (100%) respondents from all three job groups (Safety Professionals, Managers and Accident Subjects) completed the counterfactual ‘If only...’ sentence to bring about a better outcome (an upward counterfactual). This suggests that the respondents’ default norm was one in which the accident was avoided completely. Not a single respondent

completed their counterfactual sentence in a way where the accident still happened but where Mary’s injury was reduced in severity or she was uninjured, although that approach was open to respondents and would still have been an upward counterfactual. Every respondent’s counterfactual sentence sought to bring about a better outcome and this is not unexpected given the particular setting of this study. People naturally seek to avoid accidental injury, whether by virtue of their specific roles and responsibilities (Safety Professionals and Managers) or simply because of an innate desire to survive which drives our basic responses to keep away from environments and situations where we could be physically or emotionally harmed. There was no social imperative inherent in this study which would have naturally led respondents to bring about a worse outcome, and they were not asked to commiserate, reassure, or sympathise with Mary, so a strong response to bring about a better outcome was expected.

If injury severity is represented on a 10-point scale (Figure 3), both a minor injury at position 2 and a major injury at position 8 have scope to be changed for a better or worse outcome.

Figure. 3 Design of the scenario allowing for better and worse outcomes.



Better outcomes as reported in this study require the injury severity to be reduced (moved to the left) on the scale from the original starting point. A two- point reduction reverts a minor injury to the desired norm of no injury (0 on the scale),

whereas a major injury at point 8 requires a greater movement on the scale (minus eight steps) to revert this to the normal situation.

If a counterfactual mutation produced a linear response, that is an equal reduction in injury severity from any given starting point, a two-point reduction in severity would reduce a severe injury at point 8 to one at point 6 but would change a minor injury to a position where the accident would have been avoided altogether for the same amount of counterfactual effort. However this is not what these results indicate. The same counterfactual change is applied to bring about the expected norm no matter how far along the injury scale they start from. The minor injury was changed by minus two steps, but the major injury was changed by minus eight steps to bring about the non-injury norm using the same counterfactual approach.

The counterfactual response may be described as being asymmetrical and it highlights that under the approach adopted by respondents in this study the norm (no injury) is fixed in their minds and the counterfactual change re-established the norm irrespective of the severity of the original outcome. Of course respondents in this study were simply 'undoing' the accident as presented to them in the scenario and were not making comparisons with a more or less severe outcome, but nevertheless all respondents approached their counterfactual thoughts with the aim of completely undoing the accident. This differs from the approach suggested in the often-used example of a student who gets bad exam grades after drinking the night before (Roese & Olson, 1995). In that situation the counterfactual alternative is also a better outcome with improved grades, but it does not imply that the student would get the best possible outcome (Grade A pass), merely a better grade or perhaps returning to their normal or expected grade. In an accident scenario the best possible outcome is the expected norm.

This study has established that the norm brought to mind following an occupational slip or trip is the complete avoidance of the accident. Although both minor and major injury outcomes could be mutated to bring about a better (upward) or worse (downward) outcome, only one direction was used by all respondents and that was an upward change preventing Mary's accident from occurring. From a functional basis, avoiding accidents and injury completely is more beneficial than accepting



that an accident may occur but seeking to minimise its severity, although this approach does have a place in certain areas of risk management (for example wearing of seat belts and the provision of air bags in cars) it is not one adopted by the respondents in this study. The outcome of an accident can be unpredictable, so it makes sense from a functional perspective to ensure that the route to the counterfactual outcome is sufficiently robust to account for the wide range of possible real world outcomes and still achieve the desired norm. In this sense counterfactuals employed after a slip or trip, and probably other accident situations, are more of an 'all or nothing' approach.

It should come as no surprise that Safety Professionals who are highly familiar with the detail of health and safety legislation should use this as a framework for their counterfactual thoughts, but it was less expected from Managers. Certainly there would be little expectation that general employees (Accident Subjects) would be aware of legal requirements, yet there was no variation in the responses of any of the job groups to employ upward counterfactuals to bring about a better outcome for Mary. In this study respondents in the Manager and Accident Subject groups were not specifically asked about their knowledge of health and safety law so it cannot be ruled out that they had some knowledge. However, I suggest that this is a less likely explanation than that people have a generally held belief and expectation, based on widely experienced personal and social norms, that accidents are unwanted and to be avoided. This makes perfect sense from a functional psychological perspective.

On this basis the results presented by the respondents for the counterfactual direction element of the sentence are as predicted in Tables 1, 2 and 3, and I suggest consistent with general expectations learnt from personal experience of work and life in general. In addition, the specific setting of the scenario where an injury has been sustained and the active prompting of respondents for a counterfactual outcome would make a better outcome more available. If the setting of the scenario were to be altered to one in which Mary narrowly missed being seriously injured the framing effect would be shifted and respondents might be more inclined towards making a comparison to a worse outcome. Similarly had the respondents

been asked to console Mary after her accident downward counterfactuals might well have been recorded. The respondents' roles and the specific setting of this research scenario led to the universal adoption of counterfactuals highlighting a better outcome, but it is easy to appreciate how a slight change in the social situation where respondents' roles were different could influence the motivation for counterfactual thinking which could lead to a reversal of the counterfactual direction presented here.

### *Acton or inaction effects*

In their counterfactual thoughts Safety Professionals, Managers and Accident Subjects all reported a strong tendency towards the selection and mutation of an inaction to restore the status quo. These results are consistent with the findings of Davis et al. (1995) who also reported that counterfactual thinking focused on inaction, following real life events. However, these results do not follow the expected mutation of actions proposed by Norm Theory which suggests that actions are more likely to be perceived in everyday social settings as being more unusual (exceptional) and therefore more likely to be changed counterfactually.

Roese and Olsen (1995) proposed that the social situation had an important effect in determining whether an action or an inaction was changed to bring about the desired outcome and the current study had an occupational setting in which statutory standards apply. The law is framed in such a way as to establish a duty on employers to ensure, so far as is reasonably practicable, the health, safety and welfare of their staff (HMSO, 1974) and this establishes an expectation that active steps are taken to comply with that duty and prevent accidents. Against this background an accident suggests there has been a failure to comply with the legal duty and implies that the necessary actions have not been taken, and this is translated in counterfactual thoughts to the mutation of inactions and that has been demonstrated in this study. The particular social setting of this study contains a strong implication that actions are expected and by default that inaction is unexpected and unacceptable. This expectation arises from two sources, the first source is the legal background which sets out duties on employers and staff to act in ways that comply, and the second source is the generally implied expectation that

success (avoiding accidents in this case) arises from planned actions (McGill, 1989), which implies that failures (accidents) arise from not having taken the required actions (inactions).

However, it does not follow that all accidents result from inaction even in the slip and trip category. The exact nature of the circumstances is likely to exert a powerful influence on the action / inaction effect. As far as the mutation of actions is concerned in terms of occupational slips and trips, I suggested that they are only considered after all possible inactions have been excluded. Take for example a variation of the research scenario in which standard preventative measures had been taken, and Mary had ignored warning signs and the advice of a colleague and chose to walk through the milk. It seems very likely under those circumstances that a deliberate action would override any possible inaction and be selected for mutation.

It is likely that inactions will normally be selected for counterfactual mutation for a wide range of occupational accidents, except where there is a deliberate action by an individual which is considered to be causal and overrides the inaction effect. This is in keeping with the general principles of identifying causes in law. Hart and Honore (1985) discussed tracing causes back through the antecedent chain to the 'sine qua non' (but for event), but that search does not go past a deliberate human action.

Both the counterfactual and causal sentences resulted in an inaction effect, so were more alike, whereas the prevention sentence showed a strong propensity for the use of actions to prevent Mary's accident.

It is not surprising that the prevention sentences were more action based (Table 10) given the setting of this particular research in an occupational setting, with its attendant legal standards and very often explicit expectations for active measures to be taken to prevent accidents and ill health. As I discussed in the literature review the framing effect of the law established a strong expectation for positive actions, and breaches of the law are very often expressed in summonses to court as failures to comply. Equally the language associated with prevention is so often action

based, so we speak of ‘taking steps to prevent’ or asking ‘what will be done to prevent this from happening again?’.

In a general sense causes are not normally constrained linguistically or by legal framing effects as arising from either actions or inactions. However the specific setting can determine if one or other of these is more likely to be selected. For example, the Mr. Jones scenario involved at least four deliberate decisions and actions for the accident to happen as described. Mr. Jones decided to leave work early / go home via the coast road and he braked hard to stop at the junction, and the young man who jumped the red lights decided to drive while drunk and not to stop at the red light, all of which arise from actions. In much the same way the death of Eugene and Tina (Wells & Gavanski, 1989) might be attributed to actions which were the effect of the storm on the bridge or the decision by Eugene to drive Tina’s car, after the taxi driver refused to take them.

This refusal presents an interesting question about the nature of actions and inactions in respect of decisions. If someone, having weighed up a situation, decides not to take an action is it an action or inaction? Is the decision itself considered to be an action and the inaction a consequence of that, or is taking no action following a reasoned decision classified as an inaction as it would be in other circumstances where there was no consideration and the inaction was from a lapse of memory or a fault arising from human error? (Rasmussen, 1982). It seems in this case that the taxi driver’s refusal would be an action because it was a conscious decision taken after an assessment of the situation. In both these studies the respondents are constrained by the structure of the scenario to consider the role of actions.

In the current study the scenario included specific inactions such as the lack of warning signs and the Cleaner’s slow response, as well as implied inactions such as the Supervisor not making sure the Cleaner had responded, or the failure to learn from the previous accidents.

In both scenarios (Mr. Jones and Eugene and Tina) respondents were asked about alternative outcomes (counterfactual thinking) or responsibility for the outcome, but

were not asked directly what the cause was. Had they been, I would have expected respondents to have identified the cause of Mr. Jones' accident as being the drunken driving by the young man who jumped the red light. In the Eugene and Tina scenario the cause might well have been identified as the taxi driver's refusal to pick up his passengers. Whilst this is speculative, both would appear to violate expected behaviours. Drunk driving is explicitly prohibited by statute in the UK and there must be an implicit expectation for a taxi driver to pick up a passenger who booked a journey. In this way both actions and inactions can be counterfactually available and causally linked to the outcome, and a respondent's particular role and the social setting along with the expectations or motivations that these bring can determine whether actions or inactions are selected when people think about how an accident might have been different or its cause.

In the case of Mary's accident respondents selected a failure to act as being the cause significantly more than an action was selected, and this is likely to be a combination of the specific scenario and the framing effects of the social setting and legislative requirements. We know from the maximum detail scenario that the inactions were more significant in that they were highlighted as exceptions to an expected procedure, which is typical of an accident report, for example no warning signs were put out, the Cleaner did not clear up the spillage and there was an implied failure to implement a safe system work, all of which are set against a background of the expected duties to prevent accidents established by the Health and Safety at Work etc. Act 1974 (HMSO, 1974). In such circumstances inactions would almost certainly be seen as being more causally potent than actions and this was borne out by the results presented in Table 11. The one notable exception being the 60% of Accident Subjects who found the cause of Mary's trip accident to be from actions.

#### ***Addition or subtraction effects***

Previous counterfactual research identified that an alternative outcome can be achieved by either adding a new antecedent to the event sequence (this would be an additive counterfactual) or removing a pre-existing antecedent from the sequence of events leading to the unwanted outcome (a subtractive counterfactual). In this study

the idea that a counterfactual antecedent could be either added to or subtracted from the sequence of events leading up to an outcome was extended to how the outcome could have been prevented and what the cause was. Used in this way an addition in a prevention or causal sentence becomes something which was improved, better or more than expected, and a subtraction becomes something which was less or worse than expected. Under this extended concept there is a logical relationship between the counterfactual, prevention, and causal use of additions and subtractions.

Assuming an upward additive counterfactual is generated this should relate to an additive prevention sentence in which Mary's accident is prevented by improving something, whilst the cause is most likely to be presented as being less than expected. Conversely, where an upward but subtractive counterfactual is generated, prevention of Mary's accident should also be achieved by removing something.

As a strong additive counterfactual effect has been shown in this study, a similarly strong additive effect would be expected in the way that respondents completed their prevention sentences and this in turn leads to an expectation that the cause will be expressed in terms of being subtractive or less than expected, and this is what the results have shown (see Tables 12, 13 and 14).

No particular preference for the use of additional or subtractive counterfactuals has been expressed in previous research for different social situations, but there is inevitably a rational relationship between the mutation of actions or inactions and the use of additional or subtractive counterfactuals. The specific situation and the level of knowledge possessed by the respondent may also influence the use of additional or subtractive counterfactuals. In this study respondents showed a strong tendency towards using additional counterfactuals, with 84% of all respondents adopting this approach.

As respondents showed a strong inaction effect (discussed in the previous section) the logical mutation on the addition / subtraction dimension is to add in the missing action to the event sequence (additive counterfactuals). This is the result shown in Table 12, with the exception of Accident Subjects responding to Mary's trip accident who brought about a different outcome through the use of both additive and subtractive counterfactuals.

The use of additive counterfactuals was predicted in Tables 1, 2 and 3, because of the anticipated focus on inactions which arises from the legal duties to actively manage risk, and the assumption that when an accident occurs something has not been done properly. When people believe that something more could or should have been done additive counterfactual thoughts are inevitable and functionally adaptive to more creative ways to ensure the desired outcomes is achieved. The use of additive counterfactuals will also be discussed when considering the respondents' selection of exceptional events and a proposal that these can be classified into different classes of exceptionality.

Counterfactual thinking is not simply limited to adding or subtracting antecedents, as there must be occasions where both strategies are employed simultaneously in what becomes a substitution or a replacement of an antecedent. This can be illustrated with a simple four event sequence, A B C D leading to an unwanted outcome X, which can be written as  $A B C D \rightarrow X$ . In an additive counterfactual the alternative outcome Y is achieved by adding a new antecedent E to the event sequence, giving  $A B C D E \rightarrow Y$ , thus increasing the antecedent steps by one to give a five step sequence. Where a subtractive counterfactual approach is used the event sequence will be reduced to three stages,  $A B C \rightarrow Y$ . The mutations of events in the real world would seem to suit a replacement approach in many situations.

Whilst counterfactual thinking is often illustrated by 'if only...' thoughts which imply 'If only I had...' or 'If only I hadn't... then things might have been different', there must be occasions where the two are joined by a 'but' or 'and' so the counterfactual thoughts become 'If only I had / hadn't ... but / and had... instead, things might have been different'. Roese and Olson (1995) refer to an example of counterfactual thinking which illustrates this. John is a student who goes out drinking the night before an exam and gets a poor grade, and is reported as thinking 'If only I hadn't drunk so much I might have passed'. However normal preparation for an exam is likely to involve revising the evening before and having an early night to ensure you get sufficient sleep, so a more realistic counterfactual might involve substituting the unusual behaviour of going for a drink with the more

normal behaviour of revising and having an early night. The counterfactual now becomes 'If only I hadn't gone out drinking but / and I had revised and gone to bed early I might have received a better grade'. As this example shows, the order in which additions or subtractions are made is not important.

To illustrate this I return to my simple four stage event,  $A B C D \rightarrow X$ . I will substitute event D (drinking) with event R (revising), so the desired outcome Y (a better grade pass) can be achieved by subtracting D before adding R or vice versa. The sequence now looks like this:  $A B C (-D +R) \rightarrow Y$ , which is the same as adding R before subtracting D, i.e.  $A B C (+R -D)$ , as the resultant sequence is  $A B C R \rightarrow Y$  in both cases. Of course substitution of an antecedent can occur at any point in the antecedent chain and not just at the end as I have illustrated. Equally the substitution could be split over two separate temporal points and antecedents, and it is logically possible for an antecedent to be added at one point and subtracted at a different one. For example  $A B C D \rightarrow X$  could be mutated by adding a new antecedent between A and B and subtracting C, so that the sequence becomes  $A, +E, B, -C, D \rightarrow Y$  (or  $A E B D \rightarrow Y$ ).

The use of inaction and additive counterfactuals in response to the slip and trip scenarios may indicate how people build up a retrospective perception (hindsight bias) that the accident could and therefore should have been prevented. This is referred to as the counterfactual fallacy (Miller et al., 1990). The combination of inactions and additive counterfactuals gives anyone considering the event after it happened a wide range of choices and options to bring about the different outcome. The more choices available counterfactually, the more obvious it is that one of the many options would have prevented the accident and in the face of this weighty evidence blame and punishment can follow.

The prevention sentences also showed a strong addition effect, indicating that to have prevented Mary's accident something more was needed over and above that which existed, and this implies that the cause might be perceived as arising from something which was less than expected or subtractive in its nature, and there is a logical relationship between the two. If the cause was from something missing or lacking, then an obvious remedy is to replace that which was missing or provide



something which is better or improved. The results of the causal sentences bear this out with 76% of all respondents showing a strong preference for the use of a subtractive / less than sentence, with the exception of Accident Subjects and trip accidents where subtractive causes were not used significantly more than additive causes (Table 14).

The counterfactual use of addition and subtraction was predicted in Tables 1, 2 and 3 and the results provide evidence of a logical relationship in which the use of additive counterfactual thoughts is repeated in the prevention sentences but not in the causal sentences. For this structural dimension counterfactual thoughts were more like prevention thoughts (missed opportunities to have prevented), so when someone thinks counterfactually following a work-related accident the implied failure to control the hazard leads to an inevitable counterfactual mutation, bringing the hazard under control by doing something additional to remedy the inaction that led to the situation. Under these circumstances counterfactual thinking is more like preventative thinking than causal thinking. The ability to control the antecedent may also play an important role in determining the use of additional or subtractive counterfactuals. Where an antecedent can be controlled it is more likely to be changed, and additional counterfactual thinking allows for greater and more innovative control than subtractive counterfactual thinking which simply removes an existing antecedent and might be more appropriate for uncontrollable antecedents.

Causes of Mary's accident were generally described in terms of being less than expected (for example, inadequate warnings), and as causal thinking is only retrospective it identifies the cause but leaves it at that. If control is to be exercised over it there has to be a further stage of cognitive processing which makes changes to the cause and runs a forward looking simulation in order to assess the impact of the proposed change. It is the control that is exercised over the antecedent that makes counterfactual and prevention thinking more comparable under the structural dimension of addition / subtraction.

It is noteworthy that again the results for Accident Subjects' counterfactual and causal trip sentences were different and did not show the same effect presented by the other respondents in Tables 12 and 14.

### **Normality**

According to Norm Theory counterfactual 'if only...' thoughts seek to re-establish the expected, desired or normal state of affairs and, in doing so, an antecedent event is selected and changed and that event is considered to be unusual or exceptional in some way, however Gavanski and Wells (1989) suggested that the relationship between outcome and antecedent was based on a correspondence heuristic, in which exceptional outcomes had exceptional causes and normal outcomes had normal causes.

In most counterfactual research the unusual or exceptional event is designed into the research scenario and this study was no exception, with Mary (the accident subject) agreeing to cover for her friend who was on holiday from work. Mary would not normally have been at work on the day the accident occurred and that was therefore exceptional or unusual.

Typically in previous research, respondents have focused their counterfactual attention on the exceptional events provided in the scenario, however in this research the designed exceptional event (Mary working) was only selected to any significant degree by Accident Subjects (16.2%), but was rarely referred to by either Safety Professionals (1.1%) or Managers (1.5%) and failed to reach statistical significance compared to other antecedents that were selected and changed as being exceptional events.

On the basis of Norm Theory counterfactuals are targeted towards an event considered by the respondent to be unexpected or exceptional, therefore it must follow that whatever events were selected and changed in this study were considered by those respondents to be exceptional. However not all previous research has supported the findings of Norm Theory. For example Davis et al. (1995) found that parents chose to change mundane everyday events when undoing the death of their child.

The results prompt a question as to why the scenario exceptional event (Mary's decision to cover for her friend's holiday leave) was so rarely selected? Was the scenario design deficient in some way that failed to make her decision salient and available, or was this a more realistic test of what the respondents classified as being exceptional events in this type of accident? Whatever the reason, respondents were given a free choice in the selection of the antecedent, but 95.6% of respondents rejected the scenario exceptional event of Mary working in favour of some other antecedent, the exact nature of which will be discussed further in this section when I discuss the specific subject of the counterfactual sentence. However in summary, the most commonly selected antecedents were: the presence of the hazard and poor housekeeping – selected by Safety Practitioners; the presence of the hazard and inadequate warnings – selected by Managers – and Mary's lack of attention; Mary's decision to work; and the presence of the hazard, selected by Accident Subjects.

The antecedents that were selected as being exceptional were categorised into four types, based on how the alternative outcome was expressed in relation to the norm that was evoked by the actual outcome. Apart from the exceptional event designed in to the scenario, which I will refer to as being a first order exception, three other categories of exceptional event were identified and these were where the alternative outcome was secured by adhering to an established set of rules (norm) which had not been met (second order exception). The next category of exceptional event was remedied by establishing a new set of rules (new norm) which led to a different outcome (third order exception), and lastly a different outcome was achieved through modifying an existing set of rules in a way which improved the likelihood of the desired alternative outcome being achieved (fourth order exception). I suggest that this new approach to the nature of the exceptional event and its relationship to the counterfactual outcome represents a useful development to the concept of exceptionality first developed in Norm Theory. The approach proved to be applicable to the antecedents selected in this study, but it would benefit from being tested more rigorously in other settings to assess its wider value as a means of describing the route from the selected exceptional antecedent to the desired outcome.

The classes of exceptional events used in this study were:

***The scenario exception (first order exception).*** Where an event is presented to respondents as being exceptional in the context of the research scenario. In this study it was Mary's decision to cover for her friend, and in Kahneman and Miller's (1986) Mr. Jones study the exceptional events were presented as being Mr. Jones' choice of route home or the time of day he left work.

***An exception to an existing rule (second order exception).*** This is an exception to an expected rule or norm. The respondent identifies the existence of an appropriate rule or norm which was not met in the circumstances of the actual outcome and the counterfactual is framed to that ensure the rule or norm is met in the alternative outcome. This differs from the norm as presented in previous research in that it is not expressly presented as being exceptional or unusual to respondents in the research scenario.

***New rule (third order exception).*** These are changes that establish a new norm, either replacing an existing one with a completely new norm or establishing one from first principles where there has not been one before.

***Changing an existing norm to improve the likelihood of the desired alternative outcome being achieved (fourth order exception).*** Counterfactuals in this category of exceptional events take an existing rule (norm) and change it in a way that increases its power to deliver the desired alternative outcome. I will refer to this type of exception as 'improving an existing rule'.

***Normal events.*** For the sake of completeness the coding of responses also included a fifth order exception which was the mutation of a normal event. This option was so infrequently used it was excluded from subsequent analysis.

The exceptional event designed into the study (scenario exception - Mary working) only accounted for 4.4% of all the counterfactual changes made by the respondents. Previous scenario-based research would have predicted that this class of exceptional event should have been selected much more often than it was in this study and there may be several reasons why this was the case. Mary's decision to cover for her friend was too distant from the accident to be considered relevant

when undertaking counterfactual thinking. The details provided to respondents did not specify when Mary made the decision, but as holidays are usually planned in advance, it may have been assumed that this was weeks or even months earlier. Mary's presence may have been considered almost incidental to the scenario and respondents may have thought if it was not Mary it could have been any other worker and proceeded on that basis, or respondents may have considered there was no causal link between Mary covering for her friend and the slip, although changing her decision to cover for her friend would have brought about a different outcome or prevented this specific accident.

Having recognised the possible design limitations, the results obtained are now considered in more detail.

#### *Comment on scenario exceptions and existing rule exceptions*

There can be a fine distinction between scenario exceptions (first order exceptions) and existing rule exceptions (second order exceptions).

Scenario exceptions (first order exceptions) are those specifically designed into the research scenario, manipulated by the researcher and drawn to the attention of the respondents, however they can also be examples of real life existing rule exceptions (second order exceptions). The main difference is that the respondents' attention is drawn toward a scenario exception because it is included in the study scenario often as a manipulated element of the design, whereas existing rule exceptions are not presented obviously to the respondents who may infer their existence from norms developed from other experiences and source.

In Kahneman and Miller's (1986) scenario, Mr. Jones decision to go home early or take a different route both fall into the category of being an exceptional event. In the definitions of exceptions developed in this study, those events would be categorised as scenario exceptions (first order exceptions) because they arose out of a manipulated research scenario where the respondents' attention was actively drawn toward them by the structure of the scenario and the way it was presented. In other words, the norm that the researcher wants the respondent to adopt is presented to them. In a real life situation Mr. Jones' behaviour would be existing rule

exceptions (second order exceptions) because they represent an obvious departure from an established routine / norm.

Exceptions to existing rules (second order exceptions) may be based on previous experiences of similar situations or from higher-level general norms. In the case of the Mr. Jones accident, a general norm might be that drunk drivers are more likely to be the cause of accidents than sober drivers. It seems that exceptions to existing rules can arise in two distinct ways. In the first way a fact must be made known to the respondent (counterfactual thinker) which highlights a departure from a norm. The main difference between this and a scenario norm is that the respondent is able to select the fact and the norm it breaks from among many such facts, and it is their choice which to select rather than being directed towards a norm suggested by the limited and selective information provided in a scenario. In real life situations the exceptional fact may be obtained either by asking questions, as would happen during an accident investigation, or by being told. Respondents in this position would be basing their counterfactual thoughts on 'known' information and this tendency has been examined in this study as part of the manipulation of the level of details provided to respondents as part of this study.

The second way in which existing rule exceptions are identified is through an 'inferred' route. The situation which stimulates the respondents' counterfactual thinking has an inherent norm associated with it which is brought to mind through the classification of the situation with minimal specific details being necessary, typically a stereotype of an event or person will bring to mind certain norms without specific facts being available to the respondent.

#### ***Comment on new rules***

Some outcomes evoke a desired norm, but to achieve it the respondent has to establish a whole new set of 'rules'. These are described as new rule exceptions (third order exceptions) in which a new set of rules or circumstances designed to undo the unwanted outcome are established. Such a response may be based on previous experience of similar unwanted events or it may be developed specifically in response to a completely new experience.

A respondent would need to have some degree of general or domain-specific causal or prevention knowledge to generate a new rule exception. For example, few members of the public watching the Challenger space shuttle disaster in 1986 could generate a meaningful new rule exception because they did not possess the necessary technical knowledge upon which to draw conclusions about the possible cause or how to prevent it, and therefore could not establish a coherent and lucid counterfactual. On the other hand, a NASA technician with technical knowledge probably could generate a new rule exception because they would have the necessary technical understanding.

This does not imply that the general population cannot make new rule exceptions, but in order to do so they may need to be provided with basic information through media reports or following technical / legal investigations, but once apprised of the relevant information anybody can draw the inferences necessary to make new rule exceptions.

Adopting the new rule approach relies on the use of additional counterfactuals which have already been described by Roese and Olsen (1993b) as being more highly creative. When a new rule is being developed the thinker is relatively unbounded by existing constraints and this opens the door to highly innovative solutions and approaches.

***Comment on changing an existing norm to improve the likelihood of the desired alternative outcome being achieved – improving an existing rule (fourth order exception)***

This type of exception recognises that for a particular outcome certain behaviours or circumstances should pre-exist, but that they could be improved in the light of the recent event and in making those improvements (mutations) the certainty of achieving the desired alternative outcome is increased over just re-establishing pre-existing norms or rules.

In effect, the unwanted outcome prompts a review of the established and expected norm and seeks to improve it. This appears to be a process very similar to that involved in undertaking a risk assessment, which is required of employers under the

Management of Health and Safety at Work Regulations 1999 (HMSO, 1999). This implies the use of forward inferential counterfactuals and involves identifying the potential for an unwanted outcome arising from a particular set of circumstances, and then assessing the adequacy of the existing controls (antecedent events) to determine whether or not they are satisfactory. One way of testing this is to run ‘if only...’ scenarios based on changing antecedent events and evaluating the likely outcomes. When a counterfactual change to an existing norm increases the likelihood of the desired alternative outcome being achieved I have classified this as a separate type of exceptional event called ‘improving an existing rule’.

*Comment on new rules (third order exceptions) and improving existing rules to improve the likelihood of the desired outcome (fourth order exceptions)*

Because some degree of general or specific knowledge is required to make these types of exceptions, it was thought that differences may exist between the respondents’ job groups in this study as to the type of counterfactuals being used.

The specific nature of the accident may have a strong influence on the general level of understanding of its causes and opportunities for prevention. In this study, slips and trips are a relatively non-technical type of accident involving walking which is a fundamental human activity. Everyone has experienced a slip or trip and their nature is intuitively understood. If you slip on a liquid or trip over an object, it is an obvious choice to mutate its presence, and few people can be unaware of the need to provide warnings about hazards. Against a background of well-established preventative rules (norms) and retrospectively obvious opportunities to improve systems of work, respondents used both second and fourth order exceptions most frequently in the counterfactual sentences.

Accident Subjects were expected to have less understanding of the technical and legal aspects of occupational accidents and this would have resulted in them using the scenario-based exceptions most commonly, especially as these are actively drawn to the respondents’ attention. Whilst Accident Subjects were the group most likely to use this approach their use did not reach statistical significance and Accident Subjects most commonly made changes that led to the improved likelihood of achieving the desired outcome for slip accidents (65.7%) and for trip



accidents (36.9%), as well as identifying exceptions to existing rules for trips (38.5%) (Table 15).

There is no obvious explanation why Accident Subjects selected a different approach for trips from that used following a slip accident, especially when Safety Professionals and Managers most commonly improved an existing rule (fourth order exception) for both slip and trip accidents.

In this study no group showed a significant use of new rule (third order) exceptions for either slips or trips. This indicates that respondents had no need to create a new norm because they already had one against which to compare the accident outcome, and this is based on there being no accident which our everyday experience tells us is the case.

The use of a counterfactual approach which involves making changes to an existing set of rules, with the aim of improving the prospect of achieving the desired outcome, is psychologically healthy and implies that people learn from their involvement with unwanted outcomes, including slips and trips. If people only sought to re-establish existing rules (norms) it might indicate a more limited and narrow approach to counterfactual thinking by unquestioningly adhering to a pre-existing set of rules which may not be effective. By adopting a developmental approach to counterfactual thinking the opportunity for continual improvement in achieving the desired outcome exists by reviewing the existing rules and building on them. However there are two risks inherent in this approach. The first is that by continually adding to a set of rules they could become longer or more complex with the risk that people forget to implement all the steps, thus increasing the risk of creating an unwanted outcome based on an exception to an existing rule (second order exception). The other risk is that of making changes based on false understanding. Because a change to an antecedent was effective in another situation it may be 'imported' and applied to the current outcome without it being properly assessed, however this should not be a problem if the proposed new set of rules are properly evaluated by applying an appropriate forward simulation model.

The use of exceptions that improved the likelihood of achieving the desired outcome may also be linked to the theory of Regulatory Focus proposed by Roeser et al. (1999) who suggested that there are prevention and promotion goals. Prevention goals are those that seek to maintain the status quo, whereas promotion goals are those that people aspire to achieve. Slips and trips are an uncommon occurrence and people's personal experience and expectation is that they will not slip or trip and be injured and I suggest this is a prevention focused goal, albeit possibly an unconsciously held one. From a functional perspective, the continued wellbeing of an individual is more certain the longer the status quo can be maintained. As changing existing rules to improve the likelihood of achieving the desired outcome also improves the prospects of maintaining the status quo, it follows that they support the achievement of a prevention goal.

***The relationship between counterfactual exceptions and the addition or subtraction of antecedents***

Four categories of exceptional event have been identified from the respondents' completed sentences and I will discuss a possible relationship between these and the use of additive, subtractive or replacement counterfactual strategies.

The first order of exceptional events are described as the mutation of a scenario exceptional event and in this study that was Mary's decision to cover for her friend, and this is most likely to be mutated by a simple subtractive counterfactual such as 'If only Mary had not agreed to cover for her friend things could have been different'.

The second order of exceptional events arises where there are expected or established rules which become the default norm. When these rules are not complied with the exceptional event is described as being an exception to an existing rule. When respondents identify this type of exception the counterfactuals that follow are likely to be additive where the rule requires something to be done and involve the addition of an action to replace the omitted one, and where rules prohibit actions the counterfactual thinker is most likely to bring about a different outcome through the subtraction of the action that was done but which should not have been.

Additional counterfactuals are most likely to be generated where the respondent seeks to bring about the alternative outcome by establishing a new rule (third order exceptional event). This would be used in situations where no rules exist or an existing rule had been superseded for some reason. This is probably a relatively rare situation in comparison to those in which an existing rule is not met or where an existing rule is strengthened to be more certain that the desired outcome is achieved. In this category I suggest that counterfactuals may involve the substitution of antecedent events as existing rules are changed and substituted with ones that improve the likelihood of the desired alternative outcome being realised.

### *Exceptional events – a general comment*

The concept of different categories of exceptionality may go some way to explain the differences found between studies such as those of Kahneman and Miller (1986) (Mr. Jones) and Davis et al. (1995) (SIDS Study). Respondents undoing Mr. Jones' motor vehicle accident focused on the exceptions highlighted in the research study (route home or time of departure), whereas Davis et al. (1995) found people undid mundane everyday events.

Typically in traditional counterfactual research, respondents are given a scenario to read which contains details of the expected norm and a specific exception. If this exception is selected for change it is categorised as a scenario exception, but because scenarios contain limited contextual details respondents are typically constrained by the limited details that are provided and have to choose from a restricted number of options. The scenario-based exceptions often also represent exceptions to existing rules, but I draw a distinction between the two types. In the main where scenarios are used, respondents' counterfactuals are based on the specific details provided to them, whereas in studies based on respondents' personal experiences these constraints do not arise and the respondent is free to choose from an almost unlimited range of counterfactuals. In those circumstances studies such as those reported by Davis et al. (1995) and Gavanski and Wells (1989) have shown that people tend to select normal or mundane events to mutate, which could be classified as being an exception to an existing rule or exceptions which if changed they believe might have brought about the desired outcome.

Scenario studies have been criticised by researchers including Davis et al. (1995), Woodcock (1996), and Byrne and McEleney (2000) for being limited in their ecological validity, as they cannot convey all the necessary relevant information to the respondent who is very often a role-playing student. Woodcock (1996) said that such role playing only highlights the role expectations held by the role player. In the real life studies such as those undertaken by Davis et al. (1995) the respondents were parents who had a personal involvement and intimate knowledge of the circumstances, routines and behaviours prior to the sudden and unexpected death of their child. Faced with the death of a child Davis et al. (1995) found that parents selected a routine action or a normal behaviour which was missed out or done differently to change. For example, not checking on the child before going to bed or the other parent checking instead of the usual one would be categorised as exceptions to existing rules as they were changes to an established routine.

Equally, respondents could invent a norm such as checking on their child before going to sleep and this would be a new rule exception. In the same way they could still use the same antecedent behaviour (checking on their child), but improve it by checking the child more frequently, and this is a change designed to increase the likelihood of the desired outcome.

Davis et al. (1995) commented that choosing to change mundane behaviours was unhelpful, because they could become viewed as causally linked to the death of the child, which they clearly were not. In the light of the more recent work by Mandel and Leman (1996) if counterfactuals are failed opportunities to prevent then the selection of more mundane and routine antecedents may be more understandable. The correspondence principle (Gavanski & Wells, 1989) suggests that serious outcomes arise from significant incidents, omissions or actions, but in the absence of one of these and faced with the huge psychological need to understand and feel in control the person seeking an answer may have no alternative but to use a slight variation to a mundane or routine action to bring about the alternative desired outcome.

Truly exceptional events are rare and highly available for counterfactual mutation, but the reality is that unwanted outcomes happen in the course of everyday living.

If counterfactuals are ‘missed opportunities to prevent’ then the ability to identify exceptionality in the four ways described here becomes more helpful in identifying the route to the desired outcome.

*The use of exceptional events in the prevention and causal sentences*

Both counterfactual and prevention sentences address how the future could be altered by looking to the past to see what could have been changed, with the aim of securing a different counterfactual outcome and using this in the future to prevent the same outcome from being experienced again, whereas causal sentences start with the outcome and just look to the past to identify the cause. It is because of the future aspirations implicit in both the counterfactual and prevention sentences that the type of exceptional events they identify should be similar and this is confirmed by the results presented in Tables 15, 16 and 17.

Table 15 presents the results for the use of exceptional events in the counterfactual sentences and clearly shows a strong preference for the use of exceptional antecedents being changed in a way which improved the likelihood of the desired outcome being achieved. This trend is not so obvious in Table 16 which presents the results for the type of exceptional events referred to in the prevention sentences, but on closer analysis changing antecedents in a way which improved the likelihood of the desired outcome was significantly higher than the use of new rule exceptions in all but one case, that being Safety Professionals and slip accidents.

Superficially, the results in Table 17 for the type of exceptional events used in the causal sentences look similar to those for the prevention sentences, but there are two important and significant differences. Firstly, different types of exceptions were used. Whilst both the prevention and causal sentences referred to exceptions which improved the likelihood of achieving the desired outcome, the second most frequent type of exception referred to in the prevention sentences were of the new rule type, but it was exceptions to existing rules that were the focus in the causal sentences. However, the most important difference was that the proportion of respondents using exceptions to existing rules (second order exceptions) was higher in most cases than the proportion using fourth order exceptions which improved the likelihood of achieving the desired outcome. Not only was there a general trend

away from using exceptions which improved the likelihood of achieving the desired outcome, in half the cases their use was significantly less. These results support the proposal that the type of exceptional events referred to in the counterfactual and prevention sentences are more alike and different to those used in connection with the causal sentences.

### *Timescale*

The nature of the relationship between antecedents leading up to an accident can influence the temporal position of the antecedent selected for change. Where the antecedents are causally related researchers such as Brickman et al. (1975) and Wells (1987) proposed that antecedents early in the chain were more likely to be changed than later ones. Where the antecedents are independent of each other Miller and Gunasegaram (1990) suggested that those later in the chain and closer to the accident are more likely to be selected for change. In this study events occurring before the day of Mary's accident are described as being 'distal' and as being 'Before Stage A' whilst events that occurred on the itself are described as being 'proximal' and cover stages referred to in Tables 18 and 82 as A to J.

This study has revealed an interesting effect highlighting a difference in the temporal position of the selected antecedent for slips and trips.

Slips were most commonly undone at Stage D (the spillage had been reported but not cleared up), whereas trips were mostly undone by changing something occurring before the day of the accident (Before Stage A).

This is an unexpected result and one for which there is no obvious explanation given that the structure of both the slip and trip scenarios were identical. The respondent's job group had no influence on this effect as Safety Professionals, Managers and Accident Subjects all showed a preference to undo the accidents at those two stages. The counterfactual antecedent for trips focused on matters which were controllable before the day of the accident (Before Stage A in Table 18), whilst the focus for slips was at the point where the spilt milk had been reported but not cleared up (Stage D). This could possibly arise from two inter-related sources, namely physical aspects of the situation and systems of work. If respondents

believed that slips and trips have different physical origins which are best changed at different points in the temporal sequence, this would in turn influence the focus of the safe systems of work to avoid them, however it is difficult to see exactly how these might differ. Employers are required to proactively establish safe working procedures, which should lead to the selection of antecedents before the day of the accident. It is not clear why this approach was adopted for trips but not slips. The results indicate the temporal location of the antecedent can be very variable, even in closely related type of events. The influence of the respondents' social role on the temporal position of the selected antecedent is an area where further research might prove to be of interest.

On the basis of previous research these results suggest that the slip accident was part of a chain of independent events because the antecedent selected most commonly was late in the sequence (Stage D, the spillage had been reported but not cleared up), whereas the trip accident was part of a causal sequence because the event changed was one that occurred much earlier in the sequence (before the day on which Mary had her accident - Before Stage A).

In reality, the sequence of events leading up to an unwanted outcome is likely to contain both causal and independent events. Previous research has typically been focused on short chains of up to four events, but this study presented a more realistic accident sequence containing 11 stages of mixed causal and independent events, and the suggested relationship between the various stages is set out in Table 72.

Given that the relationship between the antecedent events was the same for both types of accident it is unclear why different antecedent stages were selected for slips and trips.

The predicted results in Table 1 suggested that Safety Professionals would select counterfactual antecedents occurring more 'distal' to the accident, that is occurring before the day of the accident itself (Before Stage A), on the assumption that they would be basing their thoughts on legal requirements such as safe systems of work, procedures and risk assessments, all of which should have been undertaken and

implemented before the accident. Likewise it was anticipated that Managers and certainly Accident Subjects would be less influenced by the legal requirements and would focus their counterfactual thoughts on the more directly observable and controllable events on the day, showing a greater tendency to select antecedents closer to the accident itself (proximal antecedents).

Table 72. The temporal relationship between the antecedent events

Antecedent stages	Description of event	Relationship to the previous event
Before Stage A	Mary agrees to cover for her friend	
Stage A	Mary goes for her break	Independent
Stage B	Mary waits for her friend and walks towards the rest room	Causal
Stage C	Milk on the floor/box on the floor	Independent
Stage D	Reported to Cleaner five minutes ago, Cleaner requested to attend, but not cleared up	Causal
Stage E	Mary did not see the milk or box	Independent
Stage F	Mary stepped on the milk/box	Causal
Stage G	Mary slipped or tripped	Causal
Stage H	Mary lost balance and fell	Causal
Stage I	Mary is injured	Causal
Stage J	Taken to hospital, off work	Causal

The distinction in the temporal location of counterfactual antecedents for slips and trips was not clearly replicated by all respondents in either the prevention or the causal sentences. The most obvious change was exhibited by Safety Professionals for slip accidents, who shifted their attention to a much earlier stage when seeking to prevent the accident. They selected an event occurring before the day of the accident (Before Stage A) for prevention, whereas they selected events at Stage D



(the spillage had been reported but not cleared up) when changing the outcome counterfactually.

This change in the temporal position of the focal event can be explained by the influence of the legal framework in which they work. The Health and Safety at Work etc. Act 1974 (HMSO, 1974) seeks to prevent occupational accidents and ill health by requiring employers to have safe systems of work in place to prevent accidents, so naturally when one does happen Safety Professionals' attention is at least initially drawn towards checking that this duty has been discharged. If it has then their attention may move up the temporal chain towards other pre-requisites such as training and supervision which again are antecedents that are most relevant and controllable before the day of the accident.

It is interesting that Safety Professionals selected antecedents located before the day of the accident (Before Stage A) for trips irrespective of whether they were thinking counterfactually, preventatively or causally (Tables 19, 20 and 21) and for slips for prevention and the cause, so it is only when thinking counterfactually about slips that Safety Professionals focused on events other than those occurring before the day of the accident (Before Stage A). This is in contrast with both Managers and Accident Subjects who maintained their focus on events at Stage D (the spillage had been reported but not cleared up) consistently in their counterfactual, prevention and causal sentences for slip accidents.

### ***Control***

If counterfactuals have a functional use to the person making them, then it should follow that changes are made to events that they can personally control as opposed to events over which they have no control (Miller et al., 1990; Giroto et al., 1991) and this assumes that counterfactual thinking is being undertaken from a personal perspective. However there are many situations in which a public perspective is adopted due to the thinker's social role and people make counterfactual changes to outcomes experienced by other people. This does not alter the underlying assumption that a person (scenario actor) associated by a counterfactual thinker with an antecedent would have control over it, but it may change the nature of that control from being direct to indirect.

In this study the concept of control was extended to differentiate between direct control and indirect control, and this was rooted in the difference between personal and public perspective counterfactuals and the different ways that responsibilities under health and safety legislation can be discharged (HMSO, 1974). Therefore the scenario actor selected as being the subject of the counterfactual sentence could have had either direct or indirect control over the selected antecedent. A duty to comply with a legal requirement is usually placed on a person who holds a position of responsibility (the duty holder). That person is not necessarily in a position to discharge the duty personally, but they can delegate responsibility to another person (member of staff) placing the duty holder in a position of indirect control. If that member of staff were subsequently selected as being the focal actor in the counterfactual sentence they would be in a position to exercise direct control. In this study the Store Manager would have responsibility (be a legal duty holder) for having and implementing, a robust procedure to deal with spillages but is highly unlikely to clean it up himself so would exercise indirect control through delegation and employ a Cleaner to mop up the spilt milk. The Cleaner would be considered as having direct control over the prompt clearing up of the spillage.

The counterfactual sentences revealed that controllable actions (both direct and indirect control) were used significantly more often than uncontrollable actions; however there were some interesting and unexpected results between job groups and the type of accident. Safety Professionals selected directly and indirectly controllable actions following Mary's slip accident, but used controllable (direct and indirect) and uncontrollable actions when mutating her trip accident. Safety Professionals' use of uncontrollable actions in relation to trips (28.4%) was markedly higher than for slips (13.2%).

Managers were more likely to select directly controlled antecedents for slips (59.0%) but use direct and indirect control for trips (direct 47.1% and indirect 35.7%).

In contrast Accident Subjects showed a clear preference to complete the counterfactual sentence by changing antecedents over which the scenario actor had direct control (52.3% for slips and 84.1% for trips) and in doing so clearly followed

the pattern of earlier research in which direct control was found to be used most commonly.

It appears that Safety Practitioners more than Managers and Accident Subjects recognise that different outcomes can be achieved both by an individual who can exercise direct control, but also by someone who has indirect control.

Managers' positions lie somewhere between Safety Practitioners and Accident Subjects, attributing direct control over antecedents for slips and equally attributing direct and indirect control to antecedents for trips.

Perhaps control is not as simple an issue as has been previously suggested. While controllable events were selected significantly more than uncontrollable ones, there are clear differences which are influenced by the respondents' job group (social situation or knowledge) and the nature of the event (slips or trips) over the type of controllability of the antecedent selected for change.

People's social roles may influence whether they make self-referential (internal) counterfactuals or external counterfactuals (pertaining to someone else). It would be more functional for internal self-referential counterfactuals to focus on antecedents over which there was direct personal control, whereas when a counterfactual is focused externally there is the opportunity for control to be direct or indirect.

The type of control over the selected antecedents in the prevention and causal sentences was similar to the counterfactual sentences, scenario actors having both direct and indirect control over the antecedent. The antecedent selected by Safety Professionals was most commonly under indirect control by the scenario actor 58.8% in their prevention sentences and 57.2% in their causal sentences. This again reflects the difference between the duty placed on an employer or manager to comply with the law through indirect control when thinking counterfactually, and the direct control being attributed to the person who is undertaking a task or with immediate supervisory responsibility and control when thinking about the cause of the accident or how it could have been prevented.

Managers' use of direct and indirect control was not significantly different for the prevention or causal sentences for either slips or trips. It was the same for Accident Subjects following Mary's slip accident but not after her trip accident, where Accident Subjects showed a significant propensity to attribute direct control over the antecedents in their prevention and causal sentences as well as in their counterfactual sentences for both slips and trips.

The greater use of direct control by Accident Subjects promoted a further stage of analysis to consider who they saw as the scenario actor having direct control for trip accidents. They most commonly referred to Mary in the counterfactual sentence (52.7%) and prevention sentence (33.3%), and another worker (41.7%) in the causal sentences. This makes intuitive sense and is in keeping with the general results presented in Tables 43, 44 and 45 (proportion of scenario actors referred to by respondents in their counterfactual, prevention and causal sentences).

A clear preference for indirect control was expressed by Safety Professionals for preventing slips and trips, and for the cause of slips. Tables 44 and 45 refer to the Employer which again supports the idea that the social role of the respondent has an important influence on who is in their mind when they think about how Mary's accident could have been prevented, or what the cause was, and that this links directly to the nature of the antecedent they associate with that person and the type of control they exercise over it.

#### *Dynamic or static effects*

When the counterfactual sentences were coded for this structural element a reference to anything that was present at the scene or was directly observable or otherwise directly detectable was classified as being dynamic, whereas any reference to anything which was not present or directly observable, such as training, safe working procedures, risk assessments or reviews of previous accidents, would have been classified as static.

A general trend shown by previous research has been for dynamic antecedents to be selected for counterfactual mutation because they are more easily observable and co-vary with outcomes. This was replicated in this study by Safety Professionals for

slips and trips and by Managers and Accident Subjects but for slips only. An interesting divergence was found for Managers and Accident Subjects completing the counterfactual sentence for trip accidents, where there was no significant difference between the selection of dynamic or static antecedents (Table 25).

There is no obvious explanation for this. If any group were expected to have shown a preference to select a static antecedent it would have been Safety Professionals (Table 25), because of their greater legal knowledge and the requirements of the Health and Safety at Work etc. Act 1974 (HMSO, 1974) to establish safe systems of work. This could have prompted them to relate the accident to failures to establish or monitor safe systems of work and Safety Professionals would expect there to be documentary evidence to support the existence of safe systems of work. As these are not directly observable it was anticipated that they would select a static antecedent to mutate, however this does not seem to be the case as Safety Professionals clearly focused on directly observable (dynamic) events to change.

An alternative explanation might be that on learning of an accident Safety Professionals brought to mind a model procedure, one that improves the prospect of the desired outcome being achieved. That model is mentally adopted as the expected norm and is actively visualised and then compared to a mental reconstruction of the accident sequence. Comparing the model procedure against the actual sequence of events highlights differences which become more tangible resulting in them being expressed as dynamic antecedents.

Although Managers and Accident Subjects selected a dynamic antecedent for slips, there must be something about trip accidents which changed the way they approached bringing about a different outcome as they were equally likely to select a dynamic or static antecedent. This is an area which this study cannot explain and would be an interesting area for further study.

Safety Professionals opted for static antecedents to prevent Mary's slip and trip accident and typically these referred to systems and procedures, Accident Subjects referred to dynamic antecedents for both types of accident, and Managers showed no preference for dynamic or static antecedents. I suggest this is further evidence of

the influence that the respondents' social roles have on the way that they approach thinking about the prevention of an accident. Static antecedents are those that were not directly observable on the day of the accident and fit in with the results showing that Safety Professionals selected antecedents relating to an early temporal stage (Before Stage A – before the day of the accident) when completing their prevention sentences.

Safety Professionals recorded the cause of Mary's accident as being both dynamic and static depending on the type of accident. The cause of Mary's slip accident was more likely to be static, whereas the cause of her trip accident was more likely to be dynamic. One wonders why this might be, when in both cases the spilt milk and the box were there for all to see before and immediately after the accident, in which case the cause should be dynamic for both. There again both could have their cause rooted in inadequate systems of work which would have given rise to static causes.

What is it about a slip accident that prompts Safety Professionals to prefer a static cause, but prefer a dynamic cause for trip accidents? Some explanation may be gleaned from the specific type of antecedents that Safety Professionals used in their causal sentences. They attribute the cause of Mary's slip accident to antecedents relating to inadequate systems of work (Table 48) and these are matters that should have been fully established before the accident. Inevitably these are classified as being static and arise very early in the temporal sequence of events. However Safety Professionals focused their causal sentences on different specific antecedents following Mary's trip accident. They most commonly referred to the presence of the hazard as being the cause, which led to the classification of the antecedent as being dynamic and being at a different temporal location (Stage D, the box had been reported but not cleared up).

Without discussing each specific antecedent and the relationship between its temporal position and dynamic or static nature, I have illustrated a consistency based on the type of accident and / or the respondent's job group. For example, Safety Professionals are more likely to be influenced by legal requirements requiring safe systems of work being implemented before the accident, so their counterfactual, prevention and causal thoughts are more likely to be located earlier

in the temporal sequence and be static, whereas Accident Subjects who looked at Mary's accident through much more contemporary eyes and focused on later antecedents concerned themselves with the presence of the hazard and more visible and dynamic antecedents.

### **Specific comments on the new structural dimensions**

The following seven structural dimensions have not been considered in relation to counterfactual thinking before so it is not possible to compare the results with any previous research findings, but I have made some general comments about them.

#### ***Case specific or general antecedents***

This dimension was suggested by the proposal that Safety Professionals' counterfactual thoughts would be significantly influenced by the legal requirements of the Health and Safety at Work etc. Act 1974 (HMSO, 1974) which set out goals for employers to achieve but not the detail on how to meet them. If Safety Professionals chose to bring about a different outcome by changing an antecedent to comply with a general legal duty, they were more likely to express that in a general way by saying e.g. 'If only the Employer had undertaken risk assessments the accident would not have happened'. A more technical change to the antecedent might have been 'If only the floor had a higher coefficient of friction Mary would not have slipped', and this would have represented a case specific antecedent.

Safety Professionals were predicted in Table 1 to use general counterfactuals whereas Managers and Accident Subjects were predicted in Tables 2 and 3 to use more specific ones. The results in Tables 28, 29 and 30 supported the predicted use of specific counterfactuals by Managers and Accident Subjects, but not the use of general counterfactuals by Safety Professionals.

The strong preference shown by all respondents' groups for specific counterfactuals supports their functional use by providing a clearly identified antecedent to change and exactly how it should be changed, rather than leaving it unspecified and general.

Whilst Safety Professionals and Managers used specific counterfactual thoughts, most frequently they made greater use of general counterfactuals (typically 30%)

than Accident Subjects (5%), suggesting that people are more inclined to use general counterfactuals when they adopt a public perspective to their counterfactual thoughts.

Referring to the results in Table 28 one third of Safety Professionals used general counterfactuals, but this was significantly less than the two thirds who used case specific counterfactuals. The proportion of Managers using general counterfactuals was higher for trip accidents (33.8%) than slips (14.3%) but again they were used significantly less than case specific ones. Accident Subjects showed the greatest tendency to use a case specific counterfactual approach. 94.2% of Accident Subjects responding to Mary's slip and 95.5% responding to Mary's trip accident used case specific counterfactual thoughts.

From a functional perspective specific counterfactuals are probably more useful to an individual who wishes to avoid repeating an unwanted outcome because they are more focused on the precise detail of the actual event, rather than taking a wider and more general perspective. They focus on how to avoid this specific outcome rather than how to avoid outcomes of a similar type to this one.

I expected there to be a difference in the use of specific and general counterfactuals based on the three job groups. Safety Professionals' knowledge and application of the law led me to predict they would use general counterfactuals more than case specific ones because the law is written in a general way so that it is applicable to all occupational settings. In addition Woodcock (1996) reported on causal schema used by Canadian Safety Officers to provide a shorthand way of describing occupational accidents, developed through repeated experience of accidents they build up a general stereotypical description of a class of accident, and this is another reason why I had anticipated that Safety Professionals would be more inclined to use a general approach to counterfactual thinking after an accident.

The results for Safety Professionals were not as expected and they showed a strong preference to use case specific counterfactual antecedents and this could be prompted by the framing effect of the counterfactual sentence they were asked to complete. Causal schema may provide a convenient shorthand way for Safety



Professionals to describe a class of accidents but this study asked how Mary's accident could have been different, and the task of thinking about a specific accident counterfactually may utilise the general framework of a causal schema to ask specific questions about a specific accident which demands specific answers and therefore specific counterfactuals.

The means by which Mary's accident could have been prevented was influenced by both the type of accident and the respondents' job group. Slip accidents were most likely to be prevented by a specific antecedent whilst trips were being prevented more generally, in addition the respondents' job group influenced the choice of specific and general antecedents between accident types. The only exception was Accident Subjects who consistently selected case specific antecedents for both slips (84.5%) and trips (71.2%). Safety Professionals' and Managers' selection of antecedents varied, there was no difference in the use of case specific and general antecedents by Safety Professionals to prevent slip accidents or by Managers to prevent trip accidents. However, Managers prevented slip accidents by specific antecedents and Safety Professionals prevented trip accidents by using general antecedents.

Generally respondents showed no preference for specific or general causes for Mary's accident. Managers showed no distinction between specific or general causes for either slips or trips and neither did Safety Professionals for slips, however Safety Professionals showed a strong preference for general causes of trip accidents. Accident Subjects responded consistently to both Mary's slip and trip by identifying a specific cause to her slip and trip accident.

The results for the respondents' use of specific and general antecedents following Mary's slip and trip accident are summarised in Table 73 for the counterfactual, prevention and causal sentences. Specific antecedents were used significantly more in connection with the counterfactual sentence than either the prevention or causal sentences where their use was more even. Accident Subjects were the only respondent group to be consistent in the way that they responded using a specific antecedent to both slip and trip accidents in their counterfactual, prevention and causal sentences.

The results indicate that counterfactual thoughts are more closely associated with the precise detail of the event being undone and this is in keeping with their functional use in identifying a single mutable event which if changed had the power to bring about a different outcome. Identifying just one event allows the person seeking to bring about the different outcome greater clarity, and may increase the perception of control and certainty of success by specifying an unambiguous route to take.

The prevention sentences show an overall distinction between slips and trips, with slips being prevented more commonly by using specific antecedents whilst trips were more often prevented by applying more general antecedents. Tables 73 and 29 summarise the positions for the three job groups.

It is worth noting that Safety Professionals and Managers used both specific and general antecedents when preventing Mary's accident, but that Safety Professionals used more general antecedents than Managers, and Managers used more general antecedents than Accident Subjects (Table 29). This trend in the increasing use of general antecedents by Managers and Safety Professionals can be explained by the influence exerted on their prevention thinking by the legal framework established by the Health and Safety at Work etc Act 1974 (HMSO, 1974). The more highly involved the respondent was with the accident the greater the likelihood that preventing it would be expressed in general terms.

To be able to complete the prevention sentence respondents must have some understanding of the relationship between a particular antecedent and the unwanted outcome in order to be sure that changing it would have had the desired effect. To arrive at the point where an individual can form ideas about how an outcome could be prevented it would seem likely that they engage in either counterfactual or causal thinking to identify an antecedent which if changed would have the effect of bringing about a different outcome, that of preventing the unwanted outcome. Counterfactual thoughts might be more suitable because they are considered by Mandel and Lehman (1996) to represent missed opportunities to prevent an unwanted outcome and identify a potential antecedent, which is then used in a forward running simulation heuristic to assess its impact on the outcome. If

changing the antecedent changes the outcome then it has the potential to be classified as having a preventative role. Having identified the specific preventative antecedent Accident Subjects used it in its raw state when completing their prevention sentences, as well as in their counterfactual and causal sentences referring to specific antecedents. To different degrees Safety Professionals and Managers undertake some refining of the specific antecedent and classify it as being part of a more general class of preventative measures and select these to complete their prevention sentences.

Respondents were predicted to use case specific causes (Table 3) but this was only supported for Accident Subjects (Table 30), whereas the results for Safety Professionals and Managers were not as predicted. Respondents were asked to complete the causal sentence 'The cause of Mary's accident was...' which might have led respondents to give a specific cause to a specific accident, making the use of a specific causal antecedent predictable, which was the response for Accident Subjects.

Accident Subjects' tendency to see causes in specific terms may be more representative of the general population when compared to the more balanced use of specific and general causes by Safety Professionals and Managers, whose thinking is more likely to have been influenced by the general duties imposed by the Health and Safety at Work etc Act 1974 (HMSO, 1974) and accident prevention initiatives and campaigns which address types of accident rather than a single specific accident. The results again show a graduation of responses, with Safety Professionals showing a greater use of general causes than Managers; however this was only statically significant for Safety Professionals and trip accidents.

It is not clear from this study whether Managers and Safety Professionals start by identifying a particular cause for a particular accident which is then subsumed in to a general category of 'causes for accidents of this type' and reported in the completed causal sentence in a general way. Alternatively Managers and Safety Professionals might categorise an accident and identify a typical cause though its associated causal schema. When the details of the accident confirm the presence of the typical cause, it becomes associated with this particular accident and is

expressed as a specific cause when the causal sentence is completed. The results summarised in Table 73 would suggest that both approaches are likely to be used.

### ***Known or inferred antecedents***

The idea that respondents might select an inferred antecedent was prompted by the work of Woodcock (1996) who proposed that Safety Professionals used causal schema when investigating accidents. This approach suggested that, after clarifying an accident as being of a particular type, Safety Professionals adopt a stereotypical representation of it. This mental image of an accident provides sufficient information for a Safety Professional to make judgements concerning its origin, cause and how it might have been prevented in the absence of any specific details being made known to them. I have referred to such judgements as being 'inferred' as opposed to being drawn from 'known' information.

In this study I proposed that causal schema are recruited early in an accident investigation based on minimal information. The results indicate a significant relationship between counterfactual antecedents that were known or inferred by the respondents and the level of detail provided. When respondents were given the minimum level of information they used inferred antecedents, but when they were given greater detail they used known antecedents.

The results offer support to the idea that Safety Professionals have a mental model (norm) of a slip or trip accident. The mental model contains information built up through experience of the cause, how it could be prevented and how it could have been different, so that when they are asked to complete a counterfactual sentence about an accident for which they lack detailed information, they draw on this mental model for the missing details and select inferred antecedents.

Table 73. Summary of the use of specific and general antecedents by accident type and job group

	Counterfactual			Prevention			Cause		
	All accidents	Slip	Trip	All accidents	Slip	Trip	All accidents	Slip	Trip
Safety Professional	Specific*	Specific*	Specific*	General*	Specific & General	General*	General*	Specific & General	General*
Managers	Specific*	Specific*	Specific*	Specific & General	Specific***	Specific & General	Specific & General	Specific & General	Specific & General
Accident Subjects	Specific*	Specific*	Specific**	Specific*	Specific*	Specific*	Specific*	Specific*	Specific*
All respondents	Specific*	Specific*	Specific*	Specific & General	Specific*	General*	Specific & General	Specific & General	Specific & General

Cells marked with \* were all significant between  $\chi^2(1) = 55.54 p < .001^{**}$  and  $\chi^2(1) = 55.54 p = .042.***$

In this study sufficient relevant additional details were provided to fill in the missing but expected detail, so that under the maximum detail conditions more respondents were able to find something in the additional details that fitted their mental model, resulting in a higher percentage (slips 63.4% and trips 60%) being changed counterfactually by referring to a known antecedent.

It would appear that a greater level of detail is needed by a Safety Professional to identify how a slip or trip can be prevented or what its cause was than to bring about a different outcome, because they used more inferred antecedents than known antecedents even when the maximum detail scenarios were used.

The results also suggest that Managers and Accident Subjects have a mental model of a typical slip accident as their results closely matched those of Safety Professionals. However the picture for Managers and Accident Subjects with regard to trip accidents was less clear, relying to a greater extent on known antecedents for trips under minimal detail conditions. This tends to imply that they have a less well defined mental model so require the facts provided in the scenario even when these are minimal.

Overall the prevention and causal sentences were completed using more inferred antecedents than known ones. This might indicate a limitation with the scenario design by not providing the information that they wanted to meet their mental model, or it indicates that they are focusing on different aspects of the antecedent sequence. If this is so, further research would help understand this effect and its implications for practical accident investigation.

The counterfactual responses to the manipulation of the level of detail in the scenarios were influenced to a greater degree than those for either the prevention or causal sentences (Table 32). Slip accidents demonstrated this relationship most clearly where respondents presented with minimal information selected antecedents which they inferred must have been in the sequence of events leading up to Mary's accident. In contrast, respondents who were given the maximum detail most often selected an antecedent which had been specifically referred to in the scenario. This

dichotomy of responses inevitably led me to explore whether different antecedents where selected were any different when respondents' inferred their presence or when they were known. A lack of information could have led respondents to use more imaginative counterfactual thinking or draw on previous experiences and select an antecedent which is commonly associated with the outcome.

If Safety Professionals recruit causal schema it could result in counterfactual attributions for slips and trips which were not necessarily based on the individual facts presented in the scenarios but based on the stereotypical slip or trip. It was anticipated if causal schema were used by Safety Practitioners or indeed by Managers or Accident Subjects, that these would be recruited on the basis of minimal information. The manipulation of the level of detail in the scenarios was included to test whether this made any significant difference to what was selected for mutation.

For both slips and trips minimal detail resulted in the counterfactual mutation of an inferred antecedent, whilst maximum detail led to the mutation of a known antecedent and the pattern of response was found in all three job groups (Safety Practitioners, Managers and Accident Subjects), see Table 32.

Six specific antecedents accounted for 64.5% of all the those referred to in the counterfactual sentences about Mary's slip accident. They were: systems of work, warnings, response time by the Cleaner, lack of attention by Mary, Mary's decision to cover for her friend, and clearing up. On closer examination the first five of these antecedents were found to have significant differences between their selection as being known or inferred. Systems of work and Mary's lack of attention were inferred by respondents, whilst the other three antecedents were known to the respondents because they were specifically mentioned in the scenario. These were the lack of warnings, the response time by the Cleaner, and Mary's decision to cover for her friend. The sixth counterfactual antecedent, clearing up the spillage or the box, was used both as being known or inferred.

Managers used fewer inferred antecedents in their counterfactual thoughts than either Safety Professionals or Accident Subjects. 53.7% of Safety Professionals

who used an inferred antecedent related it to systems of work, whilst 47.36% of Accident Subjects inferred that Mary had not been paying attention to where she was going.

It is interesting to note that the subject of Safety Practitioners' counterfactual sentences altered from being general, referring to safe systems of work when they were using inferring antecedents, to more specific ones relating to lack of warnings (37.9%), the failure to clear up (28.8%), and the Cleaner's response time (27.3%) as being known antecedents. Only 1.5% of Safety Professionals referred to systems of work when they had greater detail, which is a significant reduction from 53.7% when they were using inferential counterfactuals.

In summary, the level of detail provided to respondents had a clear influence on their propensity to base their counterfactual thoughts following Mary's slip accident, on known or inferred antecedents (Table 74). Minimum detail tended to lead to inferred antecedents, which were quite different to those known antecedents generated when respondents were in possession of a greater level of detail about the circumstances of the accident. The relationship between the level of detail and the use of known or inferred antecedents found in the counterfactual sentences for slips was not exactly replicated for the trip accident. The trip scenario with minimum detail led to the use of an inferred antecedent, but the maximum detail scenario led to the use of both known and inferred antecedents.

Reviewing Tables 33 and 34 (proportion of respondents using known or inferred antecedents in their prevention sentences) and Tables 35 and 36 (proportion of respondents using known or inferred antecedents in the causal sentence), it is apparent that the majority of responses were inferred. Overall, Safety Professionals and Managers showed a greater tendency to use inferred antecedents than known antecedents when completing their prevention and causal sentences. Again it was the Accident Subject group that showed the most variable responses. For both the prevention of slips and the cause of slips the level of detail influenced the selection of known or inferred antecedents in the same way as it did for the counterfactual slip, with minimum detail leading to inferred antecedents and maximum detail leading to known antecedents being used. However, this pattern was not found for



Accidents Subjects' prevention and causal sentences for the trip accident. In both instances Accident Subjects continued to use inferred antecedents when presented with minimum detail scenarios, but used both known and inferred antecedents with maximum detail scenarios.

Counterfactual thinking about slip accidents was more sensitive to the level of detail provided to the respondents than was counterfactual thinking about trip accidents or to preventative thinking or causal thinking. The reason for this is unclear from this study and it may benefit from further research to establish why this may be so and what effect it has on the way that slip accidents are responded to in the workplace.

Table 74. Summary of the use of known or inferred antecedents by accident type and job group

	Counterfactual			Prevention			Cause		
	All accidents	Slip	Trip	All accidents	Slip	Trip	All accidents	Slip	Trip
Safety Professional	Known & Inferred	Known & Inferred	Known & Inferred	Inferred*	Inferred*	Inferred*	Inferred*	Inferred*	Inferred*
Safety Professional (minimum detail)	Inferred *	Inferred *	Inferred *	Inferred*	Inferred*	Inferred*	Inferred*	Inferred*	Inferred*
Safety Profession. (maximum detail)	Known *	Known*	Known & Inferred	Inferred *	Inferred*	Inferred*	Inferred *	Inferred *	Inferred*
Managers	Known & Inferred	Known & Inferred	Known & Inferred	Inferred*	Inferred*	Inferred*	Inferred*	Known & Inferred	Inferred*
Managers (minimum detail)	Inferred*	Inferred *	Known & Inferred	Inferred*	Inferred*	Inferred*	Inferred*	Inferred	Inferred*
Managers (maximum detail)	Known *	Known*	Known & Inferred	Known & Inferred	Known & Inferred	Known & Inferred	Inferred*	Known & Inferred	Inferred *
Accident Subjects	Known & Inferred	Known & Inferred	Known & Inferred	Inferred*	Known & Inferred	Inferred*	Inferred*	Known & Inferred	Inferred*
Accident Subjects (minimum detail)	Known & Inferred	Inferred *	Known & Inferred	Inferred*	Inferred	Inferred	Inferred*	Inferred	Inferred*
Accident Subjects (maximum detail)	Known*	Known*	Known & Inferred	Known*	Known*	Known & Inferred	Known & Inferred	Known *	Known & Inferred

Cells marked with \* were all significant between  $\chi^2(1) = 189.78 P < .00$  and  $\chi^2(1) = 46.72 p = .044$

### *Personal or situational antecedents*

This study sought to differentiate between situational counterfactual thoughts that related to the physical environment or situations which influenced a scenario actor's behaviour and personal counterfactual thoughts which related to a scenario actor's character, personality or other inherent traits.

Safety Professionals and Managers showed a clear preference for selecting counterfactual antecedents which changed the situation over those that related to someone's character or personality, but Accident Subjects used both types of counterfactual thought. The prevention and causal sentences showed a very similar pattern of responses to the counterfactual sentences, with the exception of Managers' causal sentences which used personal and situational antecedents.

Roese and Olsen (1993b) considered the generation of externally focused counterfactuals following failures to achieve a desired goal and internally focused counterfactuals following successes. In the context in which they discussed internal and external counterfactuals, they were being generated by the person who was the subject of the unwanted outcome and not, as in this study, by people who were personally and professionally involved to varying degrees.

In this study the different roles that respondents held in relation to Mary's accident were more complex, embracing a range of personal and professional involvement, and the scenarios were developed to allow for a more detailed exploration of the effect of these roles to be undertaken. Safety Professionals and Managers were expected to adopt a public perspective to their thinking and be more likely to use externally located situational antecedents, whilst Accident Subjects were more likely to adopt a personal perspective and use externally located (situational or personal) antecedents or internally (situational or personal) relevant antecedents.

An illustration of these different respondent roles and the types of counterfactual thoughts that they might use is given in Figure 9. The four boxes represent decreasing personal involvement and increasing professional involvement as they get larger. The inner (left) box represents the highest personal involvement into which we place Mary as the accident subject. That box also represents the

immediate physical work environment. In that situation Mary could generate either an internal or an external counterfactual (Roese and Olsen, 1993b).

As this study involved an accident and an injury it was reasonable to assume that Mary would regard that as a failure and generate an external counterfactual, which is represented by the black arrows AS1 and AS2. The possible, but probably unused, internal counterfactual is represented by the arrow AS3. There are many possible targets for external counterfactual thoughts but they can be described as belonging to two categories, the first being personal antecedents, where the event selected for change focuses on an aspect of a person's nature, personality, character or behaviour. This particular type of external antecedent is represented by arrow AS1 in Figure 9. In this example Mary is selecting a personal aspect of the Cleaner's behaviour, but this could have been anyone else who was sufficiently closely associated with the accident, for example Mary might have thought 'If only the Cleaner had been more attentive and cleaned up the spillage quicker... things might have been different'.

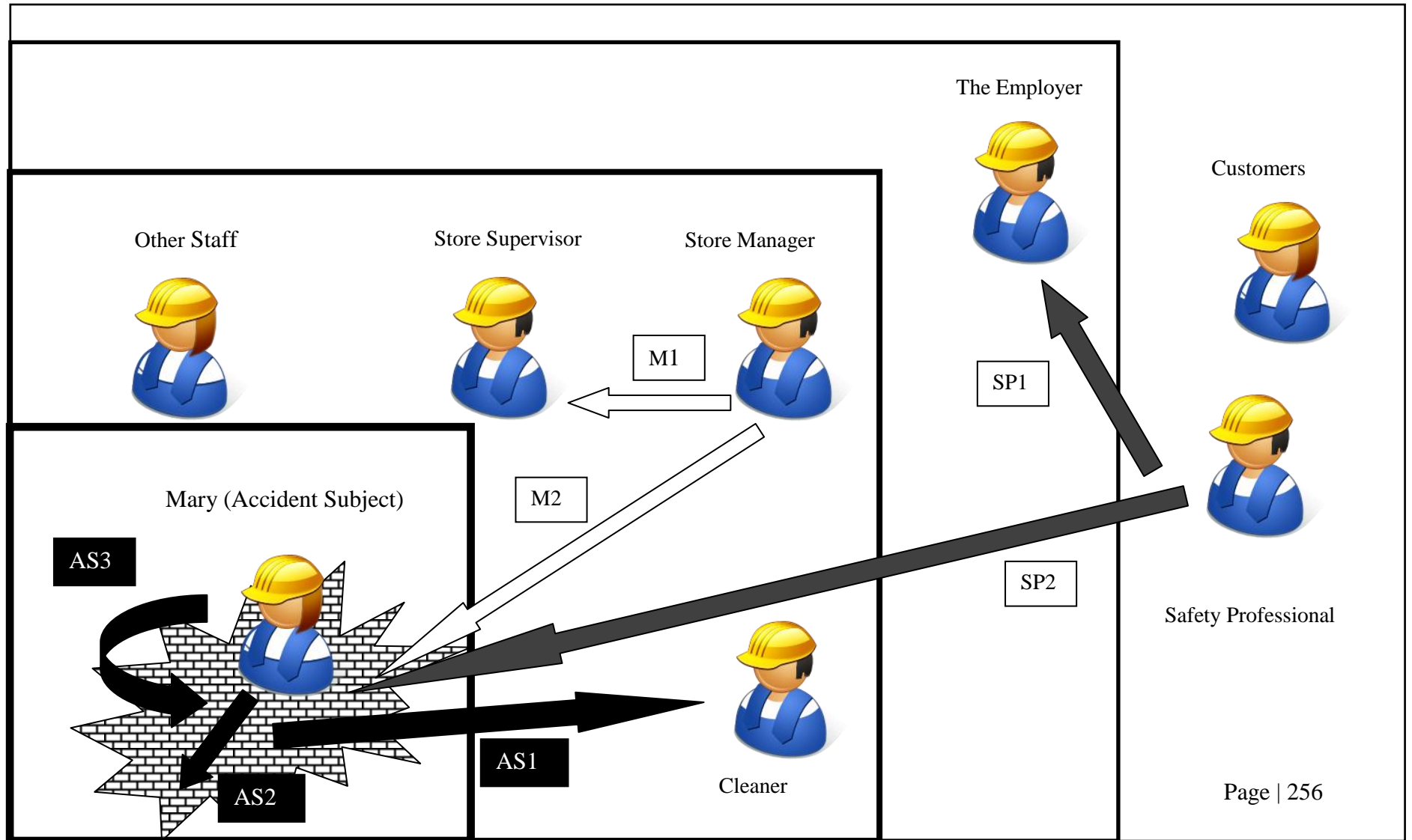
There are probably limits to the temporal, physical or emotional relationship with an outcome beyond which personal antecedents become less attractive or functional to the thinker. I suggest that a personal antecedent relating to a Safety Professional would not be a lucid counterfactual, probably because it is hard to imagine how changing their personal characteristics would bring about a different outcome.

The second possible target of an external counterfactual relates to the situation or set of circumstances under which the unwanted outcome occurred, and this can also include behaviours influenced by the environment. This is illustrated by arrow AS2 in Figure 9 and includes physical as well as procedural antecedents. An example of an external situational counterfactual might be 'If only the warning signs had been displayed... things might have been different'. An antecedent is not fixed as being either a personal or a situational counterfactual, but is context dependent. As I have illustrated above the lack of warning signs could be an external situational counterfactual or, if it had been expressed slightly differently, as an external personal counterfactual ('If only the Cleaner could have been bothered to put the warnings signs out things might have been different'). Similarly arrows M1 and

SP1 illustrate a possible personal focus for Managers' and Safety Professionals' counterfactual thoughts, whilst M2 and SP2 represent possible situational counterfactuals.

It is noteworthy that Safety Professionals and Managers showed a strong tendency to select situational antecedents most commonly following both Mary's slip and trip accident in their counterfactual, prevention and causal sentences, whereas Accident Subjects were as likely to use both personal and situational antecedents, with two noticeable exceptions - Accident Subjects showed a significant tendency to use personal counterfactual antecedents after Mary's trip accident and situational causal antecedents after her slip accident.

Figure 9. Schematic representation of personal and situational counterfactual thinking



### *Was a specific actor spontaneously identified?*

All three respondent job groups were recruited from people who had relevant real life experience, however they were still to some extent role playing by having to apply that experience to the scenario setting of Mary's accident. In this study respondents were asked to adopt two slightly different roles, with Safety Professionals and Managers adopting a more neutral, less personal, more public perspective (third party observers), whilst Accident Subjects were actually asked to respond as though they were Mary herself, so their stance was more personal and from a more first-hand perspective.

Safety Professionals and Managers adopted a public perspective when undertaking their counterfactual thinking and it seemed likely that when they structured and expressed their thoughts they would make explicit the relationship between the antecedent selected for change and the person who they associated with it. The results in Table 40 showed that Safety Professionals and Managers did make some spontaneous reference to the scenario actor, but just as frequently did not. The pattern of responses in the prevention and causal sentences showed a significant difference for Safety Professionals and Managers with the majority not making any spontaneous reference to a scenario actor.

Accident Subjects were expected to generate counterfactual thoughts from a more personal perspective and were less likely to refer to a scenario actor because they should be more self-referential. This was not supported by the results in that they referred to a scenario actor as often as not in their slip counterfactual sentences and went even further from this prediction in their counterfactual responses to Mary's trip accident, with the majority making a spontaneous reference to a scenario actor.

The majority of Safety Professionals and Managers made no reference to a scenario actor in their prevention and causal sentences; however, Accident Subjects were as likely as not to refer to a specific actor (Tables 41 and 42).

The accident scenarios used in this study were not ones in which Safety Professionals or Managers were expected to change anything that they had done personally or had any personal control over, whereas this was more likely from Accident Subjects, so it was interesting to note whether the counterfactual sentence spontaneously identified a scenario actor and who that person was.

Across all respondents, counterfactual thoughts (Table 40) showed no significant difference in the proportion who spontaneously identified a scenario actor and those who did not with 52.4% identifying an actor and 47.6% not. Safety Professionals and Managers were equally likely to identify an actor as they were not for both slips and trips. Accident Subjects showed the same tendency in response to slip accidents, but they displayed a different approach towards trip accidents where they were significantly more likely to identify a specific person in their counterfactual sentence.

In contrast, respondents were significantly less likely to identify a scenario actor in their prevention (72.8%) or causal sentences (75.6%), in Tables 41 and 42. However there were differences between the respondent groups. In the prevention sentence Accident Subjects were again noted as having a different approach from Safety Professionals and Managers, showing no statistical difference between those who did identify a scenario actor and those that did not, and this was the same for both slips and trips. In the causal sentences it was again Accident Subjects considering Mary's trip accident who were equally likely to have spontaneously identified a scenario actor as not.

A higher percentage of counterfactual thoughts were focused on a named individual than were causal or prevention thoughts. With a stronger personal focus, counterfactual thoughts are more likely to be associated with blame and responsibility.

Of all the 1,906 sentences completed in this study (636 counterfactual, 626 prevention and 644 causal), 1,246 (65.4%) did not make a direct and unprompted reference to a clearly identifiable scenario actor. This trend was identified during the pilot stage and an additional question was added to the questionnaire asking



each respondent after they had completed a sentence stating who, from a given list of scenario actors, their sentence related to. In the next section I will discuss the results from this question.

***To which scenario actor did the sentence refer?***

The person associated with a counterfactual, prevention or causal sentence can have important consequences as far as responsibility, blame or legal liability is concerned. It also assists in understanding how and more importantly who can exercise control over the selected antecedents and this is particularly relevant to social situations governed by strict rules.

Table 75 reports the modal responses for the selection of the scenario actor in all three types of sentence. Whilst this simplifies the picture to some extent it nevertheless highlights an unexpected pattern to the selection of the scenario actors by Safety Practitioners in their sentences, with the counterfactual sentence referring to the Supervisor whilst both the prevention and causal sentences referred to the Employer.

For Managers and Accident Subjects the results show a high degree of conformity with the respondents' sentences most commonly referring to either the Supervisor or the Employer. There were two notable exceptions, the selection of the Store Manager by Managers in their causal sentence, and the reference to Mary by Accident Subjects in their counterfactual sentence.

I do not consider Managers' reference to the Store Manager to be particularly unexpected. Managers selected the Supervisor almost as often (22.9%) as the Store Manager (23.7%) in their causal sentences and Safety Professionals selected the Store Manager as their second choice of scenario actor (19.9%) in their prevention sentences. So the Store Manager was being selected with some degree of regularity by both Safety Professionals and Managers, but not, on closer examination of the results, by Accident Subjects.

Table 75.  
Proportion of respondents selecting a scenario actor as their modal choice

	All responses	Safety Professionals	Managers	Accident Subjects
Counterfactual sentence	Supervisor (31.4)	Supervisor (31.5%)	Supervisor (37%)	Mary (31.4%)
Counterfactual sentence (Slips)	Supervisor (34.3%)	Supervisor 32.6%	Supervisor (41.3%)	Supervisor (32.4%)
Counterfactual sentence (Trips)	Supervisor (28.6%)	Supervisor 30.5%	Supervisor (35.7%)	Mary (44.6%)
Prevention sentence	Supervisor (23.0%)	Employer (32.7%)	Supervisor (29.7%)	Supervisor (38.4)
Prevention sentence (Slips)	Supervisor (28.5%)	Employer (35.4%)	Supervisor (30.6%)	Supervisor (44.9%)
Prevention sentence (Trips)	Supervisor (23.2%)	Employer (30.2%)	Supervisor (32.8%)	Supervisor (24.2%)
Causal sentence	Employer (24.4%)	Employer (38.7%)	Store Manager (23.7%)	Supervisor (27.1%)
Causal sentence (Slips)	Employer (30.9%)	Employer (47.7%)	Supervisor (37.7%)	Supervisor (38.8%)
Causal sentence (Trips)	Employer (22.9%)	Employer (33.7%)	Manager (27.1%)	Other worker (22.7%)

There is also a legally-based explanation why Safety Professionals and Managers might be more predisposed to selecting scenario actors who have a supervisory

responsibility or management role along with the employer, and this is based on the requirements of the Health and Safety at Work etc Act 1974 (HMSO, 1974) and regulations made under it, along with various codes of practice and guidance issued by the Health and Safety Executive, but in particular HSG65 Successful Health and Safety Management (HSE, 2013c). The Act sets out a general duty in Section 2 on an employer to ‘to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his employees’ and to ‘prepare...a written statement of his general policy with respect to the health and safety at work of his employees and the organisation and arrangements for the time being in force for carrying out that policy, and to bring the statement... to the notice of all of his employees’. In the employer’s health and safety policy statement, the management organisation and arrangements to implement the policy will set out the roles and responsibilities of managers and supervisors and HSG 65 provides guidance to managers on how the management of health and safety in an organisation needs to be planned and implemented in the same way as any other management function.

The selection of Mary by 31.4% of Accident Subjects as being the counterfactual actor is more unexpected and is a distinct departure from the majority of the other responses in Table 75, and Mary is particularly associated with trip accidents (44.6%) over slip accidents (26.5%). It is perhaps particularly reassuring that Managers did not appear to have seen Mary as being important in bringing about a different outcome to her own accident. It would have been all too obvious and almost convenient for Managers to have focused their counterfactual thoughts on what Mary could have done differently and vice versa. Indeed this was the starting point for Lehane (1998) who examined the perceptions of causal responsibility for slips and trips and also found a greater divergence between Managers and Accident Subjects with regard to trip accidents than slip accidents.

Looking at the responses for all respondents in Table 75, the counterfactual and prevention sentences both focused on the Supervisor as the scenario actor whilst the causal sentence focused on the employer, but each respondent group had a slightly different approach. For Safety Professionals the counterfactual sentence focused on the Supervisor whereas the prevention and causal sentences focused on the

Employer. The focus on the Employer can be explained by the framing effect of the legal duties placed on employers under the Health and Safety at Work etc Act 1974 (HMSO, 1974). This would imply that Safety Professionals saw a greater similarity in the role of the scenario actors between thinking about the cause of an accident and how it could have been prevented than how it could have been counterfactually different.

Managers' counterfactual sentences also focused on the Supervisor's role indicating that these two groups adopted a similar approach to how Mary's accident could have been different. Counterfactually the Supervisor was one of a number of people who could have acted in a different way and whose actions were sufficient to have led to a different outcome. It is interesting to note that 54.1% of Safety Professionals and 46% of Managers who selected the Supervisor as the focal scenario actor considered him to have been in a position to have exerted direct control over the antecedent to be changed. It is perhaps surprising that the role of the Cleaner in bringing about a different outcome was not ranked more highly, after all the Cleaner's role is directly associated with the removal of spillages and rubbish from the shop floor yet was not the scenario actor referred to most frequently by either Safety Professionals and Managers.

In a later section I will propose that the relationship between the scenario actor and the specific subject of the sentence is one of either 'responsibility' or 'control', and it is that relationship which I propose drove Safety Practitioners to select the Supervisor as the scenario actor for their counterfactual sentence and the Employer for their prevention and causal sentence.

Other results presented from this study suggest that Safety Professionals are more likely than Managers and Accident Subjects to think about slips and trips from within a legal framework. Health and Safety legislation sets out to identify hazards and control them with the aim of preventing occupational injury, and in doing so places specific duties on employers to comply with them. Against this background it is not unexpected that Safety Professionals focused their prevention thoughts on the role of the Employer, as they did in this study. When things go wrong and an accident occurs it highlights a failure to discharge these duties, and this must stimulate

thoughts about the cause of the accident, which according to the Safety Professionals' responses in this study also focuses on the responsibility of the Employer. So why do Safety Professionals alter their focus to the Supervisor when they think about how a different outcome might have happened? For Safety Professionals it seems that the frame of reference that counterfactual thinking operates within is in some way subtly different to that brought in to play by thinking about the cause of the outcome or how it could have been prevented. This is suggested by the differential focus on the Supervisor and the implied control relationship over the specific subject of the counterfactual sentence.

Previous research initially considered the relationship between counterfactual and causal thinking and more latterly between counterfactual thinking and prevention. The cognitive processes involved are very similar and it is easy to slip into counterfactual thinking when trying to identify a cause or ways in which the accident could have been prevented, but from the results presented here for Safety Professionals it would seem that prevention and causal thinking are more closely related to each other than they are to counterfactual thinking. This may of course be an artefact of the particular role that safety practitioners have towards occupational accidents, and the influence of the legal framework on the context in which they operate cognitively, and it would be interesting to undertake further research on this aspect of counterfactual thinking by people with a role-specific relationship to an unwanted outcome. I was going to suggest that police officers investigating road traffic accidents might exhibit similar differences between counterfactual thinking and causal and prevention thinking, but there is probably an important difference in the legal framework applicable to road traffic accidents and occupational accidents. I have already alluded to the fact that the Health & Safety at Work etc Act 1974 (HMSO, 1974) places duties on employers who discharge them through the delegation of control to managers and supervisors. When a failure arises the employer is usually held to be culpable but this subtle difference is not apparent in road traffic accidents where the responsibility for compliance and control rests with the driver, so the effect identified in safety practitioners may only be found under certain and specific circumstances.

The results of this study indicate that Safety Professionals use counterfactual thinking to test the actions of an employer against their duties under Section 2 of the Health and Safety at Work Act 1974 (HMSO, 1974). If an employer's actions were found not to comply then Safety Professionals change an antecedent to bring about an alternative outcome in which the employer's actions are legally compliant. If this is the case then the norm for a Safety Professional is compliance with the law but this raises the question as to whether compliance with the law would, in reality, have prevented Mary's accident? Clearly the law sets out standards that are considered by the legislator to minimise the risk of people being injured, but I suggest that mere compliance does not of itself result in the avoidance of all accidents. However for Safety Professionals, whose norm is based on legal compliance undoing an outcome by returning a non-compliant situation to one which complies, it highlights and makes that non-compliance more exceptional and available.

A counterfactual does not have to be objectively true, but it has to be subjectively convincing to the thinker so that they believe making the change would lead to the desired outcome. For a Safety Professional whose thoughts are framed by the law it is enough that the counterfactual change could bring about a different (better) outcome and that within that framework they believe it to be so, whereas the counterfactual brought to mind by an Accident Subject may be quite different but from their perspective they believe that the counterfactual change will achieve their goal to re-establish their norm and avoid accidents. Both may be objectively true or false but what is important is that from their respective positions, each framed by the social situation and roles they find themselves in and the attendant framing effects, they believe that their counterfactual is controllable and therefore achievable.

#### ***The specific subject of the sentence***

The results presented in this study on the specific nature of the antecedents referred to in the respondents' sentences are limited to the scenarios used but should be relevant to slip and trip accidents in general, however they cannot be generalised across other types of occupational accident without further research and evaluation.

The specific subject of the three types of sentence presented in Tables 46, 47 and 48 help to understand and explain the pattern of responses revealed when considering

who the scenario focal actors were (Table 75). I suggest that the specific subject of the sentence points to a functional relationship with the scenario actor which is based on the actor either being responsible for something or having the opportunity to effect control by taking an action or not acting (responsibility or control), and may be illustrated in the responses of Safety Professionals.

In their counterfactual sentences they associated the Supervisor with inadequate warning signs and I suggest this represents a control relationship, as a Supervisor could have ensured the signs were displayed, or even put them out himself! A different scenario actor and specific sentence subject were used by Safety Professionals for their prevention and causal sentences. In both cases they related to the Employer who was associated through the specific subject of the sentence to the establishment of safe systems of work, which I suggest represents a relationship based on responsibility. In this instance the responsibility is an explicit one established by Section 2 of the Health and Safety at Work etc Act 1974 (HMSO, 1974). Not all responsibility-related antecedent relationships will be explicit; there will be situations where the responsibility will be implicit or will be a moral one. The two types of relationship (responsibility or control) are not mutually exclusive and it is quite easy to conceive of situations where being in a position to take action creates a moral responsibility to act. An example might be, if you were to witness a crime where you could have intervened and stopped it. Similar connections based on this responsibility or control relationship can be made for the other respondents and their sentences. I have set out in Tables 76, 77 and 78 the type of relationships I believe may have existed.

Table 76. Type of relationship between the scenario actor and the specific subject of the sentence for Safety Professionals

Sentence	Scenario actor	Specific subject of the sentence	Relationship between actor and specific subject
Counterfactual (Slips)	Supervisor	Inadequate warnings	Control
Counterfactual (Trips)	Supervisor	The presence of the hazard	Control
Prevention (Slips)	Employer	Systems of work	Responsibility
Prevention (Trips)	Employer	Standards of housekeeping	Responsibility
Causal (Slips)	Employer	Systems of work	Responsibility
Causal (Trips)	Employer	The presence of the hazard	Responsibility



Table 77. Type of relationship between the scenario actor and the specific subject of the sentence for Managers

Sentence	Scenario actor	Specific subject of the sentence	Relationship between actor and specific subject
Counterfactual (Slips)	Supervisor	Inadequate warnings	Control
Counterfactual (Trips)	Supervisor	The presence of the hazard	Control
Prevention (Slips)	Supervisor	Inadequate warnings	Control
Prevention (Trips)	Supervisor	The presence of the hazard	Control
Causal (Slips)	Supervisor	The presence of the hazard	Control
Causal (Trips)	Store Manager	The presence of the hazard	Control

Table 78. Type of relationship between the scenario actor and the specific subject of the sentence for Accident Subjects

Sentence	Scenario actor	Specific subject of the sentence	Relationship between actor and specific subject
Counterfactual (Slips)	Supervisor	Inadequate warnings	Control
Counterfactual (Trips)	Mary	The presence of the hazard	Control
Prevention (Slips)	Supervisor	Failing to clean up	Control
Prevention (Trips)	Supervisor	The presence of the hazard	Control
Causal (Slips)	Supervisor	The presence of the hazard	Control
Causal (Trips)	Other worker	The presence of the hazard	Control

### *Domains*

The specific subjects of the counterfactual sentences were initially grouped into one of four categories which I refer to as domains. These were based on a physical domain, a behavioural domain, a process or procedure, or an attitude. However attitude was excluded from subsequent analysis because it was so infrequently used.

For both respondents' job group and accident type the items selected for counterfactual change were most commonly located in the behavioural domain (mean percentages - Safety Professionals 53.7%, Managers 61.2% and Accident Subject 78.2%). Although the specific subject of the 'if only...' sentence may have related to the presence of the hazard or a lack of warnings, most commonly it was a behaviour that was changed in relation to the specific subject. Behaviours could be something that was done (an action) or something which had not been done (inaction).

The pattern of responses changed for the prevention sentence where Safety Professionals' sentences were located mostly in the process and procedure domain (mean 64.8%) whilst Accident Subjects were still mostly in the behaviour domain (mean 65.1%) and Managers were using both (mean behaviour domain 46.2%, mean procedure domain 41%).

Safety Professionals' causal sentences showed more mixed responses combining the behavioural domain (32.9%) of the counterfactual sentence with the procedural domain (49.7%) of the prevention sentence at least for slip accidents, but showed a continuing preference for causal antecedents for trip accidents in the procedure and process domain (55.1%). Managers showed a preference for behavioural antecedents (50.9%) in their causal sentences for slip accidents and a dual use of behaviours (37.7%) and processes (39.3%) for trip accidents. Accident Subjects continued to show a preference for behavioural antecedents in their causal sentences (58.1% for slips and 57.1% for trips).

These results show that the counterfactual sentences mainly sought to make changes to behaviours. This is common to all three job groups and unaffected by the type of accident, although the behavioural focus is not so pronounced for the prevention and causal sentences, with the exception of Accident Subjects for whom a behavioural antecedent is most commonly used. Again the results reflect the influence exerted on Safety Professionals by their social role and the framing effect of the legal system that they work in. When they consider how Mary's accidents could have been prevented they achieve this through antecedents located in the procedure / process domain, which reflect the legal requirements to have a safety policy, documented arrangements and procedures, and this emphasis on the procedure / process domain was also found in their causal sentences.

Managers' responses to the completion of the prevention and causal sentences tended to place them between the Safety Professionals and Accident Subjects, as they showed a more balanced use of antecedents using both the behavioural and procedure / process domains, except when thinking about the cause of Mary's slip which was more firmly located in the behavioural domain.

### **Comparing the Counterfactual Sentences with the Prevention and Causal Sentences**

There has been some debate in the literature as to whether counterfactuals identify a causal relationship between the mutated antecedent and the outcome or identify a missed opportunity to prevent the unwanted outcome. In an attempt to explore this further, each respondent was also invited to complete a prevention and a causal sentence in addition to the counterfactual sentence. The responses to those sentences are detailed in Appendix 5. The prevention and causal sentences were coded across the same dimension as the counterfactual sentence, with the exception of ‘direction’ which only related to counterfactual thought.

A high-level analysis of the sentences suggests that there is a greater degree of parity between the counterfactual sentence and the prevention sentences than between the counterfactual and causal sentences, and this has already been discussed where relevant in the preceding sections.

### **The effect of the respondents’ job group and the type of accident on the Consideration of Future Consequences score**

The Consideration of Future Consequences Scale (Strathman et al., 1994) was modified for this study and applied to the respondents to assess how much consideration they gave to safety in the future as opposed to now. Against expectation Accident Subjects’ mean scores were higher than those of both Safety Professionals and Managers. I had anticipated that the Safety Professionals scores would have been the highest given that they deal with safety on daily basis and are more closely associated with ensuring that ongoing safety standards are met than Accident Subjects.

A possible explanation for these results is that Accident Subjects had recently been involved in a real work-related accident which had caused an injury serious enough to have kept them off work for at least three days. This experience was still fresh and being invited to respond to the research questionnaire strengthened their responses over those that might be expected of an employee who had not recently been involved in an occupational injury. Future research might usefully develop and refine

the use of the scale more widely in occupational settings to better understand how people think about their future safety and to find out if this varies in different occupational settings.

### **Limitations of this research**

The study set out to examine how counterfactual thinking was used to bring about a different outcome to an occupational slip and trip accident using respondents who had recent and personal experience of such accidents, or who were professionally involved with safety or the management of workplaces. Whilst attempting to achieve a high degree of ecological validity there were inevitable limitations. These are briefly discussed in the following sections.

The study attempted to examine a real life situation which includes many variables and these were included in the study scenario including three respondent groups, manipulating the type of accident, the severity of the injury and the level of detail that was provided to the respondents. In retrospect this was too ambitious and would have benefited from being focused on one type of accident and a single type of injury. The inclusion of three respondents' groups and the two levels of detail proved to be the most relevant.

Twenty four versions of the questionnaire were required to manipulate the various factors and this was unnecessarily complex and required a large sample to ensure adequate statistical power. Considerable time and effort was required to identify and recruit enough respondents. Access to Safety Professionals was easy and a very good response rate was obtained, but it proved difficult to recruit Managers and Accident Subjects and the data collection period was prolonged as a result.

The scenario and its associated questionnaire attempted to capture a wide range of information from respondents and was correspondingly quite a substantial document which took about 20-30 minutes to complete. This was not a limiting factor for Safety Professionals but may have been a reason why the response rate from Managers and Accident Subjects was lower. A shortened version of the questionnaire was introduced part-way through the data collection phase to address this concern.

A key element of this research was the use of real life respondents to give a more authentic response than role-playing students. Scenarios and questionnaire were randomly addressed to businesses through publicly available business directories. This was an inefficient method of recruitment for Managers and was costly and time consuming. Future research might be easier if it could be undertaken with the support of a large partner organisation, but that would limit the responses to that organisation's particular culture. Only a small percentage of employees have a reportable occupational accident from the total working population in England and Wales and recruiting from this population proved to be resource intensive and relied on access to the national accident database.

Potential respondents were identified and invited to respond, but those that chose to complete the questionnaire were self-selecting and this had the potential to introduce a bias because it may have encouraged respondents who are interested in the subject to respond more than those who are more neutral or disinterested. In this study it is likely that Managers who responded were more safety conscious than those who did not respond. Care was taken to exclude any Managers whose responses indicated any significant health and safety involvement and when there was any doubt they were coded as being from a Safety Practitioner. Questionnaires were posted out to potential Accident Subjects on a monthly basis in the hope that it would reach them when their accident was still fresh and they could respond with a high degree of realism, but that time scale might have been too soon for some individuals and too late for others.

### **Theoretical and Practical Implications of this Study**

The study has highlighted a number of areas where the structural dimensions of the counterfactual sentence predicted to be the most common by earlier research have been influenced by either the respondents' job group or the type of accident. I will comment on the main points and suggest why these are important and how further research might be directed towards a fuller understanding of the interrelationships between the various factors.

## Counterfactual direction

Whilst the respondents' different social roles in this study exerted a more subtle influence on the structure of the counterfactual sentences, there was a common purpose shared by all respondents in seeking to bring about a better (upward) outcome following both slip and trip accident scenarios. This may have been a direct and inevitable consequence of the scenario in an occupational setting with its associated rules and responsibilities. The social setting presented through the scenario was based on an accident report and investigation and may have constrained the direction of counterfactual thinking so that the avoidance of the accident was most likely, although respondents had the opportunity to bring about a different but worse outcome however no respondent chose to change it in that direction.

One avenue for future research would be to present respondents with other types of occupational accident, with different outcomes, and with different reasons for engaging in counterfactual thinking, in order to see which prompts a worse outcome (downward counterfactual). For example, a downward comparison might be made under circumstances where the risk of serious injury is higher but was avoided (a lucky outcome), or where the respondents' role is to inform the accident subject's family about the accident, depending again on the severity of the outcome. It is reasonable to suggest that as the legal process of accident investigation progresses and a prosecution is brought by an HSE or local authority inspector, their use of upward counterfactuals would be maintained because it highlights how easy it was to have prevented the accident and that justifies their role and subsequent blame and punishment. In this instance the relationship between counterfactual thinking and hindsight bias is important because an employer can only be responsible for risks that are reasonably foreseeable, and this is another important area to understand in the context of an occupational accident.

### *Actions / inactions and addition / subtraction*

A predictably strong inaction effect was identified given the setting in which legal duties establish an expectation that action is required to meet those duties and avoid accidents. The implication of an accident is that the necessary actions were not taken (an inaction). Norm Theory suggests that in general social situations actions are more

exceptional than inactions, but this study has shown the reverse with inactions being mutated. In social situations governed by rules and legal standards inactions are the exception and are selected for change to return them to the expected norm. In such situations inactions are then likely to be associated with failure, bringing with that attributions of responsibility, blame and being punished. We know from previous research, for example Wells and Gavanski (1989), that where someone's actions could have prevented an accident they are held to be more responsible for the outcome. However this study did not ask respondents to make these attributions, but it would be worthwhile extending the study to compare the attribution of responsibility, blame and degree of punishment as a result of thinking counterfactually, compared to thinking how the accident could have been prevented or how it was caused.

The study identified a relationship between actions / inactions and addition / subtraction. Counterfactuals focusing on inactions were corrected by the addition of an action, and the subsequent prevention sentence was also likely to focus on the addition of an action. Respondents who identified the cause as arising from an inaction also found it to be subtractive in the sense that it was less than required.

This pattern of responses is likely to be widespread in social situations which are subject to formal rules requiring certain actions (behaviours) to comply. In other social situations where the rules prohibit certain actions a different relationship would be expected, in which counterfactual thought would change actions, prevention would focus on inaction and cause would be attributed to an action.

Further research in this area would assist in understanding the roles that counterfactual, prevention and causal thinking have on people's actions and inactions under different regulatory regimes and how that leads to the identification of individuals and the attribution of responsibility, blame and punishment for unwanted outcomes when rules are broken.



### ***Exceptionality***

A refinement of Norm Theory has been developed in this study. Under Norm Theory unexpected outcomes are returned to their default and expected state, or norm, by changing an antecedent which is classified as being exceptional in some way. Three categories of exceptional event were developed which describe the relationship between the antecedent and the expected outcome. This was found to be achieved through the application of existing rules where these have not been correctly or adequately applied (second order exception), by altering existing rules to improve the probability of the desired outcome being achieved (fourth order exception) and, lastly and more rarely, by establishing completely new rules (third order exception). This new way of classifying exceptional antecedents was also applied to the prevention and causal sentences in this study.

The classification scheme worked well in the specific context of this study but more work is needed to establish if it is applicable to other social situations and provides a useful additional utility to describing the nature of the antecedent and how it is changed. In this study the classification of exceptional antecedents based on this scheme appears to provide a better understanding of the route offered by a counterfactual mutation of an antecedent and how it leads to the desired outcome. It has the potential to help identify differences in the type of antecedents selected by different groups, and through this might facilitate a better understanding of how people's post-accident cognitions operate and assist in delivering more targeted accident prevention strategies.

### ***Temporal location (timescale)***

Real accidents arise from long chains of antecedents combining causally and temporally related antecedents. This study successfully created and applied an accident scenario with 11 stages of mixed antecedents. Quite unexpectedly the type of accident had a significant influence on the temporal location of the antecedent selected to be changed whereas the respondents' job group did not. The counterfactual antecedents most commonly selected following Mary's trip accident were located very early in the temporal sequence (before the day of the accident) whilst the antecedent most commonly selected following Mary's slip accident was

located at a much later stage, at the point where the hazard was on the floor and awaiting the Cleaner (Stage D).

It is unclear what the reasons for this differentiation are and whilst I have speculated about possible causes they remain just that. This is potentially an important result because it is one of the few structural dimensions used in the study which shows clear blue water between the antecedents used in connection with slips and trips and is unaffected by respondents' job group. Further research would be helpful to establish if this effect is repeated and not an artefact of this particular study.

### *Control*

Under the Health and Safety at Work etc. Act 1974 (HMSO, 1974) employers are expected to exercise control over the working environment and working practices and procedures, making control over the antecedent both expected and legally required. This would be in keeping with previous research in which controllable antecedents were mutated in preference to uncontrollable ones. A differentiation in control was proposed and found in this study, in which some antecedents were under the direct control of the scenario actor whilst others were under indirect control. This difference was largely based on whether the respondent was viewing the outcome from a personal or public perspective. Safety Professionals showed a tendency to select antecedents that were under indirect control as opposed to Accident Subjects who selected a greater percentage of antecedents under direct control, and this differentiation was also likely to influence both the selection of the scenario actor and the specific subject of the counterfactual prevention and causal sentences. The nature of these relationships has been suggested in Tables 76, 77 and 78. The relevance and implications of direct and indirect control and how they are related to the person thinking counterfactually and to their selected actor is worthy of further research, particularly in social situations in which strong rules exist governing people's behaviour.

## Dynamic or static antecedents

This study has confirmed the results of previous research which suggested that dynamic antecedents were more highly available for counterfactual mutation. This is true even for Safety Professionals, whose selection of antecedent had been predicted to be more highly constrained towards static antecedents because of the overarching legal rules to meet goals through distinctly static requirements, such as having to have undertaken risk assessments, written safety policies and procedures, and have plans to monitor compliance, none of which are immediately obvious to an observer of an accident and can only be ascertained through questioning. A possible explanation why Safety Professionals still preferred dynamic antecedents has been offered, but this has not been tested and the influence of social rules on the use of dynamic and static antecedents would benefit from further research.

### *The new structural dimensions of counterfactual thinking*

Seven new structural dimensions of counterfactual thought were proposed and applied in this study and their relevance to counterfactual thinking needs to be more fully explored and understood before their usefulness and importance can be assessed.

Clearly some dimensions such as the specific subject of the counterfactual thought will be intimately linked to particular situations and outcomes, but could nevertheless inform research in very precise fields of enquiry such as accident investigation as used here. Others dimensions, for instance the use of known or inferred antecedents, could be much more widely applicable and the relevance of that to the psychology of hindsight bias, stereotyping and other similar heuristics, like the use of causal schema by Safety Professionals, might be informative.

In this study a very strong association was found between the level of detail provided to respondents and their use of known or inferred counterfactual antecedents.

Minimal details led to the greater use of inferred antecedents but reassuringly greater levels of detail led to more known antecedents being used. However this was not the case when respondents were asked what the cause of Mary's accident was, which was in the main attributed to inferred antecedents. If this pattern were repeated in

other rule-based social settings there could be implications for the fairness of decisions made.

### ***Final comment***

Applying the seven existing and seven new structural dimensions to the counterfactual thoughts of three real life populations associated with an occupational accident has provided an insight into how people mentally undo an unwanted outcome and how their roles influence the ways in which they structure their thoughts. The ways in which respondents completed the counterfactual, prevention and causal sentences has been summarised in Tables 79, 80 and 81 to show how each of the 14 dimensions are influenced by the respondents' job group and accident type, enabling for the first time the structure of counterfactual thoughts to be directly compared with the structure of thoughts directed at preventing the outcome and identifying its cause. Similarities and differences have been identified, all of which are of interest to those involved with the study of how we think about life and the events that we face as well as those charged with keeping work safe and investigating things that inevitably go wrong leading us to think 'If only...'.

Table 79. Modal responses for the counterfactual sentences

Counterfactual dimension	Safety Professional Slip	Safety Professional Trip	Manager Slip	Manager Trip	Accident Subject Slip	Accident Subject Trip
Counterfactual direction	Upward (better outcome)	Upward (better outcome)	Upward (better outcome)	Upward (better outcome)	Upward (better outcome)	Upward (better outcome)
Action/inaction	Inaction	Inaction	Inaction	Inaction	Inaction	Inaction
Addition or subtraction	Addition	Addition	Addition	Addition	Addition	Addition
Normal /exceptional	Improve existing norm	Improve existing norm	Improve existing norm	Improve existing norm	Improve existing norm	Exception to an expected norm and improve existing norm
Timescale	Stage D	Before Stage A	Stage D	Before Stage A	Stage D	Before Stage A
Control	Direct and indirect control	Direct and indirect control	Direct control	Direct and indirect control	Direct control	Direct control
Dynamic or static	Dynamic	Dynamic	Dynamic	Dynamic and static	Dynamic	Dynamic and static
Case specific or general	Specific	Specific	Specific	Specific	Specific	Specific
Known or inferred antecedent under minimum detail conditions	Inferred	Inferred	Inferred	Inferred	Inferred	Known or inferred
Known or inferred antecedent under maximum detail conditions	Known	Known	Known	Known or inferred	Known	Known or inferred
Personal or situational	Situational	Situational	Situational	Situational	Personal and situational	Personal and situational
Identify scenario actor	Yes and no	Yes and no	Yes and no	Yes and no	Yes and no	Yes
Who	Supervisor	Supervisor	Supervisor	Supervisor	Mary and Supervisor	Mary and Supervisor
Specific subject	Hazard and warning	Hazard and warning	Hazard and warning	Hazard and warning	Mary's lack of attention and decision to work	Mary's lack of attention and decision to work
Domain	Behaviour	Behaviour	Behaviour	Behaviour	Behaviour	Behaviour

Table 80. Modal responses for the prevention sentences

Prevention dimension	Safety Professional Slip	Safety Professional Trip	Manager Slip	Manager Trip	Accident Subject Slip	Accident Subject Trip
Direction of outcome	N/A	N/A	N/A	N/A	N/A	N/A
Action/inaction	Action	Action	Action	Action	Action	Action
Addition or subtraction	Addition	Addition	Addition	Addition	Addition	Addition
Normal/exceptional	New rule & improve existing rule	improve existing rule	improve existing rule	improve existing rule	improve existing rule	improve existing rule
Timescale	Before Stage A	Before Stage A	Before Stage A & Stage C	Before Stage A	Stage D	Before Stage A & Stage C & Stage D
Control	Direct control	Direct control	Direct & indirect control	Direct & indirect control	Direct & indirect control	Direct control
Dynamic or static	Dynamic & static	Dynamic & static	Dynamic & static	Dynamic & static	Dynamic	Dynamic & static
Case specific or general	Case specific & general	General	General	Case specific & general	Specific	Specific
Known or inferred antecedent under minimum detail conditions	Inferred	Inferred	Inferred	Inferred	Inferred	Inferred
Known or inferred antecedent under maximum detail conditions	Inferred	Inferred	Known & inferred	Known & inferred	Known	Known & inferred
Personal or situational	Situational	Situational	Situational	Situational	Personal & situational	Personal & situational
Identify scenario actor	No	No	No	No	Yes & no	Yes & no
Who	Employer	Employer	Manager	Supervisor	Supervisor	Supervisor
Specific subject	System of work	Poor housekeeping	Inadequate warnings	The Hazard	Failing to clear up	The hazard
Domain	Procedure	Procedure	Behaviour	Procedure & behaviour	Behaviour	Behaviour

Table 81. Modal responses for the causal sentences

Causal dimension	Safety Professional Slip	Safety Professional Trip	Manager Slip	Manager Trip	Accident Subject Slip	Accident Subject Trip
Direction of outcome	N/A	N/A	N/A	N/A	N/A	N/A
Action/inaction	Inaction	Inaction	Inaction	Inaction	Inaction	Action & inaction
Addition or subtraction	Subtraction (less than required)	Subtraction (less than required)	Subtraction (less than required)	Subtraction (less than required)	Subtraction (less than required)	Addition (more than required) & subtraction
Normal/exceptional	Improve existing rule & existing rule exception	Improve existing rule	Improve existing rule & existing rule exception	Improve existing rule & existing rule exception	Existing rule exception	Existing rule exception
Timescale	Before Stage A	Before Stage A	Stage D	Before Stage A	Stage C & Stage D	Stage C
Control	Indirect control	Indirect control	Direct & indirect control	Direct & indirect control	Direct & indirect control	Direct control
Dynamic or static	Static	Dynamic & static	Dynamic & static	Dynamic & static	Dynamic & static	Dynamic & static
Case specific or general	Case specific & general	General	Case specific & general	Case specific & general	Specific	Specific
Known or inferred antecedent under minimum detail conditions	Inferred	Inferred	Inferred	Inferred	Inferred	Inferred
Known or inferred antecedent under maximum detail conditions	Inferred	Inferred	Known & inferred	Inferred	Known	Known & inferred
Personal or Situational	Situational	Situational	Personal & situational	Situational	Personal & situational	Personal & situational
Identify scenario actor	No	No	No	No	No	Yes & no
Who	Employer	Employer	Supervisor	Manager	Supervisor	Supervisor / Manager & Safety Officer
Specific subject	Inadequate systems of work	The hazard/inadequate systems & poor housekeeping	The hazard	The hazard/inadequate systems & poor housekeeping	Hazard & failing to clear up	The hazard
Domain	Procedures	Procedures	Behaviour	Behaviour & procedures	Behaviour	Behaviour

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# Appendix 1

## Coding Scheme

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### **Coding Scheme**

When coding responses the coder adopted an ‘all seeing’ position as though viewing the scenario from above and following the actions and locations of all the characters as described in the scenario version.

When coding the completed sentences the coder was asking the following questions. For the counterfactual sentence it was ‘What has been changed to bring about the alternative outcome?’, whilst for the prevention sentence the questions was ‘How was the accident prevented?’, and for the causal sentence the question was ‘What was the cause of the accident?’.

The counterfactual sentence was coded for 14 different aspects to the way it was constructed (structural dimensions). There was no ‘directional’ element for the prevention and causal sentences so they were coded for 13 structural dimensions: the first seven structural dimensions described below have been identified by previous researchers, whilst the last seven have been identified during the current research.

### **Counterfactual direction**

This describes whether the counterfactual outcome was better or worse than the actual outcome. The coding options were:

***Upward*** for a better outcome - Any mutation which would have the effect of preventing or minimising the consequences of the outcome of the accident.

Counterfactual outcomes are better or less serious.

***Downward*** for a worse outcome - Any mutation which makes the actual outcome better or less serious than possible outcomes. Counterfactual outcomes are worse or more serious.

Example 'If only I had been more careful I might not have slipped' was coded as an upward mutation as it would have prevented the accident which is a better outcome.

Counterfactual direction was only applicable to the counterfactual sentence as it can have two outcome options (bi-directional) whereas as both the prevention and the causal sentences are unidirectional.

### **Action or inaction**

Did the sentence relate to something that was done – an action - or to something not done – inaction? The coding options were:

**Action** – if the subject of the sentence or the antecedent referred to was an action taken by one of the characters. An action could be removed or undone. The coding was also applied to the prevention and causal sentences where the accident would have been prevented by an action being taken or where the cause was attributed to an action.

**Inaction** – where the subject of the sentence or the antecedent referred to was an inaction or lack of action by one of the characters. The coding was also applied where the accident would have been prevented by something not being done or where the cause was attributed to the lack of an action being taken.

*Counterfactual sentence example -*

'If only I had been more careful I might not have slipped' was coded as a counterfactual mutation of inaction.

*Prevention sentence example -*

'Mary's accident might have been prevented if she had looked where she was going' was coded as an action.

*Causal sentence example -*

'The cause of Mary's accident was her lack of attention' was coded as an inaction.

### **Addition or subtraction**

The coding options were:

**Addition** - did the counterfactual sentence change something by adding a new antecedent element or by subtracting an existing antecedent when bringing about the alternative outcome?

When applied to the prevention and causal sentences the concept of addition was extended to include something that was 'more than expected or more than optimal' or 'better than'.

**Subtraction** - correspondingly subtraction was used when an antecedent was removed from the existing sequence of events or when applied to the prevention and causal sentences was 'less than expected or less than optimal' or 'worse than'.

*Counterfactual sentence example -*

'If only I had been more careful I might not have slipped' was coded as a counterfactual mutation of addition.

*Prevention sentence example -*

'Mary's accident might have been prevented if she had looked where she was going' was coded as an addition. Mary would be paying more attention than before to prevent another accident.

*Causal sentence example -*

'The cause of Mary's accident was her lack of attention' was coded as a subtraction (less than optimal), her level of attention was less than optimal.

### **Normality**

Did the counterfactual sentence change something that was normal (a routine everyday antecedent) or something which was unusual, out of the ordinary or exceptional? Four types of exceptional event were identified and coded and the coding options were:

***Scenario exception*** - this related to Mary's decision to cover for her friend's holiday leading to her working on Thursday which was not her usual day.

***Exception to an existing rule*** - where the sentence indicated that the outcome would have been different had some expected behaviour, standard or rule been followed. For example 'If only I had been careful I might not have slipped'.

***New rule*** - where the sentence created a new behaviour, standard or rule to achieve the desired outcome, prevent it or cause it. For example 'Cleaning equipment should be provided in each aisle of the store' where this has not previously been the case.

***Improving an existing rule to increase the likelihood of achieving the desired outcome*** - this coding option was applied where the counterfactual sentence modified an existing behaviour, standard or rule in such a way that the desired outcome was more certain to be achieved than by simply applying the unmodified behaviour, standard or rule. For example suppose the Cleaner had a five minute response time to attend a spillage after it was reported and reduction to a three minute response time would improve the prospect of preventing accidents.

***Normal*** - the antecedent changed was a routine, usual or everyday unexceptional event.

#### **Timescale (temporal location)**

Where in time before the accident was the item changed? The accident sequence was split up into 11 stages – Before Stage A and Stages A to J (see Tables 18 and 82) and the location of the specific subject of the completed question was coded according to its position in the sequence. The response 'If only the milk had been mopped up' was coded as being at Stage D, whereas 'If only Mary had not covered for her friend' was coded as being 'Before Stage A'.

Table 82. Accident sequence – timescale

Coding options	Slip event	Trip event
Before A	Mary agrees to cover for her friend	Mary agrees to cover for her friend
Stage A	Mary goes for her usual mid-morning rest break	Mary goes for her usual mid-morning rest break
Stage B	Mary waits for her friend on the next checkout and they both walk along the front of the checkouts towards the staff room	Mary waits for her friend on the next checkout and they both walk along the front of the checkouts towards the staff room
Stage C	Milk has been spilt on the floor	A box has been left on the floor
Stage D	The spillage has been reported 5 minutes ago. The Cleaner has been requested to clear up but has not got round to it	The box has been reported 5 minutes ago. The Cleaner has been requested to clear up but has not got round to it
Stage E	Mary does not see the milk on the floor	Mary does not see the box on the floor
Stage F	Mary steps on the milk	Mary's foot is caught in the box
Stage G	Mary slips on the milk	Mary trips over the box
Stage H	Mary loses her balance and falls over	Mary loses her balance and falls over
Stage I	Mary falls awkwardly hurting her right arm	Mary falls awkwardly hurting her right arm
Stage J	Mary is taken to hospital - her arm is x-rayed and found to be broken. She will be off work for 3 weeks	Mary is taken to hospital - her arm is x-rayed and found to be broken. She will be off work for 3 weeks

## **Control**

Did the scenario actor have control over the item changed in the counterfactual sentence or referred to in the prevention or causal sentences?

Following the completion of each counterfactual, prevention and causal sentence respondents were asked to select from a standard list the scenario actor to whom the sentence best related. The control that actor had over the subject of the sentence was then coded as:

***Direct control*** – where the actor could take the action personally.

***Indirect control*** – where the actor could secure the action but through the action of others.

***No control*** – where the actor had no control or responsibility towards the actions suggested in the sentence.

*Counterfactual sentence example -*

‘If only I had been more careful I might not have slipped’ was coded as direct control.

*Prevention sentence example -*

‘Mary’s accident might have been prevented if she had looked where she was going’ was coded as direct control.

*Causal sentence example -*

‘The cause of Mary’s accident was her lack of attention’ was coded as direct control.

## **Active or passive**

Was an ‘active’ or ‘passive’ antecedent changed in the counterfactual sentence? Was the accident caused or prevented by something that was ‘active’ or ‘passive’? For the purposes of coding the following definitions were used:

Active

Something that was changing over time and was directly observable or detectable by the senses, or was known to the respondent at the time based on the given information, for example ‘If only signs had been put out’ was coded as being ‘active’.

### ***Passive***

This would refer to something unchanging or something not known at the time. For example no details were given in the scenario about the existence or otherwise of ABC Supermarkets' working procedures to deal with spillages, so sentences relating to the adequacy of those procedures would have been coded as being 'passive' because further investigation would have been required before any judgment could be formed.

### **Case specific or general**

Was the alternative outcome achieved by changing an antecedent which was specific only to the research scenario accident, i.e. it was 'case specific', or was the change one that could be applied to a wider class of slip or trip accident, i.e. was it more 'general'? Similarly did the prevention and causal sentences refer to matters which were specific to the scenario or did they refer to more general matters?

The two coding options were:

***Case specific.*** The subject of the sentence related to something which was only relevant to the specific accident referred to in the scenario.

For example the counterfactual sentence 'If only Mary had not agreed to work that Thursday' was coded as being 'case specific'.

***General.*** The general coding was used where the sentence referred to something which was applicable to a wider range of slip or trip accidents and was not confined to the scenario accident.

For example the counterfactual sentence 'If only people followed procedures' was coded as being 'general'.



### **Known or inferred**

The use of two levels of detail in the study (minimum and maximum detail) gave rise to the possibility that the subject of the counterfactual, prevention or causal sentence was something that had been made explicit in the scenario or it was something that the respondent has added to the details already given based on personal experience.

The coding of 'known' or 'inferred' was designed to differentiate these two possibilities.

Two coding options were available:

***Known*** was used where the subject of the sentence was something that had been specifically included in the scenario details given to the respondent (with either minimum or maximum details).

***Inferred*** was used where the respondent completed the sentence with reference to something that was not made explicit in the scenario details (minimum or maximum).

For example 'If only Mary had been more careful she might not have slipped' was coded as inferred. Neither the minimum or maximum detail scenario made any reference to Mary not being careful or taking any less care than usual.

Minimum detail scenario version

**INVESTIGATING A SLIPPING ACCIDENT IN A SUPERMARKET**

In the section that follows you are asked to read about a slipping accident to Mary (a part-time checkout operator at ABC Supermarkets) who slipped over on a spillage of milk near to the checkouts as she was going to the staff room for her mid-morning break.

When answering the questions that follow please do so as a **safety professional**, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of slipping accidents to add to the information given about the accident.

Mary is a lady of about 55 years of age who has worked as a part-time checkout operator for about eight years. She usually works Monday, Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.

**As a safety professional you have received a report on an accident to Mary in ABC Supermarkets.**

**ABC SUPERMARKET**

**MESSAGE TO** SAFETY OFFICER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and slipped over on some spilt milk and hurt her arm. An ambulance was called to take her to hospital. She has broken her right arm, which has been plastered. She will be off work for at least three weeks.

**Additional information provided in the maximum information scenario version**

- Mary does not usually work on Thursdays but was covering for a friend who was on holiday.
- Mary closed her checkout at the usual time for her mid-morning break and waited for a friend on the checkout next to her to serve her last customer and they both went to their break together as usual.
- They were walking together past the checkout when Mary slipped over on some spilt milk and fell awkwardly on her right arm.
- The First Aider attended and an ambulance was called to take Mary to hospital.
- At hospital she was found to have a broken right arm. She will be off work for at least three weeks with her arm in plaster.
- A customer had seen the milk and reported it to Bill the Supervisor.
- Bill confirmed that the spillage had been reported by a customer and the Cleaner had been asked to clear it up five minutes before the accident but had not got round to dealing with it.
- No warning signs had been put out.
- It is not known how long the milk had been on the floor before it was reported by the customer.
- Spillages around the checkouts are very common.
- According to the Accident Book four other people had been injured in slipping accidents in the past six months.

**Personal or situational**

The subject of the completed sentence could relate to a characteristic of a person or the situation they were in.

A *personal characteristic* might be carelessness, laziness or being reckless. Sentences relating to a *situation* might for example refer to the presence of the hazard or the lack of warning signs.

The coding of sentences referring to behaviours was not so clear cut but generally the fact that a person did or did not do something was considered more as a fact of the situation rather than being an indication of something personal.

For example a sentence such as ‘Mary should have looked where she was going’ would have been coded as being ‘personal’, whereas ‘Warnings should have been given’ would have been coded as ‘situational’.

### **Spontaneous identification of the scenario actor**

This element of the sentence identified whether the respondent spontaneously identified the person (scenario actor) to whom it related in the way it was structured.

It has been noticed during the piloting of the research scenario and questionnaires that the scenario actor was identified or referred to by some respondents when completing the counterfactual, prevention and causal sentences.

Two coding options were available:

*The scenario actor was spontaneously identified or*

*The scenario actor was not spontaneously identified*

An example of where the counterfactual sentence did spontaneously identify the actor is ‘If only Mary had been more careful she might not have slipped’, whereas a response such as ‘If only the milk had been cleaned up’ was coded as not identifying the actor spontaneously.

### **The specific subject of the sentence**

The specific subject of the counterfactual, prevention and causal sentences were identified and coded against a list of 17 options. These coding options were developed during the coding stage of the research as new categories were identified.

<b>Coding options</b>	<b>Example of an ‘If only...’ sentence completion</b>
The presence of the hazard	The milk had not been spilt
Inadequate system of work	There has been a proper system in place to clean up the milk
Inadequate training	Staff had been trained to deal with spillages as well as the Cleaner
Inadequate audits	Audits of spillages had been done
Lack of staff ownership of safety	Staff cared more about safety
Inadequate warnings	Warning signs had been put out
Poor safety culture	ABC supermarkets had a better safety culture
Carelessness or recklessness	The person who left the box in the aisle had been more careful
Poor housekeeping	The Manager had enforced better standards of housekeeping
Inadequate response time	The cleaner has got to the spillage quicker
Lack of attention by Mary (Accident Subject)	Mary had looked where she was going
Failing to learn from other accidents	The safety manager had looked at the accident book
Mart’s decision to cover for her friends holiday	Mary had not been at work that day
An action or inaction by someone	Someone had picked up the box when they saw it
Failing to clear up	The box had been moved out of the way
Inadequate hazard reporting procedures	Someone had told the Cleaner about the box when they saw it
Other	

### **Domains (physical, behavioural, procedural or attitude)**

The specific subjects of the sentences could be grouped into four broader categories which are called domains in this research. These were:

*The physical domain.* Where the specific subject related to some physical aspect of the situation or environment e.g. the box on the floor, warning signs.

*The behavioural domain.* Where the respondent referred to someone's actions or inactions or behaviour, e.g. The person who left the box on the floor should have put it in the box store.

*The procedure or system of work domain.* Would cover all sentences where the respondent made any reference to safe systems of work, legal responsibilities, training supervision or review of accident records etc., e.g. the Employer should have had better systems in place to deal with the spillage.

*Attitude.* Would cover any sentence where the respondent made any reference to someone's approach to the situation such as their being uninterested in safety, cavalier, reckless or careless.

### **To whom did the sentence refer (scenario actor)?**

During piloting of the questionnaires about 50% of respondents made any spontaneous reference to an identifiable person when completing the sentences. A question was added after each sentence asking the respondent to select from a standard list of scenario actors to whom the sentence related. The coding options were:

- Accident Subject
- Store Manager
- Employer
- Cleaner
- None of the above
- Supervisor
- Safety Officer
- Other Worker
- Customer

Table 83. Coding of a counterfactual sentence

<b>'If only Bill had ensured the spill was cleaned up immediately... things could have been different'</b>		
Structural element of sentence	Coding options	Coding applied to the sentence
Direction of outcome	1. Upward 2. Downward	Upward
Action or inaction changed	1. Action 2. Inaction	Inaction
Addition to or subtraction from the antecedent sequence	1. Addition 2. Subtraction	Addition
Normality of the antecedent	1. Scenario exception 2. Exception to an existing rule 3. New rule 4. Improved existing rule	Improved existing rule Increased likelihood of achieving desired outcome
Temporal position of the antecedent (timescale)	Before Stage A to Stage J (see Table 82 for details)	Stage E
Scenario actors control over the selected antecedent	1. Direct control 2. Indirect control 3. No control	Direct control
Dynamic or static antecedent	1. Dynamic 2. Static	Dynamic
Case specific or general antecedent	1. Case specific 2. General	Case specific
Known or Inferred antecedent	1. Known 2. Inferred	Inferred
Personal or situational antecedent	1. Personal 2. Situational	Situational
Was scenario actor identified in the sentence	1. Yes 2. No	Yes
What was the specific subject of the sentence	1 The hazard, 2 Systems of work, 3 Training, 4 Warnings, 5 Housekeeping, 6 Inadequate response times, 7 Failing to clear up, 8 Mary's decision to work, 9 Lack of attention, 10 Personal action or inaction	Personal inaction
Domain of the specific subject	1. Physical element or environment 2. Work procedure 3. Behaviour 4. Attitude	Behaviour
Which scenario actor	1 Mary, 2 Supervisor, 3 Manager, 4 Safety Officer, 5 Cleaner, 6 Other staff member	Supervisor

Table 84. Coding of a prevention sentence

**Mary's accident could have been prevented if a barrier had been placed around the spillage and the Cleaner or other member of staff had cleaned up the liquid.**

Structural element of sentence	Coding options	Coding applied to the sentence
Direction of outcome	1. Upward 2. Downward	Not applicable
Action or inaction changed	1. Action 2. Inaction	Action
Addition to or subtraction from the antecedent sequence	1. Addition 2. Subtraction	Addition
Normality of the antecedent	1. Scenario exception 2. Exception to an existing rule 3. New rule 4. Improved existing rule	Improved existing rule Increased likelihood of achieving desired outcome
Temporal position of the antecedent (timescale)	Before Stage A to Stage J (see Table 82 for details)	Stage D
Scenario actors control over the selected antecedent	1. Direct Control 2. Indirect control 3. No control	Direct control
Dynamic or static antecedent	1. Dynamic 2. Static	Dynamic
Case specific or general antecedent	1. Case specific 2. General	Case specific
Known or inferred antecedent	1. Known 2. Inferred	Known
Personal or situational antecedent	1. Personal 2. Situational	Situational
Was scenario actor identified in the sentence	1. Yes 2. No	No
What was the specific subject of the sentence	1 The hazard, 2 Systems of work, 3 Training, 4 Warnings, 5 Housekeeping, 6 Inadequate response times, 7 Failing to clear up, 8 Mary's decision to work, 9 Lack of attention, 10 Personal action or inaction	System of work
Domain of the specific subject	1. Physical element or environment 2. Work procedure 3. Behaviour 4. Attitude	Work procedure
Which scenario actor (Selected from a list)	1 Mary, 2 Supervisor, 3 Manager, 4 Safety Officer, 5 Cleaner, 6 Other staff member	Supervisor



Table 85. Coding of a causal sentence

**The cause of Mary's accident was the spilt milk which she did not see.**

Structural element of sentence	Coding options	Coding applied to the sentence
Direction of outcome	1. Upward 2. Downward	Not applicable
Action or inaction changed	1. Action 2. Inaction	Action
Addition to or subtraction from the antecedent sequence	1. Addition 2. Subtraction	Addition
Normality of the antecedent	1. Scenario exception 2. Exception to an existing rule 3. New rule 4. Improved existing rule	Exception to an existing rule
Temporal position of the antecedent (timescale)	Before Stage A to Stage J (see Table 82 for details)	Stage C
Scenario actors control over the selected antecedent	1. Direct control 2. Indirect control 3. No control	Direct control
Dynamic or static antecedent	1. Dynamic 2. Static	Dynamic
Case specific or general antecedent	1. Case specific 2. General	Case specific
Known or inferred antecedent	1. Known 2. Inferred	Known
Personal or situational antecedent	1. Personal 2. Situational	Situational
Was scenario actor identified in the sentence	1. Yes 2. No	No
What was the specific subject of the sentence	1 The hazard, 2 Systems of work, 3 Training, 4 Warnings, 5 Housekeeping, 6 Inadequate response times, 7 Failing to clear up, 8 Mary's decision to work, 9 Lack of attention, 10 Personal action or inaction	Lack of attention
Domain of the specific subject	1. Physical element or environment 2. Work procedure 3. Behaviour	Behaviour
Which scenario actor (selected from a list)	1 Mary, 2 Supervisor, 3 Manager, 4 Safety Officer, 5 Cleaner, 6 Other staff member	Mary

## **Appendix 2**

### **Inter-rater reliability**

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Table 86. Inter-rater reliability

Parameter	Kappa P = < .001
Counterfactual direction	Not calculated as it is constant
Counterfactual action / inaction	Kappa .729
Counterfactual addition/ subtraction	Kappa .849
Counterfactual active / passive	Kappa .900
Counterfactual control	Kappa .903
Counterfactual normality	Kappa .803
Counterfactual timescale	Kappa .856
Counterfactual specific / general	Kappa .684
Counterfactual domain	Kappa .785
Counterfactual known / inferred	Kappa .780
Counterfactual actor identified	Kappa .702
Counterfactual personal / situation	Kappa .731
Counterfactual sentence subject	Kappa .789
Counterfactual scenario actor	Responses did not require coding
Prevention direction	Not calculated as it is constant
Prevention action / inaction	Kappa .685
Prevention addition / subtraction	Kappa .634
Prevention active / passive	Kappa .866
Prevention control	Kappa .674
Prevention normality	Kappa .711
Prevention timescale	Kappa .736
Prevention specific / general	Kappa .700
Prevention domain	Kappa .678
Prevention known / inferred	Kappa .683
Prevention actor identified	Kappa .685
Prevention personal / situation	Kappa .804
Prevention sentence subject	Kappa .745
Prevention scenario actor	Responses did not require coding
Cause direction	Not calculated as it is constant
Cause action / inaction	Kappa .861
Cause addition / subtraction	Kappa .753
Cause active / passive	Kappa .830
Cause control	Kappa .681
Cause normality	Kappa .770
Cause timescale	Kappa .882
Cause specific / general	Kappa .727
Cause domain	Kappa .720
Cause known / inferred	Kappa .700
Cause actor identified	Kappa .795
Cause personal / situation	Kappa .722
Cause sentence subject	Kappa .758
Cause scenario actor	Responses did not require coding

Table 87.

Mean inter-rater reliability results for each structural element

Parameter	Kappa
Mean direction	Not calculated as it is constant
Mean action / inaction	Kappa .758 $p = < .001$
Mean addition/ subtraction	Kappa .748 $p = < .001$
Mean active / passive	Kappa .865 $p = < .001$
Mean control	Kappa .752 $p = < .001$
Mean normality	Kappa .761 $p = < .001$
Mean timescale	Kappa .773 $p = < .001$
Mean specific / general	Kappa .703 $p = < .001$
Mean domain	Kappa .727 $p = < .001$
Mean known / inferred	Kappa .721 $p = < .001$
Mean actor identified	Kappa .717 $p = < .001$
Mean personal / situation	Kappa .752 $p = < .001$
Mean sentence subject	Kappa .764 $p = < .001$
Mean scenario actor	Responses did not require coding
Mean Kappa for all scores	.753

Table 88.  
 Sample size calculations and post hoc power calculations for the counterfactual sentence

	Sample size calculations based on desired power .80			Post hoc power calculations			
	Effect size 0.3 (medium)	Min sample size required	Df	Actual sample size	Critical chi sq	Post hoc power	Effect size found
Direction	0.3	108	2	612	5.99	0.99	0.3
Normality	0.3	160	7	111	14.07	0.98	0.5
Addition or subtraction	0.3	108	2	133	5.99	0.88	0.3
Action or inaction	0.3	108	2	130	5.99	0.87	0.3
Static or dynamic	0.3	108	2	134	5.99	0.88	0.3
Control	0.3	133	4	134	9.49	0.80	0.3
Timescale	0.3	181	10	132	18.31	0.99	0.5
Specific subject	0.3	233	20	135	31.41	0.97	0.5
Domain	0.3	152	6	134	12.60	0.74	0.3
Spontaneous identification of actor	0.3	108	2	135	5.99	0.89	0.3
Personal or situational	0.3	133	4	134	9.49	0.80	0.3
Specific or general	0.3	133	4	134	9.49	0.80	0.3
Known or inferred	0.3	108	2	134	5.99	0.88	0.3
Scenario actor	0.3	233	20	135	31.41	0.97	0.5

Table 89.  
Sample size calculations and post hoc power calculations for the prevention sentence

	Sample size calculations based on desired power .80			Post hoc power calculations			
	Effect size 0.3 (medium) or 0.5 (large)	Min. sample size required	Df	Actual sample size	Critical chi sq	Post hoc power	Effect size found
Normality	0.3	167	8	130	15.51	0.67	0.3
Addition or subtraction	0.3	108	2	126	5.99	0.86	0.3
Action or inaction	0.3	108	2	124	5.99	0.85	0.3
Static or dynamic	0.3	108	2	131	5.99	0.88	0.3
Control	0.3	133	4	120	9.49	0.75	0.3
Timescale	0.3	152	6	130	12.59	0.72	0.3
Specific subject	0.3	233	20	132	31.41	0.96	0.5
Domain	0.3	152	6	131	12.59	0.73	0.3
Spontaneous identification of actor	0.3	108	2	132	5.99	0.88	0.3
Personal or situational	0.3	133	4	130	9.49	0.79	0.3
Specific or general	0.3	133	4	132	9.49	0.79	0.3
Known or inferred	0.3	108	2	131	5.99	0.87	0.3
Scenario actor	0.3	215	16	40	26.30	0.44	0.5

Table 90.  
Sample size calculations and post hoc power calculations for the causal sentence

	Sample size calculations based on desired power .80			Post hoc power calculations			
	Effect size 0.3 (medium) or 0.5 (large)	Minimum sample size required	Df	Actual sample size	Critical chi sq	Post hoc power	Effect size found
Normality	0.3	167	8	127	15.51	0.99	0.5
Addition or subtraction	0.3	108	2	122	5.99	0.85	0.3
Action or inaction	0.3	108	2	94	5.99	0.74	0.3
Static or dynamic	0.3	108	2	135	5.99	0.88	0.3
Control	0.3	133	4	125	9.49	0.77	0.3
Timescale	0.3	152	6	133	12.59	0.73	0.3
Specific Subject	0.3	233	20	136	31.41	0.97	0.5
Domain	0.3	152	6	130	12.59	0.72	0.3
Spontaneous identification of actor	0.3	108	2	135	5.99	0.89	0.3
Personal or situational	0.3	152	6	136	12.59	0.74	0.3
Specific or general	0.3	133	4	135	9.48	0.80	0.3
Known or inferred	0.3	108	2	135	5.99	0.88	0.3
Scenario actor	0.3	215	16	131	26.29	0.97	0.5

## **Appendix 3**

### **Technical Report**

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# Technical Report

How safety practitioners, managers and accident subjects  
think about  
workplace slip and trip accidents -  
Implications for policy and practice.

Paul Lehane JP. MSc. CFCIEH

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## **1. Summary**

Slip and trip accidents caused 8416 major injury accidents in the UK in 2012-13. Investigations are usually undertaken by safety practitioners & managers and involve accident subjects. What they believe to be important is influenced by their individual perspectives and mental model of the accident. HSE's guidance on slips and trips focuses on physical factors, but neglects peoples thought processes about them.

This study examined how these three groups thought about slip and trip accidents. Three hundred and fifty safety practitioners, 129 managers and 133 accident subjects read a supermarket based scenario and recorded their thoughts about how a different outcome might have come about, how the accident might have been prevented and what its cause was.

Four key results are reported here;-

1. People's thoughts were structured in such a way that behaviours were used to bring about different outcomes more than they were used to prevent the accident or as its cause.
2. The level of detail provided in the scenario influenced how people thought about how a different outcome might have come about, rather than how they might have prevented it or identified its cause. Overall people thought about events that they 'assumed' to have happened, rather than what they 'knew' to have happened.
3. Peoples' thoughts about slips were more likely to focus on events that happened on the day of the accident, whereas they thought about earlier events for trips.
4. Peoples thoughts about a different outcome and preventing the accident involved improving behaviours or procedures, whereas thinking about the cause focused on failures of behaviours or procedures.

As a result of this study the HSE is urged to recognise the importance of people's thought processes, their role & the type of accident, and how these influence what they consider to be important.

The importance of further commissioned research is highlighted to identify the extent to which people's individual circumstances and context influences their mental models of accidents. This influential factor can then be incorporated into the design of prevention and investigation approaches to supplement existing knowledge. In the meantime, a suggested approach to investigation is proposed.

## **2. Introduction**

The number of reported major injuries from slips and trips has reduced by 23% over the last 7 years from 10963 (2007/08) to 8416 (2012/13), but they still account for 56% of all major injuries (HSE 2013a) at an estimated annual cost to the UK economy of £197m (HSE 2013b).

The Health & Safety at Work etc. Act 1974 requires employers to protect employees from harm. The Health & Safety Executive (HSE) is the lead body for enforcement and publishes guidance on managing occupational risks. In the case of slip and trip accidents this has focused on physical aspects such as surface roughness, slip resistance and footwear, but has not addressed how people think following a slip or trip accident.

One way in which people might think about an accident is to consider how a different and better outcome might have occurred. This is known as counterfactual thinking and involves changing a pre-accident event and evaluating its effect on the outcome. This event is said to identify a cause of the accident (Roese 1994) or a missed opportunity to have prevented it (Mandel & Lehman 1996).

This study explored the idea that peoples' roles as safety professionals, managers or accident subjects, the type of accident and what they know about its circumstances influences how they think about how a different outcome might have been possible, how the accident might have been prevented and what caused it.

### **3. Overview of the current Study**

Most people are familiar with supermarkets so a scenario was developed in which a checkout operator slipped on spilt milk or tripped over a box. The sequence of 11 events is shown in Table 1.

Three hundred and fifty safety practitioners were recruited from local authority inspectors and company safety officers, 129 managers from small & medium sized businesses responded along with 133 workers who had been injured.

Respondents were randomly allocated to two groups. In the 'maximum detail' group they were given information detailing the supermarket manager's investigation, whilst the 'minimum detail' group were only told the accident was a slip or trip.

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**Table 1. The accident sequence**

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Timescale	Slip accident	Trip accident
<b>Before the day of the accident</b>		
Stage 1	Mary agreed to cover for her friend's holiday	Mary agreed to cover for her friend's holiday
<b>On the day of the accident</b>		
Stage 2	Mary goes for her usual mid-morning rest break	Mary goes for her usual mid-morning rest break
Stage 3	Mary waited for a colleague on the next checkout and they both walked along the front of the checkouts towards the staff room	Mary waited for a colleague on the next checkout and they both walked along the front of the checkouts towards the staff room
Stage 4	Milk had been spilt on the floor	A box had been left on the floor
Stage 5	The spillage had been reported 5 minutes ago. The cleaner had been requested to clear up but had not got round to it	The box had been reported 5 minutes ago. The cleaner had been requested to clear up but had not got round to it
Stage 6	Mary did not see the milk on the floor	Mary did not see the box on the floor
Stage 7	Mary stepped on the milk	Mary 's foot caught the box
Stage 8	Mary slipped on the milk	Mary tripped over the box
Stage 9	Mary lost her balance and fell over	Mary lost her balance and fell over
Stage 10	Mary fell awkwardly hurting her right arm.	Mary fell awkwardly hurting her right arm.
Stage 11	Mary taken to hospital- her arm was x-rayed	Mary taken to hospital- her arm was x-rayed

---

Self-completion questionnaires were posted to respondents, who were asked to complete three sentences identifying;-

- 1) How the accident could have had a different outcome (counterfactual thinking).
- 2) How it could have been prevented.
- 3) The cause of the accident.

The subjects of the sentences were identified using content analysis and assessed against 13 criteria set out in appendix 1.

#### **4. Key findings**

Four key findings are presented here.

##### **4.1. Peoples' roles and whether they were thinking about different outcomes, preventing the accident or its cause, influenced the use of behaviours or procedures.**

4.1.1. Safety practitioners, managers and accident subjects brought about a different (counterfactual) outcome to the accident by changing someone's behaviour rather than a physical factor or a procedure. (Safety practitioners: slip 55.9%, trip 51.7%. Managers: slip 65.5%, trip 57.4%. Accident subjects: slip 72.5%, trip 84.4%).

4.1.2. Safety practitioners' thinking about slips and trips focused on procedures to prevent the accident and identify its cause. (Prevention: slip 60.2%, trip 69.5%. Cause: slip 49.7% and trips 55.1%).

4.1.3. When thinking about slips and trips accident subjects focused on peoples behaviours to bring about a different outcome, prevent the accident or identify its cause. (Slips: different outcome 72.5%, prevention 74.6% and cause 58.1%. Trips - different outcome 84.4%, prevention 55.6% and cause 57.1%.)

Table 2.1 in appendix 2 sets out the full results.

**4.2. The level of detail in the scenario had a greater influence on how people thought about different outcomes, than on how they thought about prevention or causes.**

Respondents' thoughts relied heavily on events they 'assumed' to have occurred and not on 'known' facts from the scenario. This supports the idea that people use their own robust mental model when thinking about slip or trip accidents (Woodcock 1996).

4.2.1. When given a 'minimum detail' slip scenario the majority of respondents thinking about a different outcome referred to an event they 'assumed' to have happened. (Safety practitioners 73.8%. managers 82.6% & accident subjects 72.7%). In contrast when they were given a 'maximum detail' slip scenario respondents thought about a 'known' fact (safety practitioners 63.4%, managers' 82.5% & accident subjects 77.1%).

Following a trip accident safety practitioners repeated this effect when thinking about a different outcome (minimum detail - assumed event 60.4%, maximum detail - known event 60.0%), but managers and accidents did not. Managers preferred to rely on 'assumed' events (minimum detail - 64.5% and maximum detail 57.5%), whilst accident subjects used 'known' events (minimum detail 51.7%, maximum detail 59.5%).

4.2.2. Safety practitioners prevention and causal thoughts used 'assumed' events regardless of the level of detail provided to them (Prevention minimum detail - slip 93.5%, trip 88.5%. Prevention maximum detail - slip 71.7% trip 77.8%. Cause minimum detail - slip 79.5%, trip 82.8%, cause maximum detail- slip 65.2%, trip 66.7%)

4.2.3. Managers' preventative and causal thoughts also used 'assumed' events regardless of the level of detail provided to them (Prevention minimum slip 95.8%, trip 80.6%. Prevention maximum detail slip 51.4%, trip 59.0%. Cause minimum detail slip 79.2% trip 77.4%. Cause maximum detail slip 50%, trip 72.5%)

Table 2.2 in appendix 2 sets out the full results.



**4.3. The point in time of the event people thought about was influenced by their role, the type of accident and whether they were thinking about different outcomes, how the accident could have been prevented or its cause.**

4.3.1 The type of accident influenced the point in time for people's thoughts about a different outcome. For a slip accident the most commonly selected event happened on the day of the accident, but for trips this was before the day of the accident. (Slip accident - on the day of the event: safety practitioners 56.2%, managers 69.5%, accident subjects 65.5%. Trip accident - events before the day: safety practitioners 44.3%, managers 48.5% and accident subjects 44.9%).

4.3.2 Managers's and accident subjects' thoughts about prevention and the cause of the slip accident used events that happened on the day of the accident. (Manager - prevent 46.4%, cause 52.5%. Accident subject - prevent 73.5%, cause 41.5%)

4.3.3 Safety practitioners' thinking about prevention and the cause of the trip accident used events that happened before the day of the accident. (Prevent 81.5%, cause 66.5%)

(Note: results represent respondent's modal choice from 11 stages (1 before the day of the accident and 10 on the day of the accident, which is why some results do not exceed 50%).

Table 2.3 in appendix 2 sets out the full results

#### **4.4. Thinking about a different outcome and preventing the accident involved improving the way people behaved or the procedures they used.**

4.4.1 Respondents thinking about a different outcome and prevention changed an event in a way which improved it and making the desired outcome more likely than simply re-establishing the expected behaviour or procedure. In contrast the cause was thought about as a failure of existing behaviours or procedures.

Table 2.4 in appendix 2 sets out the full results.

### **5. Implications for HSE Policy and accident investigation practice**

The results of this study have implications for HSE in their role as policy advisor and the lead body for health & safety enforcement.

HSE's mission is to "prevent death, injury and ill health to those at work or those affected by work activities" (HSE 2014). They set the national health & safety agenda, identifying key hazards, priorities for research & development, and publishing guidance.

HSE has successfully used academic and industrial research to develop and publish authoritative guidance on slips and trips. However these do not account for the effects of mental models and their impact on what people consider when thinking about slips or trips. If HSE guidance does not compliment what people think to be important there is a risk that the guidance will be ineffective and accidents remain investigated.

Understanding people's mental models offers a new approach to accident prevention and investigation which complements existing approaches. HSE is uniquely placed to champion this approach by commissioning research to establish the shape of people's mental models for all categories of accident and how they influence the way that people think and what they think about.

In the light of this wider research HSE should review their strategic approach to accident prevention and investigation and, where appropriate, develop a four track methodology based on 1) peoples mental models and 2) physical 3) environmental

& 4) procedural factors. This methodology should then be applied to the management of specific hazards and accident investigation through HSE's advice, guidance and toolkits. HSE will need to actively promote this new approach to all stakeholders so it can be used effectively.

In particular HSE and local authority inspectors will need to understand how people's mental models influence how they think following an accident. They will need training to enable them to use the revised guidance, toolkits and accident investigation protocols because they will be applying them as part of their investigations of serious accidents. They can also demonstrate to other stakeholders how peoples' mental models are influenced by their role, and what they know about the accident and how this influences their response to the accident.

The challenge for HSE is to:

- Recognise the potential contribution that understanding people's mental models can have on preventing and investigating accidents.
- Commission research to explore how people involved in the investigation of a range of accident types actually think about different outcomes, prevention and causes.
- Map those mental models.
- Develop a guidance and an accident investigation protocol incorporating the mental models perspective with existing knowledge of physical, environmental and procedural considerations.
- Promote the use of the tools and train safety practitioners in their use.

This study has shown that people's roles, the way they think, the type of accident and what they know about it all affect what they think is important. Relying on events that are assumed to have occurred could seriously hinder accident investigations by restricting them to a single perspective based on a person's mental model. This is likely to lead to incorrect conclusions about the cause, responsibility, blame and liability and could lead to ineffective prevention strategies.

Holding different perspectives about an accident does not necessarily hinder effective investigation. If they are recognised and understood they can be used creatively to identify causes, design and implement preventative strategies. The challenge is to embrace peoples' different mental models and use them positively, working in partnership, raising awareness and creating behavioural change to reduce accidents.

Safety practitioners and managers lead accident investigations so it is essential that their approach is modified to embrace other people's perspectives. Likewise accident subjects should be aware of manager's and safety practitioner's perspectives which will help them appreciate their judgements and decisions.

To achieve this change in approach, safety practitioners and managers will require a bespoke accident investigation toolkit which embraces current practice considering physical, environmental and procedural elements and also account for people's different mental models.

Until people's mental models are researched and can be integrated into an investigative protocol, accident investigators should be encouraged to actively identify those factors that are uniquely shaped by thinking about different outcomes, prevention and causes by asking all those involved to capture these thoughts by writing them down. These thoughts should be shared and areas of agreement and disagreement can be identified and discussed. This will enable the lead investigator to think about an accident from multiple perspectives not just their own mental model.

A first draft of an accident investigation protocol based on this approach is proposed in appendix 3. It is designed to encourage a structured but open approach to establish how safety practitioners or managers and accident subjects think about slip & trip accidents and to freely share those thoughts, identify where they are the same and where they differ, then agree on a cause and how the accident could have been prevented. Finally it asks safety practitioner or managers what they will do to prevent similar accidents in the future.

The draft protocol needs piloting by a small group of safety practitioners to refine it before making it more widely available to the safety practitioner community, supported by training and instructions for use.

## **6. Conclusions.**

Four factors have been shown to influence what people think to be important after a slip or trip accident:

- 1) A person's role
- 2) The type of accident
- 3) How they think about different outcomes, prevention and causes
- 4) What they know about the circumstances

These factors form the basis of people's mental model of an accident. However the shape of these is currently unknown.

HSE is urged to commission research to map these factors and peoples mental models to support the development of a psychological approach to accident investigation.

Using a peoples mental models will strengthen the existing approaches used to investigate accidents and improve the effectiveness of preventative strategies supporting HSE's mission to "prevent death, injury and ill health to those at work or those affected by work activities".

## 7. References

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## **Technical Report Appendix 1**

### **Criteria for assessing respondent's sentences**

Each sentence was examined by asking a series of questions.

1. Did the sentence relate to an action or inaction?
2. Was an event added to the sequence or removed from it?
3. Did the sentence relate to an unusual / exceptional event or an routine event?
4. Did the sentence relate to an event that happened on the day of the accident or before?
5. Was the event under the control of the person referred to in the sentence?
6. Did the event changed over time (dynamic) or was it unchanging (static)?
7. Was the sentence specific to the accident or more general?
8. Was the event 'Known' from the details given in scenario or was the event 'assumed' to have happened because it was not given in the scenario?
9. Was a person identified in the sentence? (Yes /No)
10. Which person did the sentence relate to? (Selected from a list of people involved in the accident scenario)
11. Was the event personal to a character in the scenario or their situation?
12. What was the specific subject of sentence?
13. Did the sentence refer to a physical factor, behaviour or a procedure?

## Technical Report Appendix 2 Results

**Table 2.1 The dominant factor (behaviour or procedure) identified in peoples thoughts about different outcomes, prevention and causation. Percentages indicate how frequently each factor was identified by each group of respondents.**

	<b>Different Outcome (Counterfactual thinking)</b>	<b>Prevention thinking</b>	<b>Causal thinking</b>
<b>Slip accident</b>			
Safety Practitioners	Behaviour 55.9%	Procedure 60.2%	Procedure 49.7%
Managers	Behaviour 65.6%	Behaviour 48.3%	Behaviour 50.9%
Accident Subjects	Behaviour 72.5%	Behaviour 74.6%	Behaviour 58.1%
<b>Trip accident</b>			
Safety Practitioners	Behaviour 51.7%	Procedure 69.5%	Procedure 55.1%
Managers	Behaviour 57.4%	Behaviour 44.1%	Behaviour 37.7%
		& Procedure 47.1%	& Procedure 39.3%
Accident Subjects	Behaviour 84.4%	Behaviour 55.6%	Behaviour 57.1%



## Technical Report Appendix 2 Results

**Table 2.2 The use of ‘known’ or ‘assumed’ events by safety practitioners, managers and accident subjects for slips and trips when thinking about different outcomes, prevention and causation. Percentages indicate how frequently each factor was identified by each group of respondents.**

	Different Outcome (Counterfactual thinking)	Prevention thinking	Causal thinking
<b>Safety Practitioners</b>			
<b>Slip accident</b>			
Minimum detail	Assumed event 73.8 %	Assumed event 93.5 %	Assumed event 79.5 %
Maximum detail	Known event 63.4 %	Assumed event 71.7 %	Assumed event 65.2 %
<b>Trip accident</b>			
Minimum detail	Assumed event 60.4 %	Assumed event 88.5 %	Assumed event 82.8 %
Maximum detail	Known event 60.0 %	Assumed event 77.8 %	Assumed event 66.7 %
<b>Managers</b>			
<b>Slip accident</b>			
Minimum detail	Assumed event 82.6 %	Assumed event 95.8 %	Assumed event 79.2 %
Maximum detail	Known event 82.5 %	Assumed event 51.4 %	Known event 50% Assumed event 50%
<b>Trip accident</b>			
Minimum detail	Assumed event 64.5 %	Assumed event 80.6 %	Assumed event 77.4 %
Maximum detail	Assumed event 57.5 %	Assumed event 59.0 %	Assumed event 72.5 %
<b>Accident Subject</b>			
<b>Slip accident</b>			
Minimum detail	Assumed event 72.7 %	Assumed event 91.2 %	Assumed event 84.8 %
Maximum detail	Known event 77.1 %	Known event 70.3 %	Known event 69.4 %
<b>Trip accident</b>			
Minimum detail	Known event 51.7 %	Assumed event 93.1 %	Assumed event 79.3 %
Maximum detail	Known event 59.5 %	Known event 56.4 %	Assumed event 52.6 %

## Technical Report Appendix 2 Results

**Table 2.3 The temporal location of the event thought about by safety practitioners, managers and accident subjects when thinking about different outcomes, prevention or causation following a slip or trip accident. Percentages indicate how frequently each factor was identified by each group of respondents.**

	<b>Different Outcome (Counterfactual thinking)</b>	<b>Prevention thinking</b>	<b>Causal thinking</b>
<b>Slip accident</b>			
Safety Practitioners	On the day of the accident 64.4%	Before the day of the accident 64.7%	Before the day of the accident 60.1%
Managers	On the day of the accident 73.6%	On the day of the accident 53.5%	On the day of the accident 66.1%
Accident Subjects	On the day of the accident 76.4%	On the day of the accident 86.7%	On the day of the accident 81.5%
<b>Trip accident</b>			
Safety Practitioners	Before the day of the accident 44.3%	Before the day of the accident 81.5%	Before the day of the accident 66.5%
Managers	Before the day of the accident 48.5%	Before the day of the accident 71.0%	Before the day of the accident 55.7%
Accident Subjects	Before the day of the accident 44.9%	On the day of the accident 59.6%	On the day of the accident 73.5%

## Technical Report Appendix 2 Results

**Table 2.4 How safety practitioners, managers and accident subjects thought brought about a different outcome, prevented the accident or identified its cause following a slip or trip. Percentages indicate how frequently each factor was identified by each group of respondents.**

	Different Outcome (Counterfactual thinking)	Prevention thinking	Causal thinking
<b>Slip accident</b>			
Safety Practitioners	Improve a behaviour or procedure 63.2%	Create a new behaviour or procedure 48.5%.  Improve a behaviour or procedure 41.9%	Improve a behaviour or procedure 39.2%  Using an existing behaviour or procedure 38.6%
Managers	Improve a behaviour or procedure 67.2%	Improve a behaviour or procedure 60.0%	Using an existing behaviour or procedure 52.5%
Accident Subjects	Improve a behaviour or procedure 65.7%	Improve a behaviour or procedure 78.3%	Using an existing behaviour or procedure 61.7%
<b>Trip accident</b>			
Safety Practitioners	Improve a behaviour or procedure 65.8%	Improve a behaviour or procedure 56.6%	Improve a behaviour or procedure 50.3%
Managers	Improve a behaviour or procedure 57.7%	Improving an existing rule/ procedure/ behaviour 58.0%	Using an existing behaviour or procedure 44.6%  Improve a behaviour or procedure 44.6%
Accident Subjects	Improve a behaviour or procedure 38.5%  Using an existing behaviour or procedure 36.9%	Improve a behaviour or procedure 62.5%	Using an existing behaviour or procedure 62.3%

### **Technical Report Appendix 3**

#### **Draft investigation tool.**

This investigation tool is designed to be completed by a safety practitioner / manager with the person who had the slip or trip accident (accident subject).

One copy should be completed by the safety practitioner / manager and a separate copy by the accident subject.

Research has shown that how we think about an accident is influenced by, the type of accident, how much we know about it, our role in connection with it and the way that we think about it.

This tool kit is designed to encourage a structured but open approach to find out how safety practitioner / managers and accident subjects think about slip & trip accidents and to freely share those thoughts, identify where they are the same and where they differ, then agree on a cause and how the accident could have been prevented.

Finally it asks safety practitioner / managers what they will do to prevent similar accidents in the future.

Please work though the questions in the order they are given.

\_\_\_\_\_

Name of person completing this report \_\_\_\_\_

Role in the organisation \_\_\_\_\_

Date of accident \_\_\_\_\_

Time of Accident \_\_\_\_\_

Location \_\_\_\_\_

1. This accident was a Slip  or Trip  (Select one type)

2 .In your own words please describe the accident (BOX 1 you will need to refer to this box again)

--

3.Please compare your description of the accident with that of your safety practitioner / manager or the accident subject.

Please note where your descriptions were the same.

1	
2	
3	
4	

and where they were different

1	
2	
3	
4	

4. Now that you have shared your comments on the accident with your safety practitioner / manger or accident subject, please complete in your own words the following three sentences.

4.1 The outcome of the accident could have been different if only .....?

<p>If only ....</p>  <p>Then.....</p>
---

4.2 . The accident could have been prevented if ...

--

4.3 The cause of the accident was...

--

5. Now sharing the sentences you have just written with your safety practitioner / manager or the accident subject please complete the following questions for each of the three sentences.

5.1 Please answer the following questions for the <b>'Different outcome'</b> sentence		
	safety practitioner / Manager answers	Accident Subjects answers
Who did the sentence relate to? Please give their name or job		
Did it relate to behaviour, a procedure or something physical? (Chose one )	Behaviour / Procedure / physical	Behaviour / Procedure / physical
What was the subject of the sentence?		
Did the sentence refer to something that was dynamic or static? Dynamic = changing over time or could be seen Static = unchanging or could not be seen	Dynamic / Static	Dynamic / Static
Was the sentence specific to this accident or more general	Specific / General	Specific /General
How did the sentence bring about a different outcome (Tick one from a, b or c)  a. By reinforcing an expected or existing rule / procedure or behaviour  b. By improving an existing rule / procedure or behaviour so that the desired outcome was more certain?  c. By setting up a new behaviour or rule?		
	a.	a.
	b.	b.
	c.	c.
If your 'different outcome' sentence referred to something that you specifically wrote in BOX 1 on page 2 write 'known' in the column , if not write 'inferred'.	Known /Inferred	Known /Inferred
Did your sentence refer to something on the day of the accident or to something earlier?	On the day of the accident or Something earlier	On the day of the accident or Something earlier

5.2 Please answer the following questions for the <b>‘Prevention’</b> sentence		
	safety practitioner / Manager	Accident Subject
Who did the sentence relate to ?		
Did it relate to behaviour, a procedure or something physical? (Chose one )	Behaviour / Procedure / physical	Behaviour / Procedure / physical
What was the subject of the sentence?		
Did the sentence refer to something that was dynamic or static? Dynamic = changing over time or could be seen Static = unchanging or could not be seen	Dynamic / Static	Dynamic / Static
Was the sentence specific to this accident or more general	Specific / general	Specific / general
How did the sentence prevent the accident (Tick one from a, b or c)		
a. Reinforcing an expected or existing behaviour / rule	a.	a.
b. Improving an existing behaviour or rule so that it would be more certain that the accident would be prevented ?	b.	b.
c. Setting up a new behaviour or rule?	c.	c.
If your ‘prevention’ sentence referred to something that you specifically wrote in BOX 1 write ‘known’ in the column to the right, if not write ‘inferred’.	Known / Inferred	Known / Inferred
Did your sentence refer to the day of the accident or to something earlier?	On the day of the accident or Something earlier	On the day of the accident or Something earlier



5.3 Please answer the following questions for the ‘Causal’ sentence		
	safety practitioner / Manager	Accident Subject
Who did the sentence relate to ?		
Did it relate to behaviour, a procedure or something physical? (Chose one )	Behaviour / Procedure / physical	Behaviour / Procedure / physical
What was the subject of the sentence?		
Did the sentence refer to something that was dynamic or static? Dynamic = changing over time or could be seen Static = unchanging or could not be seen	Dynamic / Static	Dynamic / Static
Was the sentence specific to this accident or more general	Specific / general	Specific / general
How was the cause of the accident (Tick one from a, b or c)		
a. By failing to use an expected behaviour / rule	a.	a.
b. By not having better behaviours or rules?	b.	b.
c. By not giving any expected behaviours or rules ?	c.	c.
If your ‘causal’ sentence referred to something that you specifically wrote in box 1 write ‘known’ in the column to the right, if not write ‘inferred’.	Known / Inferred	Known / Inferred
Did your sentence refer to the day of the accident or to something earlier?	On the day of the accident or Something earlier	On the day of the accident or Something earlier

6. Now please discuss and agree between yourselves one sentence which identifies the cause of the accident.

We believe the accident was caused by ....
--

Identifies how the accident could have been prevented

We believe the accident could have been prevented by ....
---

And finally ... for safety practitioner or managers only

7. What will you do now to prevent accidents like this in the future?

I will .....
--------------

Signed

Safety practitioner / Manager \_\_\_\_\_

Accident Subject \_\_\_\_\_

Date \_\_\_\_\_

## **Appendix 4**

### **Copies of research scenario and questionnaire**

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Table 91 Questions in full and short questionnaire versions			
Question	Full version – Safety professionals	Short version Manager	Short version Accident subject
Reasons for accident investigation	•	•	N/A
How likely is a slip/trip in a supermarket in the next 6 months	•	N/A	N/A
Confidence in making the judgment	•	N/A	N/A
Seriousness of slip /trip	•	N/A	N/A
“If only... “ sentence completion	•	•	•
Who does sentence refer to?	•	•	•
Week before – likelihood	•	N/A	N/A
Week before – confidence	•	N/A	N/A
Week before seriousness	•	N/A	N/A
Could scenario accident have been prevented	•	•	•
How could accident have been prevented – free text answer	•	•	•
Who does answer refer to?	•	•	•
Rate and rank responsibility for prevention	•	•	•
6 month in future – likelihood of another accident	•	N/A	N/A
6 months in future – confidence in judgement	•	N/A	N/A
6 months in future – seriousness	•	N/A	N/A
Cause of scenario accident – free text answer	•	•	•
Who does answer best refer to?	•	•	•

Table 91 Questions in full and short questionnaire versions (continued)			
Question	Full version – Safety professionals	Short version Manager	Short version Accident subject
Rate and rank responsibility for causing accident	•	•	•
Rate “Luck” at each stage of accident stage A to J	•	•	N/A
Overall “Luck” rating	•	•	N/A
Reasons for “Luck” rating	•	•	N/A
Stage A-J normal/routine	•	N/A	N/A
Stage A-J accident certain	•	N/A	N/A
Stage A-J Mary have control	•	N/A	N/A
Stage A-J Manager control	•	N/A	N/A
Stage A-J Action important and who	•	N/A	N/A
Stage A-J Inaction important and who	•	N/A	N/A
Consideration of future consequences questions	•	•	N/A
Personal info – staff numbers	•	•	N/A
Personal info - gender	•	•	•
Personal info – work organisation	•	•	N/A
Respondents Age	•	•	•
Location	•	•	N/A
Questionnaire version check group	•	•	•
Categorisation of own accident	N/A	N/A	•
Counterfactual thinking after own accident	N/A	N/A	•
“If only...” sentence completion – own accident	N/A	N/A	•



## **MANAGERS AND SUPERVISORS**

## **THINKING ABOUT ACCIDENTS**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT  
**1S**

Research supported by the



Dear Sir/Madam,

I am conducting research into the way in which **managers and supervisors** think about accidents at work.

I would be very grateful if you could spare about 10 -15 minutes to complete the attached questionnaire.

Your participation is entirely voluntary and any information you provide will be confidential and you will be completely anonymous if you post the questionnaire back to me using the envelope provided.

A summary of the results from the research may be published.

Paul Lehane.

**INSTRUCTIONS FOR COMPLETION**

Please try to answer as many questions as you can.

Any answers that you can provide are helpful so please return your form to me even if you do not complete all the questions.

Please write your answers in the grey shaded boxes or circle / tick the appropriate answer from the choices given.

**RETURN OF QUESTIONNAIRE**

**BY POST**

If you have been sent the questionnaire by post a prepaid envelope should have been provided. Please use this to return the questionnaire. If not please return to:-

Paul Lehane c/o EHTS London Borough of Bromley Civic Center Bromley England BR1 3UH
--

**BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

**WHY ARE ACCIDENTS INVESTIGATED?**

People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a **Manager or Supervisor** please indicate how important each reason is to you.

Circle / highlight **one** answer from the choices given for **each** question.

1. To find out the cause and understand what happened.

					Rank Score 1-6
(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank

2. To prevent similar accidents from happening again.

					Rank
(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank



**3. To meet organizational requirements eg collection of statistics, make insurance claims, staff training etc.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**4. To find out if staff acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**5. To find out if management acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**6. To punish someone for breaking rules and regulations. (Enforce rules or law)**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**7. Now please Rank in order of importance the 6 reasons for accident investigation.**

**Rank the most important as =1, the next most important as 2 through to the least important as = 6.**

Please write in the "**Rank**" boxes to the right of the questions above.

### **THINKING ABOUT A SLIPPING ACCIDENT IN A SUPERMARKET**

In the section that follows you are asked to read about a slipping accident to Mary (a part time checkout operator at ABC Supermarkets) who slipped over on a spillage of milk near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a **manager or supervisor**, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of slipping accidents to add to the information given about the accident.

THE ACCIDENT.

**Mary is a lady of about 55 years of age who has worked as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

Please imagine that you are the Store Manager of ABC Supermarket and have just been given this message.

**ABC SUPERMARKET**

**MESSAGE TO** STORE MANAGER

**FROM** BILL SHOP FLOOR SUPERVISOR  
**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and slipped over on some spilt milk and hurt her arm. An ambulance was called to take her to hospital. **She has broken her right arm**, which has been plastered. **She will be off work for at least 3 weeks.**

**You speak to Jane one of the other checkout operators who witnessed the accident and Bill the Shop Floor Supervisor. These are the notes from your conversations.**

- Mary does not usually work on Thursdays but was covering for a friend who was on holiday
- Mary closed her checkout at the usual time for her mid morning break and waited for a friend on the checkout next to her to serve her last customer and they both went to their break together as usual.
- They were walking together past the checkouts when Mary slipped over on some spilt milk and fell awkwardly on her right arm.
- The First Aider attended and an ambulance was called to take Mary to hospital.
- At hospital she was found to have a broken right arm. She will be off work for at least 3 weeks with her arm in plaster.
- A customer had seen the milk and reported it to Bill the Supervisor
- Bill confirmed that the spillage had been reported by a customer and the cleaner had been asked to clear it up 5 minutes before the accident but had not got round to dealing with it.
- No warning signs had been put out.
- It is not known how long the milk had been on the floor before it was reported by the customer
- Spillages around the checkouts are very common.
- According to the Accident Book 4 other people had been injured in slipping accidents in the past 6 months

Imagining yourself as the **Store manager** please answer the following questions using the information provided about Mary's accident and your own experience of slipping accidents.

**IT COULD HAVE BEEN DIFFERENT " IF ONLY....."**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder....I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

**8.** After Marys accident **you** found yourself thinking "**If only.....**" .

How would you continue this to bring about a different outcome?

If only.....

.... **Things could have been different.**

9. Which **one** of the following people does your answer to Question 8 best refer to?

Please circle / highlight your answer

9	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

**COULD MARY'S ACCIDENT HAVE BEEN PREVENTED?**

10. As the **Store Manager** do you believe that Mary's accident could have been prevented ?

Yes	No	Not Sure
(1)	(2)	(3)

Please Circle / highlight **one** answer.

If you answered YES please go to question 11.

If you answered "No" or "Not sure" please go to question 13

Please indicate how you believe Mary's slipping accident could have been prevented.

11

Mary's accident could have been prevented.....
--

Which **one** of the following people does your answer to question 11 best refer to?

Please circle / highlight your answer

12

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY'S ACCIDENT?**

As Store Manager please rate the level of responsibility of each of the following people for **preventing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Preventing</b> Mary's accident					Rank
		0 = minimum & 4 = Maximum					Score
		0	1	2	3	4	1-8
13	Mary	0	1	2	3	4	
14	Bill the Shop floor Supervisor	0	1	2	3	4	
15	You as Manager	0	1	2	3	4	
16	The Store Safety Officer	0	1	2	3	4	
17	ABC Supermarkets	0	1	2	3	4	
18	Another worker	0	1	2	3	4	
19	The Cleaner	0	1	2	3	4	
20	A Customer	0	1	2	3	4	

**21** Now please **Rank** these 8 people in order of **importance in preventing Mary's accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

**THE CAUSE OF MARY’S ACCIDENT**

As the Store Manager what would you say was **the cause** of Mary's accident?

22 The cause of Mary's accident was...

Which **one** of the following people does your answer to Question 22 best refer to?

Please circle / highlight your answer

23

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

As Store Manager please rate the level of responsibility of **each** of the following people for **causing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below



		Responsibility for <b>Causing</b> Mary's accident					Rank Score 1-8
		0 = minimum & 4 = Maximum					
24	Mary	0	1	2	3	4	
25	Bill the Shop floor Supervisor	0	1	2	3	4	
26	You as Manager	0	1	2	3	4	
27	The Store Safety Officer	0	1	2	3	4	
28	ABC Supermarkets  The Employer	0	1	2	3	4	
29	Another worker	0	1	2	3	4	
30	The Cleaner	0	1	2	3	4	
31	A Customer	0	1	2	3	4	

**32** Now please **Rank** these 8 people **of importance in causing the accident.**

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

33

(1)	(2)	(3)	(4)	(5)
Very <u>U</u> n lucky	<u>U</u> n lucky	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

34

## LUCKY OR UNLUCKY?

Mary's accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

Please circle / highlight your answer

Thursday at 10.30 Mary closed her checkout to go for her mid morning rest break	▼	35	<b>Stage A</b>				
			(1)	(2)	(3)	(4)	(5)
			Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky
s usual Mary waited for her friend on the next checkout and they both walked along the front of the checkouts towards the staff room	▼	36	<b>Stage B</b>				
			(1)	(2)	(3)	(4)	(5)
			Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Milk had been spilt on the floor	▼	37 <b>Stage C</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
The spillage had been reported 5 minutes ago by a customer. The cleaner had been requested to clear up but had not got round to it	▼	38 <b>Stage D</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary did not see the milk on the floor	▼	39 <b>Stage E</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary stepped on the milk	▼	40 <b>Stage F</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary slipped on the milk	▼	41 <b>Stage G</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary lost her balance and fell over	▼	42 <b>Stage H</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary fell awkwardly hurting her right arm.	▼	43 <b>Stage I</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary taken to hospital- her arm was x-rayed and found to be broken . She will be off work for 3 weeks.	▼	44 <b>Stage J</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

**SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Manager or Supervisor.

If the statement is a very good description of you (very like you) fill in a 1, if it is not a very good description of you (not at all like you) please fill in a 5.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me 1	Quite a good description /Quite like me 2	Not sure if it describes me. 3	Quite poor description / Quite unlike me. 4	Very poor description / Very unlike me. 5
---	--	-----------------------------------	--	--

(Please write in the grey areas to the right of each statement)

		Score
45	I think about safety in the future and try to influence things by my day to day behaviour	
46	I think about safety in the future and do things now to achieve safety in the years ahead	
47	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
48	What I do about safety is only influenced by how things work out in the short term	
49	My convenience is a big factor in how I make decisions or take actions about safety	
50	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
51	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
52	I think it is more important to do something about serious accidents in the future than minor accidents now.	
53	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
54	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
55	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
56	I believe that safety today is more important than safety at some time in the future.	

**AND LASTLY SOME INFORMATION ABOUT YOU**

**57.** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	
6-10 people	(2)	
11-15 people	(3)	
16-20 people	(4)	
21-25 people	(5)	
26-30 people	(6)	

31-35 people	(8)	
36-40 people	(9)	
41-45 people	(10)	
46-50 people	(11)	
More than 51 people	(12)	
Not applicable	(13)	

**58.** Are you (Please Tick)

Male	(1)	
Female	(2)	



59. Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	<input type="checkbox"/>
Office	(2)	<input type="checkbox"/>
Hotel/ B&B	(3)	<input type="checkbox"/>
Leisure/ Cultural	(4)	<input type="checkbox"/>
Manufacturing	(5)	<input type="checkbox"/>
Agriculture	(6)	<input type="checkbox"/>

Wholesale Shop or warehouse	(7)	<input type="checkbox"/>
Catering, Restaurant or Bar	(8)	<input type="checkbox"/>
Residential Care	(9)	<input type="checkbox"/>
Consumer Services eg hairdresser/ beauty	(10)	<input type="checkbox"/>
Construction Industry	(11)	<input type="checkbox"/>
Central or Local Government	(12)	<input type="checkbox"/>
Other	(13)	<input type="checkbox"/>

60. Please give your current age.

61. Which of the following best describes your current working location. (Please tick)

United Kingdom	(1)	
Europe	(2)	
South America	(3)	
Middle East	(4)	
Far East	(5)	

Ireland	(6)	
North America / Canada	(7)	
Australia/ New Zealand	(8)	
Africa	(9)	
Other	(10)	

62. Which of these best describes you. Please Circle / highlight

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)
-----------------------------	-------------------------------	--	---

**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.  
I AM VERY GRATEFUL.  
PLEASE RETURN IT TO ME BY POST OR FAX .**

**PLEASE DETACH THIS SHEET AND KEEP IT**

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**Thank you for completing the questionnaire.  
Research such as this cannot happen with out your help.**

This questionnaire forms part of a study in to the ways in which accidents at work are viewed by Mangers & Supervisors, Safety Professionals and Accident Subjects themselves.

The same questions have been asked of each group and the results will be compared to see if there are any differences or similarities.

This stage of the research is concerned with how people think about hazards before and after an accident has happened and how they see responsibility for cause and prevention.

It is hoped that the results will help to improve our understanding of the ways these groups think about safety and accidents at work and will allow managers / supervisors and Safety Professionals to be better trained in accident investigation.

It is proposed that the results will be published in a professional Safety Journal. All results will be summarized and no individual respondent or employer will be identified. All answers to the questionnaire are treated in the strictest confidence. The information collected will be stored and treated in accordance with the Data Protection Act.

If you need to contact the researcher please do so by e-mail





## **MANAGERS AND SUPERVISORS**

## **THINKING ABOUT ACCIDENTS**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

28

Research supported by the

Dear Sir/Madam,

I am conducting research into the way in which **managers and supervisors** think about accidents at work.

I would be very grateful if you could spare about 10 -15 minutes to complete the attached questionnaire.

Your participation is entirely voluntary and any information you provide will be confidential and you will be completely anonymous if you post the questionnaire back to me using the envelope provided.

A summary of the results from the research may be published.

Paul Lehane.

**INSTRUCTIONS FOR COMPLETION**

Please try to answer as many questions as you can.

Any answers that you can provide are helpful so please return your form to me even if you do not complete all the questions.

Please write your answers in the grey shaded boxes or circle / tick the appropriate answer from the choices given.

**RETURN OF QUESTIONNAIRE**

**BY POST**

If you have been sent the questionnaire by post a prepaid envelope should have been provided. Please use this to return the questionnaire. If not please return to:-

Paul Lehane c/o EHTS London Borough of Bromley Civic Center Bromley England BR1 3UH
--

**BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

**WHY ARE ACCIDENTS INVESTIGATED?**

People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a **Manager or Supervisor** please indicate how important each reason is to you.

Circle / highlight **one** answer from the choices given for **each** question.

1. To find out the cause and understand what happened.

					Rank Score 1-6
(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank

2. To prevent similar accidents from happening again.

					Rank
(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank

3. To meet organizational requirements eg collection of statistics, make insurance claims, staff training etc.

					Rank
(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank

**4. To find out if staff acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**5. To find out if management acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**6. To punish someone for breaking rules and regulations. (Enforce rules or law)**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

7. Now please **Rank in order of importance** the 6 reasons for accident investigation.

**Rank the most important as =1, the next most important as 2 through to the least**

Please write in the "**Rank**" boxes to the right of the questions above.

## **THINKING ABOUT A SLIPPING ACCIDENT IN A SUPERMARKET**

In the section that follows you are asked to read about a slipping accident to Mary (a part time checkout operator at ABC Supermarkets) who slipped over on a spillage of milk near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a **manager or supervisor**, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of slipping accidents to add to the information given about the accident.

---

### THE ACCIDENT

**Mary is a lady of about 55 years of age who has worked for as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**



Please imagine that you are the Store Manager of ABC Supermarket and have just been given this message.

**ABC SUPERMARKET**

**MESSAGE TO** STORE MANAGER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and slipped over on some spilt milk and hurt her arm. An ambulance was called to take her to hospital. **She has broken her right arm**, which has been plastered. **She will be off work for at least 3 weeks.**

Imagining yourself as the **Store manager** please answer the following questions using the information provided about Mary's accident and your own experience of slipping accidents.

**IT COULD HAVE BEEN DIFFERENT " IF ONLY....."**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder...I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

8. After Mary's accident **you** found yourself thinking "**If only.....**".  
How would you continue this to bring about a different outcome?

If only.....

**.... Things could have been different.**

9. Which **one** of the following people does your answer to Question 8 best refer to?

Please circle / highlight your answer

9

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**COULD MARY'S ACCIDENT HAVE BEEN PREVENTED?**

As the **Store Manager** do you believe that Mary's accident could have been prevented?

Please Circle / highlight one answer.

<b>10</b>	Yes	No	Not Sure
	(1)	(2)	(3)

If you answered YES please go to question 11.

If you answered "No" or "Not sure" please go to question 13

Please indicate how you believe Mary's slipping accident could have been prevented.

<b>11</b>	Mary's accident could have been prevented.....
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Which **one** of the following people does the answer above best refer to?

Please circle / highlight your answer

12

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY'S ACCIDENT?**

As Store Manager please rate the level of responsibility of each of the following people for **preventing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Preventing</b> Mary's accident					Rank
		0 = minimum & 4 = Maximum					Score
		0	1	2	3	4	1-8
13	Mary	0	1	2	3	4	(Rank)
14	Bill the Shop floor Supervisor	0	1	2	3	4	(Rank)
15	You as Manager	0	1	2	3	4	(Rank)
16	The Store Safety Officer	0	1	2	3	4	(Rank)
17	ABC Supermarkets (The Employer)	0	1	2	3	4	(Rank)
18	Another worker	0	1	2	3	4	(Rank)
19	The Cleaner	0	1	2	3	4	(Rank)
20	A Customer	0	1	2	3	4	(Rank)

21 Now please **Rank** these 8 people in order of **importance in preventing Mary's accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

**THE CAUSE OF MARY'S ACCIDENT**

As the Store Manager what would you say was **the cause** of Mary's accident?

22 The cause of Mary's accident was...

Which **one** of the following people does your answer to question 22 best refer to?

Please circle / highlight your answer

23

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

As Store Manager please rate the level of responsibility of **each** of the following people for **causing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident					Rank
		0 = minimum & 4 = Maximum					Score
		0	1	2	3	4	1-8
24	Mary						(Rank)
25	Bill the Shop floor Supervisor						(Rank)
26	You as Manager						(Rank)
27	The Store Safety Officer						(Rank)
28	ABC Supermarkets  The Employer						(Rank)
29	Another worker						(Rank)
30	The Cleaner						(Rank)
31	A Customer						(Rank)

**32** Now please **Rank** these 8 people of importance in causing the accident.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

33	(1)	(2)	(3)	(4)	(5)
	Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

34



**LUCKY OR UNLUCKY?**

Mary’s accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

Circle / highlight your answer

Thursday at 10.30 Mary went for a rest break	▼	35 <b>Stage A</b>				
		(1)  Very Unlucky	(2)  Unlucky	(3)  Neither lucky or unlucky	(4)  Lucky	(5)  Very Lucky
Mary walked towards the Staff Room	▼	36 <b>Stage B</b>				
		(1)  Very Unlucky	(2)  Unlucky	(3)  Neither lucky or unlucky	(4)  Lucky	(5)  Very Lucky

Milk had been spilt on the floor	▼	37 <b>Stage C</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
The spillage had not been cleared up	▼	38 <b>Stage D</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary did not see the milk on the floor	▼	39 <b>Stage E</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary stepped on the milk	▼	40 <b>Stage F</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary slipped on the milk	▼	41 <b>Stage G</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary lost her balance and fell over	▼	42 <b>Stage H</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary fell awkwardly hurting her right arm.	▼	43 <b>Stage I</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary taken to hospital- her arm was x-rayed and found to be broken. She will be off work for 3 weeks.	▼	44 <b>Stage J</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

**SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Manager or Supervisor.

If the statement is a very good description of you (very like you) fill in a 1, if it is not a very good description of you (not at all like you) please fill in a 5.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me 1	Quite a good description / Quite like me 2	Not sure if it describes me. 3	Quite poor description / Quite unlike me. 4	Very poor description / Very unlike me. 5
---	---	-----------------------------------	--	--

(Please write in the grey areas to the right of each statement)

		Score
45	I think about safety in the future and try to influence things by my day to day behavior	
46	I think about safety in the future and do things now to achieve safety in the years ahead	
47	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
48	What I do about safety is only influenced by how things work out in the short term	
49	My convenience is a big factor in how I make decisions or take actions about safety	
50	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
51	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
52	I think it is more important to do something about serious accidents in the future than minor accidents now.	
53	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
54	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
55	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
56	I believe that safety today is more important than safety at some time in the future.	

**AND LASTLY SOME INFORMATION ABOUT YOU**

**57.** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	
6-10 people	(2)	
11-15 people	(3)	
16-20 people	(4)	
21-25 people	(5)	
26-30 people	(6)	

31-35 people	(8)	
36-40 people	(9)	
41-45 people	(10) )	
46-50 people	(11) )	
More than 51 people	(12) )	
Not applicable	(13) )	

**58.** Are you (Please Tick)

Male	(1)	
Female	(2)	

59. Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	<input type="checkbox"/>
Office	(2)	<input type="checkbox"/>
Hotel/ B&B	(3)	<input type="checkbox"/>
Leisure/ Cultural	(4)	<input type="checkbox"/>
Manufacturing	(5)	<input type="checkbox"/>
Agriculture	(6)	<input type="checkbox"/>

Wholesale Shop or warehouse	(7)	<input type="checkbox"/>
Catering, Restaurant or Bar	(8)	<input type="checkbox"/>
Residential Care	(9)	<input type="checkbox"/>
Consumer Services eg hairdresser/ beauty	(10)	<input type="checkbox"/>
Construction Industry	(11)	<input type="checkbox"/>
Central or Local Government	(12)	<input type="checkbox"/>
Other	(13)	<input type="checkbox"/>

60. Please give your current age.

61. Which of the following best describes your current working location. (Please tick)

United Kingdom	(1)		Ireland	(6)	
Europe	(2)		North America / Canada	(7)	
South America	(3)		Australia/ New Zealand	(8)	
Middle East	(4)		Africa	(9)	
Far East	(5)		Other	(10)	

62. Which of these best describes you. Please Circle / highlight

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)
-----------------------------	-------------------------------	--	--

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If you need to contact the researcher please do so by e-mail

████████████████████



## **MANAGERS AND SUPERVISORS**

## **THINKING ABOUT ACCIDENTS?**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

3S

Research supported by the

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Paul Lehane.

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Any answers that you can provide are helpful so please return your form to me even if you do not complete all the questions.

Please write your answers in the grey shaded boxes or circle / tick the appropriate answer from the choices given.

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Paul Lehane c/o EHTS London Borough of Bromley Civic Center Bromley England BR1 3UH
--

#### **BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

**WHY ARE ACCIDENTS INVESTIGATED?**

People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a **Manager or Supervisor** please indicate how important each reason is to you.

Circle / highlight **one** answer from the choices given for **each** question.

1. To find out the cause and understand what happened.

					Rank Score  1-6
(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank

2. To prevent similar accidents from happening again.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
--------------------------	----------------------------	------------------	------------------------------	----------------------------	------

**3. To meet organizational requirements eg collection of statistics, make insurance claims, staff training etc.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**4. To find out if staff acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**5. To find out if management acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**6. To punish someone for breaking rules and regulations. (Enforce rules or law)**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**7.** Now please **Rank in order of importance** the 6 reasons for accident investigation.

**Rank the most important as =1, the next most important as 2 through to the least important as = 6.**

## **THINKING ABOUT A SLIPPING ACCIDENT IN A SUPERMARKET**

In the section that follows you are asked to read about a slipping accident to Mary (a part time checkout operator at ABC Supermarkets) who slipped over on a spillage of milk near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a **manager or supervisor**, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of slipping accidents to add to the information given about the accident.

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**Mary is a lady of about 55 years of age who has worked for as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

Please imagine that you are the Store Manager of ABC Supermarket and have just been given this message.

### **ABC SUPERMARKET**

**MESSAGE TO** STORE MANAGER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and slipped over on some spilt milk and hurt her arm. An ambulance was called to take her to hospital. She has **strained her right wrist, and she will be returning to work tomorrow.**

You speak to Jane one of the other checkout operators who witnessed the accident and Bill the Shop Floor Supervisor. These are your notes from your conversations.

- Mary does not usually work on Thursdays but was covering for a friend who was on holiday
- Mary closed her checkout at the usual time for her mid morning break and waited for a friend on the checkout next to her to serve her last customer and they both went to their break together as usual.
- They were walking together past the checkouts when Mary slipped over on some spilt milk and fell awkwardly on her right arm.
- The First Aider attended and an ambulance was called to take Mary to hospital.
- At hospital she was found to have strained her right wrist. She will be back at work tomorrow.
- A customer had seen the milk and reported it to Bill the Supervisor
- Bill confirmed that the spillage had been reported by a customer and the cleaner had been asked to clear it up 5 minutes before the accident but had not got round to dealing with it.
- No warning signs had been put out.
- It is not known how long the milk had been on the floor before it was reported by the customer
- Spillages around the checkouts are very common.
- According to the Accident Book 4 other people had been injured in slipping accidents in the past 6 months

Imagining yourself as the **Store manager** please answer the following questions using the information provided about Mary's accident and your own experience of slipping accidents.

### **IT COULD HAVE BEEN DIFFERENT " IF ONLY....."**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder...I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight



8. After Mary's accident **you** found yourself thinking "**If only.....**".  
How would you continue this to bring about a different outcome?

If only.....

**.... Things could have been different.**

9. Which **one** of the following people does your answer to Question 8 best refer to?

Please circle / highlight your answer

9	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

**COULD MARY'S ACCIDENT HAVE BEEN PREVENTED?**

As the **Store Manager** do you believe that Mary's accident could have been prevented?

Please Circle / highlight one answer.

10	Yes	No	Not Sure
	(1)	(2)	(3)

If you answered YES please go to question 11.

If you answered "No" or "Not sure" please go to question 13

Please indicate how you believe Mary's slipping accident could have been prevented.

11

Mary's accident could have been prevented.....

Which **one** of the following people does your answer to Question 11 best refer to?

Please circle / highlight your answer

12

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY'S ACCIDENT?**

As Store Manager please rate the level of responsibility of each of the following people for **preventing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Preventing</b> Mary's accident					Rank Score 1-8
		0 = minimum & 4 = Maximum					
13	Mary	0	1	2	3	4	(Rank)
14	Bill the Shop floor Supervisor	0	1	2	3	4	(Rank)
15	You as Manager	0	1	2	3	4	(Rank)
16	The Store Safety Officer	0	1	2	3	4	(Rank)
17	ABC Supermarkets  (The Employer)	0	1	2	3	4	(Rank)
18	Another worker	0	1	2	3	4	(Rank)
19	The Cleaner	0	1	2	3	4	(Rank)
20	A Customer	0	1	2	3		(Rank)

**21** Now please **Rank** these 8 people in order of **importance in preventing Mary's accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

**THE CAUSE OF MARY'S ACCIDENT**

As the Store Manager what would you say was **the cause** of Mary's accident?

22 The cause of Mary's accident was...

Which **one** of the following people does your answer to question 22 best refer to?

Please circle / highlight your answer

23

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

As Store Manager please rate the level of responsibility of **each** of the following people for **causing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident					Rank
		0 = minimum & 4 = Maximum					Score
		0	1	2	3	4	1-8
24	Mary	0	1	2	3	4	(Rank)
25	Bill the Shop floor Supervisor	0	1	2	3	4	(Rank)
26	You as Manager	0	1	2	3	4	(Rank)
27	The Store Safety Officer	0	1	2	3	4	(Rank)
28	ABC Supermarkets  The Employer	0	1	2	3	4	(Rank)
29	Another worker	0	1	2	3	4	(Rank)
30	The Cleaner	0	1	2	3	4	(Rank)
31	A Customer	0	1	2	3	4	(Rank)

**32** Now please **Rank** these 8 people **of importance in causing the accident.**

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

33	(1)	(2)	(3)	(4)	(5)
	Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

34	
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LUCKY OR UNLUCKY

Mary's accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

Thursday at 10.30 Mary closed her checkout to go for her mid morning rest break	▼	35 <b>Stage A</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
As usual Mary waited for her friend on the next checkout and they both walked along the front of the checkouts towards the staff room	▼	36 <b>Stage B</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Milk had been spilt on the floor	▼	37 <b>Stage C</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
The spillage had been reported 5 minutes ago by a customer. The cleaner had been requested to clear up but had not got round to it	▼	38 <b>Stage D</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary did not see the milk on the floor	▼	39 <b>Stage E</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary stepped on the milk	▼	40 <b>Stage F</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky



Mary slipped on the milk	▼	41 <b>Stage G</b>			
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky
Mary lost her balance and fell over	▼	42 <b>Stage H</b>			
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky
Mary fell awkwardly hurting her right arm.	▼	43 <b>Stage I</b>			
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky
Mary taken to hospital- Right wrist found to be strained. She will return to work tomorrow	▼	44 <b>Stage J</b>			
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky

**SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Manager or Supervisor.

If the statement is a very good description of you (very like you) fill in a 1, if it is not a very good description of you (not at all like you) please fill in a 5.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me 1	Quite a good description / Quite like me 2	Not sure if it describes me. 3	Quite poor description / Quite unlike me. 4	Very poor description / Very unlike me. 5
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(Please write in the grey areas to the right of each statement)

		Score
45	I think about safety in the future and try to influence things by my day to day behaviour	
46	I think about safety in the future and do things now to achieve safety in the years ahead	
47	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
48	What I do about safety is only influenced by how things work out in the short term	
49	My convenience is a big factor in how I make decisions or take actions about safety	
50	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
51	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
52	I think it is more important to do something about serious accidents in the future than minor accidents now.	
53	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
54	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
55	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
56	I believe that safety today is more important than safety at some time in the future.	

**AND LASTLY SOME INFORMATION ABOUT YOU**

**57.** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	
6-10 people	(2)	
11-15 people	(3)	
16-20 people	(4)	
21-25 people	(5)	
26-30 people	(6)	

31-35 people	(8)	
36-40 people	(9)	
41-45 people	(10)	
46-50 people	(11)	
More than 51 people	(12)	
Not applicable	(13)	

**58.** Are you (Please Tick)

Male	(1)	
Female	(2)	

59. Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	<input type="checkbox"/>
Office	(2)	<input type="checkbox"/>
Hotel/ B&B	(3)	<input type="checkbox"/>
Leisure/ Cultural	(4)	<input type="checkbox"/>
Manufacturing	(5)	<input type="checkbox"/>
Agriculture	(6)	<input type="checkbox"/>

Wholesale Shop or warehouse	(7)	<input type="checkbox"/>
Catering, Restaurant or Bar	(8)	<input type="checkbox"/>
Residential Care	(9)	<input type="checkbox"/>
Consumer Services eg hairdresser/ beauty	(10)	<input type="checkbox"/>
Construction Industry	(11)	<input type="checkbox"/>
Central or Local Government	(12)	<input type="checkbox"/>
Other	(13)	<input type="checkbox"/>

60. Please give your current age.

61. Which of the following best describes your current working location. (Please tick)

United Kingdom	(1)	
Europe	(2)	
South America	(3)	
Middle East	(4)	
Far East	(5)	

Ireland	(6)	
North America / Canada	(7)	
Australia/ New Zealand	(8)	
Africa	(9)	
Other	(10)	

62. Which of these best describes you. Please Circle / highlight

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)
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**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.  
I AM VERY GRATEFUL.  
PLEASE RETURN IT TO ME BY POST OR FAX .**

**PLEASE DETACH THIS SHEET AND KEEP IT**

## **ACCIDENT INVESTIGATION QUESTIONNAIRE**

**Thank you for completing the questionnaire.  
Research such as this cannot happen with out your help.**

This questionnaire forms part of a study in to the ways in which accidents at work are viewed by Mangers & Supervisors, Safety Professionals and Accident Subjects themselves.

The same questions have been asked of each group and the results will be compared to see if there are any differences or similarities.

This stage of the research is concerned with how people think about hazards before and after an accident has happened and how they see responsibility for cause and prevention.

It is hoped that the results will help to improve our understanding of the ways these groups think about safety and accidents at work and will allow managers / supervisors and Safety Professionals to be better trained in accident investigation.

It is proposed that the results will be published in a professional Safety Journal. All results will be summarized and no individual respondent or employer will be identified. All answers to the questionnaire are treated in the strictest confidence. The information collected will be stored and treated in accordance with the Data Protection Act.

If you need to contact the researcher please do so by e-mail





## **MANAGERS AND SUPERVISORS**

## **THINKING ABOUT ACCIDENTS**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

Research supported by the

4S





Dear Sir/Madam,

I am conducting research into the way in which **managers and supervisors** think about accidents at work.

I would be very grateful if you could spare about 10 -15 minutes to complete the attached questionnaire.

Your participation is entirely voluntary and any information you provide will be confidential and you will be completely anonymous if you post the questionnaire back to me using the envelope provided.

A summary of the results from the research may be published.

Paul Lehane.

### **INSTRUCTIONS FOR COMPLETION**

Please try to answer as many questions as you can.

Any answers that you can provide are helpful so please return your form to me even if you do not complete all the questions.

Please write your answers in the grey shaded boxes or circle / tick the appropriate answer from the choices given.

### **RETURN OF QUESTIONNAIRE**

#### **BY POST**

If you have been sent the questionnaire by post a prepaid envelope should have been provided. Please use this to return the questionnaire. If not please return to:-

Paul Lehane c/o EHTS London Borough of Bromley Civic Center Bromley England BR1 3UH
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#### **BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

**WHY ARE ACCIDENTS INVESTIGATED?**

People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a **Manager or Supervisor** please indicate how important each reason is to you.

Circle / highlight **one** answer from the choices given for **each** question.

**1. To find out the cause and understand what happened.**

					Rank Score  1-6
(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank

**2. To prevent similar accidents from happening again.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**3. To meet organizational requirements eg collection of statistics, make insurance claims, staff training etc.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**4. To find out if staff acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**5. To find out if management acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**6. To punish someone for breaking rules and regulations. (Enforce rules or law)**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**7. Now please Rank in order of importance the 6 reasons for accident investigation.**

**Rank the most important as =1, the next most important as 2 through to the least important as = 6.** Please write in the "**Rank**" boxes to the right of the questions above..

### **INVESTIGATING A SLIPPING ACCIDENT IN A SUPERMARKET**

In the section that follows you are asked to read about a slipping accident to Mary (a part time checkout operator at ABC Supermarkets) who slipped over on a spillage of milk near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a **manager or supervisor**, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of slipping accidents to add to the information given about the accident.

---

#### THE ACCIDENT

**Mary is a lady of about 55 years of age who has worked for as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

Please imagine that you are the Store Manager of ABC Supermarket and have just been given this message.

#### **ABC SUPERMARKET**

**MESSAGE TO** STORE MANAGER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and slipped over on some spilt milk and hurt her arm. An ambulance was called to take her to hospital. She has **strained her right wrist**, and **she will be returning to work tomorrow.**

Imagining yourself as the **Store manager** please answer the following questions using the information provided about Mary's accident and your own experience of slipping accidents.

**IT COULD HAVE BEEN DIFFERENT " IF ONLY....."**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example:

After failing an exam a student might say "If only ... I had worked harder...I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

8. After Mary's accident **you** found yourself thinking "**If only.....**".  
How would you continue this to bring about a different outcome?

If only.....
.... Things could have been different.

9. Which **one** of the following people does your answer to Question 8 best refer to?

Please circle / highlight your answer

9	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

**COULD MARY’S ACCIDENT HAVE BEEN PREVENTED?**

As the **Store Manager** do you believe that Mary's accident could have been prevented?

Please Circle / highlight one answer.

**10**

Yes	No	Not Sure
(1)	(2)	(3)

If you answered YES please go to question 11.

If you answered "No" or "Not sure" please go to question 13

Please indicate how you believe Mary's slipping accident could have been prevented.

**11** Mary’s accident could have been prevented.....

Which **one** of the following people does the answer above best refer to?

Please circle / highlight your answer

**12**

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

As Store Manager please rate the level of responsibility of each of the following people for **preventing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Preventing</b> Mary's accident					Rank
		0 = minimum & 4 = Maximum					Score
		0	1	2	3	4	1-8
<b>13</b>	Mary	0	1	2	3	4	(Rank)
<b>14</b>	Bill the Shop floor Supervisor	0	1	2	3	4	(Rank)
<b>15</b>	You as Manager	0	1	2	3	4	(Rank)
<b>16</b>	The Store Safety Officer	0	1	2	3	4	(Rank)
<b>17</b>	ABC Supermarkets (The Employer)	0	1	2	3	4	(Rank)
<b>18</b>	Another worker	0	1	2	3	4	(Rank)
<b>19</b>	The Cleaner	0	1	2	3	4	(Rank)
<b>20</b>	A Customer	0	1	2	3	4	(Rank)

21 Now please **Rank** these 8 people in order of **importance in preventing Mary's accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

**THE CAUSE OF MARY'S ACCIDENT**

As the Store Manager what would you say was **the cause** of Mary's accident?

22 The cause of Mary's accident was...

Which **one** of the following people does your answer above best refer to?

Please circle / highlight your answer

23

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

As Store Manager please rate the level of responsibility of **each** of the following people for **causing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below



		Responsibility for <b>Causing</b> Mary's accident					Rank
		0 = minimum & 4 = Maximum					Score
		0	1	2	3	4	1-8
24	Mary						(Rank)
25	Bill the Shop floor Supervisor						(Rank)
26	You as Manager						(Rank)
27	The Store Safety Officer						(Rank)
28	ABC Supermarkets  The Employer						(Rank)
29	Another worker						(Rank)
30	The Cleaner						(Rank)
31	A Customer						(Rank)

**32** Now please **Rank** these 8 people **of importance in causing the accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

33	(1)	(2)	(3)	(4)	(5)
	Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

34	
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**LUCKY OR UNLUCKY**

Mary’s accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

Circle / highlight your answers

At 10.30 Mary went for her rest break	▼	35	<b>Stage A</b>				
			(1)	(2)	(3)	(4)	(5)
			Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky
Mary walked towards the staff room	▼	36	<b>Stage B</b>				
			(1)	(2)	(3)	(4)	(5)
			Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky
Milk had been spilt on the floor	▼	37	<b>Stage C</b>				
			(1)	(2)	(3)	(4)	(5)
			Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

The spillage had not been cleared up	▼	38 <b>Stage D</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary did not see the milk on the floor	▼	39 <b>Stage E</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary stepped on the milk	▼	40 <b>Stage F</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary slipped on the milk	▼	41 <b>Stage G</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary lost her balance and fell over	▼	42 <b>Stage H</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary fell awkwardly hurting her right arm.	▼	43 <b>Stage I</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary taken to hospital- Right wrist found to be strained. She will return to work tomorrow	▼	44 <b>Stage J</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

**SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Manager or Supervisor.

If the statement is a very good description of you (very like you) fill in a 1, if it is not a very good description of you (not at all like you) please fill in a 5.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me 1	Quite a good description /Quite like me 2	Not sure if it describes me. 3	Quite poor description / Quite unlike me. 4	Very poor description / Very unlike me. 5
---	--	-----------------------------------	--	--

(Please write in the grey areas to the right of each statement)

		Score
45	I think about safety in the future and try to influence things by my day to day behaviour	
46	I think about safety in the future and do things now to achieve safety in the years ahead	
47	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
48	What I do about safety is only influenced by how things work out in the short term	
49	My convenience is a big factor in how I make decisions or take actions about safety	
50	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
51	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
52	I think it is more important to do something about serious accidents in the future than minor accidents now.	
53	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
54	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
55	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
56	I believe that safety today is more important than safety at some time in the future.	

**AND LASTLY SOME INFORMATION ABOUT YOU**

**57.** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	
6-10 people	(2)	
11-15 people	(3)	
16-20 people	(4)	
21-25 people	(5)	
26-30 people	(6)	

31-35 people	(8)	
36-40 people	(9)	
41-45 people	(10)	
46-50 people	(11)	
More than 51 people	(12)	
Not applicable	(13)	

**58.** Are you (Please Tick)

Male	(1)	
Female	(2)	



59. Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	<input type="checkbox"/>
Office	(2)	<input type="checkbox"/>
Hotel/ B&B	(3)	<input type="checkbox"/>
Leisure/ Cultural	(4)	<input type="checkbox"/>
Manufacturing	(5)	<input type="checkbox"/>
Agriculture	(6)	<input type="checkbox"/>

Wholesale Shop or warehouse	(7)	<input type="checkbox"/>
Catering, Restaurant or Bar	(8)	<input type="checkbox"/>
Residential Care	(9)	<input type="checkbox"/>
Consumer Services eg hairdresser/ beauty	(10)	<input type="checkbox"/>
Construction Industry	(11)	<input type="checkbox"/>
Central or Local Government	(12)	<input type="checkbox"/>
Other	(13)	<input type="checkbox"/>

60. Please give your current age.

61. Which of the following best describes your current working location. (Please tick)

United Kingdom	(1)		Ireland	(6)	
Europe	(2)		North America / Canada	(7)	
South America	(3)		Australia/ New Zealand	(8)	
Middle East	(4)		Africa	(9)	
Far East	(5)		Other	(10)	

62. Which of these best describes you. Please Circle / highlight

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)
-----------------------------	-------------------------------	--	---

**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.  
I AM VERY GRATEFUL.  
PLEASE RETURN IT TO ME BY POST OR FAX .**

**PLEASE DETACH THIS SHEET AND KEEP IT**

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It is proposed that the results will be published in a professional Safety Journal. All results will be summarized and no individual respondent or employer will be identified. All answers to the questionnaire are treated in the strictest confidence. The information collected will be stored and treated in accordance with the Data Protection Act.

If you need to contact the researcher please do so by e-mail

████████████████████



## **MANAGERS AND SUPERVISORS**

## **THINKING ABOUT ACCIDENTS**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

**5S**

Research supported by the

Dear Sir/Madam,

I am conducting research into the way in which **managers and supervisors** think about accidents at work.

I would be very grateful if you could spare about 10 -15 minutes to complete the attached questionnaire.

Your participation is entirely voluntary and any information you provide will be confidential and you will be completely anonymous if you post the questionnaire back to me using the envelope provided.

A summary of the results from the research may be published.

Paul Lehane.

**INSTRUCTIONS FOR COMPLETION**

Please try to answer as many questions as you can.

Any answers that you can provide are helpful so please return your form to me even if you do not complete all the questions.

Please write your answers in the grey shaded boxes or circle / tick the appropriate answer from the choices given.

**RETURN OF QUESTIONNAIRE**

**BY POST**

If you have been sent the questionnaire by post a prepaid envelope should have been provided. Please use this to return the questionnaire. If not please return to:-

Paul Lehane c/o  
EHTS  
London Borough of Bromley  
Civic Center Bromley England BR1 3UH

**BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

**WHY ARE ACCIDENTS INVESTIGATED?**

People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a **Manager or Supervisor** please indicate how important each reason is to you.

Circle / highlight **one** answer from the choices given for **each** question.

1. To find out the cause and understand what happened.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank Score 1-6
					Rank

2. To prevent similar accidents from happening again.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**3. To meet organizational requirements eg collection of statistics, make insurance claims, staff training etc.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**4. To find out if staff acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**5. To find out if management acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**6. To punish someone for breaking rules and regulations. (Enforce rules or law)**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

7. Now please **Rank in order of importance** the 6 reasons for accident investigation.

**Rank the most important as =1, the next most important as 2 through to the least important as = 6.**

Please write in the "**Rank**" boxes to the right of the questions above.



## THINKING ABOUT A TRIPPING ACCIDENT IN A SUPERMARKET

In the section that follows you are asked to read about a tripping accident to Mary (a part time checkout operator at ABC Supermarkets) who tripped over on a box near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a manager or supervisor, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of tripping accidents to add to the information given about the accident.

---

**Mary is a lady of about 55 years of age who has worked as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

Please imagine that you are the Store Manager of ABC Supermarket and have just been given this message.

### ABC SUPERMARKET

MESSAGE TO STORE MANAGER

FROM BILL SHOP FLOOR SUPERVISOR

DATE THURSDAY 10 AUGUST

TIME 11.30 HRS

SUBJECT - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and tripped over on a box and hurt her arm. An ambulance was called to take her to hospital. **She has broken her right arm**, which has been plastered. **She will be off work for at least 3 weeks.**

**You speak to Jane one of the other checkout operators who witnessed the accident and Bill the Shop Floor Supervisor. These are the notes from your conversations.**

- Mary does not usually work on Thursdays but was covering for a friend who was on holiday



Which **one** of the following people does your answer to question 8 best refer to?

Please circle / highlight your answer

9

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**COULD MARY’S ACCIDENT HAVE BEEN PREVENTED?**

As the **Store Manager** do you believe that Mary's accident could have been prevented?

Please Circle / highlight **one** answer.

10

Yes	No	Not Sure
(1)	(2)	(3)

If you answered YES please go to question 11.

If you answered "No" or "Not sure" please go to question 13

Please indicate how you believe Mary's slipping accident could have been prevented.

11

Mary’s accident could have been prevented.....

Which **one** of the following people does your answer to question 11 best refer to?

Please circle / highlight your answer

12

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

As Store Manager please rate the level of responsibility of each of the following people for **preventing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b><u>Preventing</u></b> Mary's accident					Rank Score 1-8
		0 = minimum & 4 = Maximum					
13	Mary	0	1	2	3	4	
14	Bill the Shop floor Supervisor	0	1	2	3	4	
15	You as Manager	0	1	2	3	4	
16	The Store Safety Officer	0	1	2	3	4	
17	ABC Supermarkets  (The Employer)	0	1	2	3	4	
18	Another worker	0	1	2	3	4	
19	The Cleaner	0	1	2	3	4	
20	A Customer	0	1	2	3	4	

**21** Now please **Rank** these 8 people in order of **importance in preventing Mary’s accident.**

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.** Please write in the "Rank" boxes to the right of the questions above.

**THE CAUSE OF MARY'S ACCIDENT**

As the Store Manager what would you say was **the cause** of Mary's accident?

22 The cause of Mary's accident was...

Which **one** of the following people does your answer to Question 22 best refer to?

Please circle / highlight your answer

23

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

As Store Manager please rate the level of responsibility of **each** of the following people for **causing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident					Rank
		0 = minimum & 4 = Maximum					Score
							1-8
24	Mary	0	1	2	3	4	(Rank)
25	Bill the Shop floor Supervisor	0	1	2	3	4	(Rank)
26	You as Manager	0	1	2	3	4	(Rank)
27	The Store Safety Officer	0	1	2	3	4	(Rank)
28	ABC Supermarkets The Employer	0	1	2	3	4	(Rank)
29	Another worker	0	1	2	3	4	(Rank)
30	The Cleaner	0	1	2	3	4	(Rank)
31	A Customer	0	1	2	3	4	(Rank)

**32** Now please **Rank** these 8 people of importance in causing the accident.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

<b>33</b>	(1)	(2)	(3)	(4)	(5)
	Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

34



**LUCKY OR UNLUCKY?**

Mary’s accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

<p>Thursday at 10.30 Mary closed her checkout to go for her mid morning rest break</p>	▼	<p>35 <b>Stage A</b></p>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
<p>As usual Mary waited for her friend on the next checkout and they both walked along the front of the checkouts towards the staff room</p>	▼	<p>36 <b>Stage B</b></p>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky



A box had been left on the floor	▼	37 <b>Stage C</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
The box had been reported 5 minutes ago. The cleaner had been requested to clear up but had not got round to it	▼	38 <b>Stage D</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary did not see the box on the floor	▼	39 <b>Stage E</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary's foot caught the box	▼	40 <b>Stage F</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary tripped on the box	▼	41 <b>Stage G</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary lost her balance and fell over	▼	42 <b>Stage H</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary fell awkwardly hurting her right arm.	▼	43 <b>Stage I</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
Mary taken to hospital- her arm was x-rayed and found to be broken. She will be off work for 3 weeks.	▼	44 <b>Stage J</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

**SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Manager or Supervisor.

If the statement is a very good description of you (very like you) fill in a 1, if it is not a very good description of you (not at all like you) please fill in a 5.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me  1	Quite a good description /Quite like me  2	Not sure if it describes me.  3	Quite poor description / Quite unlike me.  4	Very poor description / Very unlike me.  5
--	---	---------------------------------------	---	---

(Please write in the grey areas to the right of each statement)

		Score
45	I think about safety in the future and try to influence things by my day to day behaviour	
46	I think about safety in the future and do things now to achieve safety in the years ahead	
47	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
48	What I do about safety is only influenced by how things work out in the short term	
49	My convenience is a big factor in how I make decisions or take actions about safety	
50	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
51	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
52	I think it is more important to do something about serious accidents in the future than minor accidents now.	
53	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
54	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
55	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
56	I believe that safety today is more important than safety at some time in the future.	

**AND LASTLY SOME INFORMATION ABOUT YOU**

**57.** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	
6-10 people	(2)	
11-15 people	(3)	
16-20 people	(4)	
21-25 people	(5)	
26-30 people	(6)	

31-35 people	(8)	
36-40 people	(9)	
41-45 people	(10)	
46-50 people	(11)	
More than 51 people	(12)	
Not applicable	(13)	

**58.** Are you (Please Tick)

Male	(1)	
Female	(2)	

**59.** Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	
Office	(2)	
Hotel/ B&B	(3)	
Leisure/ Cultural	(4)	
Manufacturing	(5)	
Agriculture	(6)	

Wholesale Shop or warehouse	(7)	
Catering, Restaurant or Bar	(8)	
Residential Care	(9)	
Consumer Services eg hairdresser/ beauty	(10)	
Construction Industry	(11)	
Central or Local Government	(12)	
Other	(13)	

60. Please give your current age.

61. Which of the following best describes your current working location. (Please tick)

United Kingdom	(1)		Ireland	(6)	
Europe	(2)		North America / Canada	(7)	
South America	(3)		Australia/ New Zealand	(8)	
Middle East	(4)		Africa	(9)	
Far East	(5)		Other	(10)	

62. Which of these best describes you. Please Circle / highlight

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)
-----------------------------	-------------------------------	--	--

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**MANAGERS AND SUPERVISORS**  
**THINKING ABOUT ACCIDENTS**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

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Paul Lehane c/o EHTS London Borough of Bromley <b>Civic Center Bromley England BR1 3UH</b>
---

#### **BY FAX**

You may Fax your completed questionnaire to me on XXXXXXXXXX

**WHY ARE ACCIDENTS INVESTIGATED?**

People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a **Manager or Supervisor** please indicate how important each reason is to you.

Circle / highlight **one** answer from the choices given for **each** question.

1. To find out the cause and understand what happened.

					Rank Score 1-6
(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank

2. To prevent similar accidents from happening again.

					Rank
(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank

3. To meet organizational requirements eg collection of statistics, make insurance claims, staff training etc.

					Rank
(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank

**4. To find out if staff acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**5. To find out if management acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**6. To punish someone for breaking rules and regulations. (Enforce rules or law)**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

7. Now please **Rank in order of importance** the 6 reasons for accident investigation.

**Rank the most important as =1, the next most important as 2 through to the least important as = 6.**

Please write in the "**Rank**" boxes to the right of the questions above.

### **INVESTIGATING A TRIPPING ACCIDENT IN A SUPERMARKET**

In the section that follows you are asked to read about a tripping accident to Mary (a part time checkout operator at ABC Supermarkets) who tripped over on a box near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a **manager or supervisor**, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of tripping accidents to add to the information given about the accident.

---

**Mary is a lady of about 55 years of age who has worked for as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

Please imagine that you are the Store Manager of ABC Supermarket and have just been given this message.

**ABC SUPERMARKET**

**MESSAGE TO** STORE MANAGER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

**At about 10.30am Mary went for her rest break and tripped over on a box and hurt her arm. An ambulance was called to take her to hospital. She has broken her right arm, which has been plastered. She will be off work for at least 3 weeks.**

Imagining yourself as the **Store Manager** please answer the following questions using the information provided about Mary's accident and your own experience of tripping accidents

**IT COULD HAVE BEEN DIFFERENT "IF ONLY....."**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder....I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

8. After Mary's accident you found yourself thinking "If only.....". How would you continue this thought?

If only.....

.... Things could have been different.

9 Which one of the following people does your answer to Question 8 best refer to?

Please circle / highlight your answer

9

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**COULD MARY'S ACCIDENT HAVE BEEN PREVENTED?**

As the **Store Manager** do you believe that Mary's accident could have been **prevented?**

Please Circle / highlight **one** answer.

**10**

Yes	No	Not Sure
(1)	(2)	(3)

If you answered YES please go to question 11.  
 If you answered "No" or "Not sure" please go to question 13

Please indicate how you believe Mary's slipping accident could have been prevented.

**11** Mary's accident could have been prevented.....

Which **one** of the following people does your answer to question 11 best refer to?

Please circle / highlight your answer

**12**

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these



**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

As Store Manager please rate the level of responsibility of each of the following people for **preventing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Preventing</b> Mary's accident					Rank Score 1-8
		0 = minimum & 4 = Maximum					
<b>13</b>	Mary	0	1	2	3	4	(Rank)
<b>14</b>	Bill the Shop floor Supervisor	0	1	2	3	4	(Rank)
<b>15</b>	You as Manager	0	1	2	3	4	(Rank)
<b>16</b>	The Store Safety Officer	0	1	2	3	4	(Rank)
<b>17</b>	ABC Supermarkets  (The Employer)	0	1	2	3	4	(Rank)
<b>18</b>	Another worker	0	1	2	3	4	(Rank)
<b>19</b>	The Cleaner	0	1	2	3	4	(Rank)
<b>20</b>	A Customer	0	1	2	3	4	(Rank)

21 Now please **Rank** these 8 people in order of **importance in preventing Mary's accident.**

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

**THE CAUSE OF MARY'S ACCIDENT**

As the Store Manager what would you say was **the cause** of Mary's accident?

22 The cause of Mary's accident was...

Which **one** of the following people does your answer to Question 22 best refer to?

Please circle / highlight your answer

23

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

As Store Manager please rate the level of responsibility of **each** of the following people for **causing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident  0 = minimum & 4 = Maximum					Rank Score 1-8
24	Mary	0	1	2	3	4	(Rank)
25	Bill the Shop floor Supervisor	0	1	2	3	4	(Rank)
26	You as Manager	0	1	2	3	4	(Rank)
27	The Store Safety Officer	0	1	2	3	4	(Rank)
28	ABC Supermarkets  The Employer	0	1	2	3	4	(Rank)
29	Another worker	0	1	2	3	4	(Rank)
30	The Cleaner	0	1	2	3	4	(Rank)
31	A Customer	0	1	2	3	4	(Rank)

32 Now please **Rank** these 8 people **of importance in causing the accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

33	(1)	(2)	(3)	(4)	(5)
	Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

34	
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**LUCKY OR UNLUCKY**

Mary’s accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

Thursday at 10.30  
Mary went for rest  
break

35	<b>Stage A</b>				
(1)	(2)	(3)	(4)	(5)	
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky	

Mary walked  
towards the Staff  
Room

36	<b>Stage B</b>				
(1)	(2)	(3)	(4)	(5)	
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky	

A box had been left  
on the floor

37	<b>Stage C</b>				
(1)	(2)	(3)	(4)	(5)	
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky	

The box had not been cleared up

▼

38 Stage D				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary did not see the box on the floor

▼

39 Stage E				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary's foot caught the box

▼

40 Stage F				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary tripped on the box

▼

41 Stage G				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary lost her balance and fell over

▼

42 <b>Stage H</b>				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary fell awkwardly hurting her right arm.

▼

43 <b>Stage I</b>				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary taken to hospital- her arm was x-rayed and found to be broken. She will be off work for 3 weeks.

▼

44 <b>Stage J</b>				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

**SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Manager or Supervisor.

If the statement is a very good description of you (very like you) fill in a 1, if it is not a very good description of you (not at all like you) please fill in a 5.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me 1	Quite a good description / Quite like me 2	Not sure if it describes me. 3	Quite poor description / Quite unlike me. 4	Very poor description / Very unlike me. 5
--	--	-----------------------------------	---	---



(Please write in the grey areas to the right of each statement)

		Score
45	I think about safety in the future and try to influence things by my day to day behaviour	
46	I think about safety in the future and do things now to achieve safety in the years ahead	
47	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
48	What I do about safety is only influenced by how things work out in the short term	
49	My convenience is a big factor in how I make decisions or take actions about safety	
50	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
51	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
52	I think it is more important to do something about serious accidents in the future than minor accidents now.	
53	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
54	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
55	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
56	I believe that safety today is more important than safety at some time in the future.	

**AND LASTLY SOME INFORMATION ABOUT YOU**

**57.** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	
6-10 people	(2)	
11-15 people	(3)	
16-20 people	(4)	
21-25 people	(5)	
26-30 people	(6)	

31-35 people	(8)	
36-40 people	(9)	
41-45 people	(10)	
46-50 people	(11)	
More than 51 people	(12)	
Not applicable	(13)	

**58.** Are you (Please Tick)

Male	(1)	
Female	(2)	

59. Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	<input type="checkbox"/>
Office	(2)	<input type="checkbox"/>
Hotel/ B&B	(3)	<input type="checkbox"/>
Leisure/ Cultural	(4)	<input type="checkbox"/>
Manufacturing	(5)	<input type="checkbox"/>
Agriculture	(6)	<input type="checkbox"/>

Wholesale Shop or warehouse	(7)	<input type="checkbox"/>
Catering, Restaurant or Bar	(8)	<input type="checkbox"/>
Residential Care	(9)	<input type="checkbox"/>
Consumer Services eg hairdresser/ beauty	(10)	<input type="checkbox"/>
Construction Industry	(11)	<input type="checkbox"/>
Central or Local Government	(12)	<input type="checkbox"/>
Other	(13)	<input type="checkbox"/>

60. Please give your current age.

61. Which of the following best describes your current working location. (Please tick)

United Kingdom	(1)		Ireland	(6)	
Europe	(2)		North America / Canada	(7)	
South America	(3)		Australia/ New Zealand	(8)	
Middle East	(4)		Africa	(9)	
Far East	(5)		Other	(10)	

62. Which of these best describes you. Please Circle / highlight

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)
-----------------------------	-------------------------------	--	--

**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.  
I AM VERY GRATEFUL.  
PLEASE RETURN IT TO ME BY POST OR FAX.**

**PLEASE DETACH THIS SHEET AND KEEP IT**

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The same questions have been asked of each group and the results will be compared to see if there are any differences or similarities.

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It is proposed that the results will be published in a professional Safety Journal. All results will be summarized and no individual respondent or employer will be identified. All answers to the questionnaire are treated in the strictest confidence. The information collected will be stored and treated in accordance with the Data Protection Act.

If you need to contact the researcher please do so by e-mail

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**MANAGERS AND SUPERVISORS**  
**THINKING ABOUT ACCIDENTS**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

**7S**

Research supported by the



Dear Sir/Madam,

I am conducting research into the way in which **managers and supervisors** think about accidents at work.

I would be very grateful if you could spare about 10 -15 minutes to complete the attached questionnaire.

Your participation is entirely voluntary and any information you provide will be confidential and you will be completely anonymous if you post the questionnaire back to me using the envelope provided.

A summary of the results from the research may be published.

Paul Lehane.

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Please try to answer as many questions as you can.

Any answers that you can provide are helpful so please return your form to me even if you do not complete all the questions.

Please write your answers in the grey shaded boxes or circle / tick the appropriate answer from the choices given.

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If you have been sent the questionnaire by post a prepaid envelope should have been provided. Please use this to return the questionnaire. If not please return to:-

Paul Lehane c/o EHTS London Borough of Bromley Civic Center Bromley England BR1 3UH
--

#### **BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

**WHY ARE ACCIDENTS INVESTIGATED?**

People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a **Manager or Supervisor** please indicate how important each reason is to you.

Circle / highlight **one** answer from the choices given for **each** question.

1. To find out the cause and understand what happened.

					Rank Score 1-6
(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank

2. To prevent similar accidents from happening again.

					Rank
(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank



**3. To meet organizational requirements eg collection of statistics, make insurance claims, staff training etc.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**4. To find out if staff acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**5. To find out if management acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**6. To punish someone for breaking rules and regulations. (Enforce rules or law)**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

7. Now please **Rank in order of importance** the 6 reasons for accident investigation.

**Rank the most important as =1, the next most important as 2 through to the least important as = 6.**

Please write in the "**Rank**" boxes to the right of the questions above.

## THINKING ABOUT A TRIPPING ACCIDENT IN A SUPERMARKET

In the section that follows you are asked to read about a tripping accident to Mary (a part time checkout operator at ABC Supermarkets) who tripped over on a box near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a manager or supervisor, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of tripping accidents to add to the information given about the accident.

---

**Mary is a lady of about 55 years of age who has worked for as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

Please imagine that you are the Store Manager of ABC Supermarket and have just been given this message.

### ABC SUPERMARKET

MESSAGE TO STORE MANAGER

FROM BILL SHOP FLOOR SUPERVISOR

DATE THURSDAY 10 AUGUST

TIME 11.30 HRS

SUBJECT - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and tripped over a box and hurt her arm. An ambulance was called to take her to hospital. **She has strained her right wrist, and she will be returning to work tomorrow.**

You speak to Jane one of the other checkout operators who witnessed the accident and Bill the Shop Floor Supervisor. These are your notes from your conversations.

- Mary does not usually work on Thursdays but was covering for a friend who was on holiday
- Mary closed her checkout at the usual time for her mid morning break and waited for a friend on the checkout next to her to serve her last customer and they both went to their break together as usual.
- They were walking together past the checkouts when Mary tripped over a box and fell awkwardly on her right arm.
- The First Aider attended and an ambulance was called to take Mary to hospital.
- At hospital she was found to have strained he right wrist. She will be back at work tomorrow.
- A customer had seen the box and reported it to Bill the Supervisor
- Bill confirmed that the box had been reported by a customer and the cleaner had been asked to clear it up 5 minutes before the accident but had not got round to dealing with it.
- No warning signs had been put out.
- It is not known how long the box had been on the floor before it was reported by the customer
- The area round the checkouts often gets untidy.
- According to the Accident Book 4 other people had been injured in tripping accidents in the past 6 months

Imagining yourself as the Store Manager please answer the following questions using the information provided about Mary’s accident and your own experiences of tripping accidents

### **IT COULD HAVE BEEN DIFFERENT “IF ONLY.....”**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder....I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

8. After the accident you found yourself thinking “**If only.....**” . How would you continue this thought?

If only.....

**.... Things could have been different.**

9 Which **one** of the following people does your answer to Question 8 best refer to?

Please circle / highlight your answer

9	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

**COULD MARY’S ACCIDENT HAVE BEEN PREVENTED?**

As the **Store Manager** do you believe that Mary's accident could have been **prevented?**

Please Circle / highlight **one** answer.

10	Yes	No	Not Sure
	(1)	(2)	(3)

If you answered YES please go to question 11.  
 If you answered "No" or "Not sure" please go to question 13

Please indicate how you believe Mary's slipping accident could have been prevented.

11 Mary's accident could have been prevented.....

Which **one** of the following people does your answer to question 11 best refer to?

Please circle / highlight your answer

12	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

As Store Manager please rate the level of responsibility of each of the following people for **preventing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b><u>Preventing</u></b> Mary's accident 0 = minimum & 4 = Maximum					Rank Score 1-8
13	Mary	0	1	2	3	4	(Rank)
14	Bill the Shop floor Supervisor	0	1	2	3	4	(Rank)
15	You as Manager	0	1	2	3	4	(Rank)
16	The Store Safety Officer	0	1	2	3	4	(Rank)
17	ABC Supermarkets	0	1	2	3	4	(Rank)
18	Another worker	0	1	2	3	4	(Rank)
19	The Cleaner	0	1	2	3	4	(Rank)
20	A Customer	0	1	2	3	4	(Rank)

21 Now please **Rank** these 8 people in order of **importance in preventing Mary's accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

**THE CAUSE OF MARY'S ACCIDENT**

As the Store Manager what would you say was **the cause** of Mary's accident?

22

Which **one** of the following people does your answer to Question 22 best refer to?

Please circle / highlight your answer

23

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

As Store Manager please rate the level of responsibility of **each** of the following people for **causing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below



		Responsibility for <b>Causing</b> Mary's accident					Rank Score 1-8
		0 = minimum & 4 = Maximum					
<b>24</b>	Mary	0	1	2	3	4	(Rank)
<b>25</b>	Bill the Shop floor Supervisor	0	1	2	3	4	(Rank)
<b>26</b>	You as Manager	0	1	2	3	4	(Rank)
<b>27</b>	The Store Safety Officer	0	1	2	3	4	(Rank)
<b>28</b>	ABC Supermarkets	0	1	2	3	4	(Rank)
<b>29</b>	Another worker	0	1	2	3	4	(Rank)
<b>30</b>	The Cleaner	0	1	2	3	4	(Rank)
<b>31</b>	A Customer	0	1	2	3	4	(Rank)

**32** Now please **Rank** these 8 people **of importance in causing the accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

<b>33</b>	(1)	(2)	(3)	(4)	(5)
	Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

<b>34</b>	
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## LUCKY OR UNLUCKY

Mary's accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

Thursday at 10.30 Mary closed her checkout to go for her mid morning rest break

35	<b>Stage A</b>				
(1)	(2)	(3)	(4)	(5)	
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky	

As usual Mary waited for her friend on the next checkout and they both walked along the front of the checkouts towards the staff room

36	<b>Stage B</b>				
(1)	(2)	(3)	(4)	(5)	
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky	

A box had been left on the floor

37	<b>Stage C</b>				
(1)	(2)	(3)	(4)	(5)	
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky	

The box had been reported 5 minutes ago. The cleaner had been requested to clear up but had not got round to it

38	<b>Stage D</b>			
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary did not see the box on the floor

39	<b>Stage E</b>			
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary's foot caught the box

40	<b>Stage F</b>			
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary tripped on the box

41	<b>Stage G</b>			
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary lost her balance and fell over

42 <b>Stage H</b>				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary fell awkwardly hurting her right arm.

43 <b>Stage I</b>				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary taken to hospital- Right wrist found to be strained. She will return to work tomorrow

44 <b>Stage J</b>				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

**SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Manager or Supervisor.

If the statement is a very good description of you (very like you) fill in a 1, if it is not a very good description of you (not at all like you) please fill in a 5.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me  1	Quite a good description /Quite like me  2	Not sure if it describes me.  3	Quite poor description / Quite unlike me.  4	Very poor description / Very unlike me.  5
--	---	---------------------------------------	---	---

(Please write in the grey areas to the right of each statement)

		Score
45	I think about safety in the future and try to influence things by my day to day behaviour	
46	I think about safety in the future and do things now to achieve safety in the years ahead	
47	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
48	What I do about safety is only influenced by how things work out in the short term	
49	My convenience is a big factor in how I make decisions or take actions about safety	
50	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
51	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
52	I think it is more important to do something about serious accidents in the future than minor accidents now.	
53	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
54	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
55	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
56	I believe that safety today is more important than safety at some time in the future.	

**AND LASTLY SOME INFORMATION ABOUT YOU**

**57.** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	<input type="checkbox"/>
6-10 people	(2)	<input type="checkbox"/>
11-15 people	(3)	<input type="checkbox"/>
16-20 people	(4)	<input type="checkbox"/>
21-25 people	(5)	<input type="checkbox"/>
26-30 people	(6)	<input type="checkbox"/>

31-35 people	(8)	<input type="checkbox"/>
36-40 people	(9)	<input type="checkbox"/>
41-45 people	(10)	<input type="checkbox"/>
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More than 51 people	(12)	<input type="checkbox"/>
Not applicable	(13)	<input type="checkbox"/>

**58.** Are you (Please Tick)

Male	(1)	<input type="checkbox"/>
Female	(2)	<input type="checkbox"/>



59. Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	<input type="checkbox"/>
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Leisure/ Cultural	(4)	<input type="checkbox"/>
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Wholesale Shop or warehouse	(7)	<input type="checkbox"/>
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60. Please give your current age.

61. Which of the following best describes your current working location. (Please tick)

United Kingdom	(1)		Ireland	(6)	
Europe	(2)		North America / Canada	(7)	
South America	(3)		Australia/ New Zealand	(8)	
Middle East	(4)		Africa	(9)	
Far East	(5)		Other	(10)	

62. Which of these best describes you. Please Circle / highlight

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)
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**MANAGERS AND SUPERVISORS**  
**THINKING ABOUT ACCIDENTS**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

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People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a **Manager or Supervisor** please indicate how important each reason is to you.

Circle / highlight **one** answer from the choices given for **each** question.

1. To find out the cause and understand what happened.

					Rank Score  1-6
(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank

2. To prevent similar accidents from happening again.

					Rank
(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank

3. To meet organizational requirements eg collection of statistics, make insurance claims, staff training etc.

					Rank
(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank

**4. To find out if staff acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**5. To find out if management acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**6. To punish someone for breaking rules and regulations. (Enforce rules or law)**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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7. Now please **Rank in order of importance** the 6 reasons for accident investigation.

**Rank the most important as =1, the next most important as 2 through to the least important as = 6.**

Please write in the "**Rank**" boxes to the right of the questions above.

## INVESTIGATING A TRIPPING ACCIDENT IN A SUPERMARKET

In the section that follows you are asked to read about a tripping accident to Mary (a part time checkout operator at ABC Supermarkets) who tripped over on a box near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a manager or supervisor, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of tripping accidents to add to the information given about the accident.

---

**Mary is a lady of about 55 years of age who has worked for as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

Please imagine that you are the Store Manager of ABC Supermarket and have just been given this message.

### ABC SUPERMARKET

**MESSAGE TO** STORE MANAGER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and tripped over a box and hurt her arm. An ambulance was called to take her to hospital. She has **strained her right wrist**, and **she will be returning to work tomorrow.**

Imagining yourself as the **Store Manager** please answer the following questions using the information provided about Mary's accident and your own experiences of tripping accidents.



**IT COULD HAVE BEEN DIFFERENT "IF ONLY....."**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder....I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

**8.** After the accident you found yourself thinking “**If only.....**” . How would you continue this thought?

If only.....

**.... Things could have been different.**

**9.** Which **one** of the following people does your answer to Question 8 best refer to?

Please circle / highlight your answer

9

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**COULD MARY'S ACCIDENT HAVE BEEN PREVENTED?**

As the **Store Manager** do you believe that Mary's accident could have been **prevented?**

Please Circle / highlight **one** answer.

**10**

Yes (1)	No (2)	Not Sure (3)
------------	-----------	-----------------

If you answered YES please go to question 11.  
If you answered "No" or "Not sure" please go to question 13

Please indicate how you believe Mary's slipping accident could have been prevented.

**11** Mary's accident could have been prevented.....

Which **one** of the following people does your answer to question 11 best refer to?

Please circle / highlight your answer

**12**

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

As Store Manager please rate the level of responsibility of each of the following people for **preventing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Preventing</b> Mary's accident					Rank
		0 = minimum & 4 = Maximum					Score
							1-8
<b>13</b>	Mary	0	1	2	3	4	(Rank)
<b>14</b>	Bill the Shop floor Supervisor	0	1	2	3	4	(Rank)
<b>15</b>	You as Manager	0	1	2	3	4	(Rank)
<b>16</b>	The Store Safety Officer	0	1	2	3	4	(Rank)
<b>17</b>	ABC Supermarkets	0	1	2	3	4	(Rank)
<b>18</b>	Another worker	0	1	2	3	4	(Rank)
<b>19</b>	The Cleaner	0	1	2	3	4	(Rank)
<b>20</b>	A Customer	0	1	2	3	4	(Rank)

**21** Now please **Rank** these 8 people in order of **importance in preventing Mary’s accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

**THE CAUSE OF MARY'S ACCIDENT**

As the Store Manager what would you say was **the cause** of Mary's accident?

22 The cause of Mary's accident was...

Which **one** of the following people does your answer to Question 22 best refer to?

Please circle / highlight your answer

23

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

As Store Manager please rate the level of responsibility of **each** of the following people for **causing** Mary's accident.

The higher the number of points the more responsible you believe they were.

(0 = No responsibility, 4 = Maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident					Rank
		0 = minimum & 4 = Maximum					Score
		0	1	2	3	4	1-8
24	Mary	0	1	2	3	4	(Rank)
25	Bill the Shop floor Supervisor	0	1	2	3	4	(Rank)
26	You as Manager	0	1	2	3	4	(Rank)
27	The Store Safety Officer	0	1	2	3	4	(Rank)
28	ABC Supermarkets	0	1	2	3	4	(Rank)
29	Another worker	0	1	2	3	4	(Rank)
30	The Cleaner	0	1	2	3	4	(Rank)
31	A Customer	0	1	2	3	4	(Rank)

**32** Now please **Rank** these 8 people **of importance in causing the accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

<b>33</b>	(1)	(2)	(3)	(4)	(5)
	Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

<b>34</b>	
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**LUCKY OR UNLUCKY**

Mary’s accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

Thursday at  
10.30 Mary went  
for her rest break

35	<b>Stage A</b>				
(1)	(2)	(3)	(4)	(5)	
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky	

Mary walked  
towards the staff  
room

36	<b>Stage B</b>				
(1)	(2)	(3)	(4)	(5)	
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky	

A box had been  
left on the floor

37	<b>Stage C</b>				
(1)	(2)	(3)	(4)	(5)	
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky	

The box had not been cleared up

38	<b>Stage D</b>			
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary did not see the box on the floor

39	<b>Stage E</b>			
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary's foot caught the box

40	<b>Stage F</b>			
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary tripped on the box

41	<b>Stage G</b>			
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky



Mary lost her balance and fell over

42 <b>Stage H</b>				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary fell awkwardly hurting her right arm.

43 <b>Stage I</b>				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary taken to hospital- Right wrist found to be strained. She will return to work tomorrow

44 <b>Stage J</b>				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

**SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Manager or Supervisor.

If the statement is a very good description of you (very like you) fill in a 1, if it is not a very good description of you (not at all like you) please fill in a 5.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me 1	Quite a good description / Quite like me 2	Not sure if it describes me. 3	Quite poor description / Quite unlike me. 4	Very poor description / Very unlike me. 5
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(Please write in the grey areas to the right of each statement)

		Score
45	I think about safety in the future and try to influence things by my day to day behaviour	
46	I think about safety in the future and do things now to achieve safety in the years ahead	
47	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
48	What I do about safety is only influenced by how things work out in the short term	
49	My convenience is a big factor in how I make decisions or take actions about safety	
50	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
51	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
52	I think it is more important to do something about serious accidents in the future than minor accidents now.	
53	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
54	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
55	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
56	I believe that safety today is more important than safety at some time in the future.	

**AND LASTLY SOME INFORMATION ABOUT YOU**

**57.** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	
6-10 people	(2)	
11-15 people	(3)	
16-20 people	(4)	
21-25 people	(5)	
26-30 people	(6)	

31-35 people	(8)	
36-40 people	(9)	
41-45 people	(10)	
46-50 people	(11)	
More than 51 people	(12)	
Not applicable	(13)	

**58.** Are you (Please Tick)

Male	(1)	
Female	(2)	

59. Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	<input type="checkbox"/>
Office	(2)	<input type="checkbox"/>
Hotel/ B&B	(3)	<input type="checkbox"/>
Leisure/ Cultural	(4)	<input type="checkbox"/>
Manufacturing	(5)	<input type="checkbox"/>
Agriculture	(6)	<input type="checkbox"/>

Wholesale Shop or warehouse	(7)	<input type="checkbox"/>
Catering, Restaurant or Bar	(8)	<input type="checkbox"/>
Residential Care	(9)	<input type="checkbox"/>
Consumer Services eg hairdresser/ beauty	(10)	<input type="checkbox"/>
Construction Industry	(11)	<input type="checkbox"/>
Central or Local Government	(12)	<input type="checkbox"/>
Other	(13)	<input type="checkbox"/>

60. Please give your current age.

61. Which of the following best describes your current working location. (Please tick)

United Kingdom	(1)	
Europe	(2)	
South America	(3)	
Middle East	(4)	
Far East	(5)	

Ireland	(6)	
North America / Canada	(7)	
Australia/ New Zealand	(8)	
Africa	(9)	
Other	(10)	

62. Which of these best describes you. Please Circle / highlight

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)
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**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.  
I AM VERY GRATEFUL.  
PLEASE RETURN IT TO ME BY POST OR FAX .**

**PLEASE DETACH THIS SHEET AND KEEP IT**

## **ACCIDENT INVESTIGATION QUESTIONNAIRE**

**Thank you for completing the questionnaire.  
Research such as this cannot happen with out your help.**

This questionnaire forms part of a study in to the ways in which accidents at work are viewed by Mangers & Supervisors, Safety Professionals and Accident Subjects themselves.

The same questions have been asked of each group and the results will be compared to see if there are any differences or similarities.

This stage of the research is concerned with how people think about hazards before and after an accident has happened and how they see responsibility for cause and prevention.

It is hoped that the results will help to improve our understanding of the ways these groups think about safety and accidents at work and will allow managers / supervisors and Safety Professionals to be better trained in accident investigation.

It is proposed that the results will be published in a professional Safety Journal. All results will be summarized and no individual respondent or employer will be identified. All answers to the questionnaire are treated in the strictest confidence. The information collected will be stored and treated in accordance with the Data Protection Act.

If you need to contact the researcher please do so by e-mail

**[REDACTED]**



**ACCIDENT INVESTIGATION QUESTIONNAIRE**  
**FOR SAFETY PROFESSIONALS**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT  
CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

**9**

Research supported by the





Dear Sir/Madam,

I am conducting research into the way in which safety professionals think about accidents at work.

I am interested in your views and would be very grateful if you could spare about 15-20 minutes to complete the attached questionnaire. Your participation is entirely voluntary and any information you provide will be confidential, although overall questionnaire results may be published in summary form. In addition, questionnaire completion is anonymous unless you are responding by e-mail or fax. If you have received this electronically but wish to respond anonymously, then simply print the questionnaire off and return by post.

Thank you,

Paul Lehane.

### **INSTRUCTIONS FOR COMPLETION**

Please complete by hand if the questionnaire has been posted to you, writing your answers in the grey shaded boxes or circle / tick the appropriate answer from the choices given.

If you have received the questionnaire by E-mail or downloaded it from the University Internet site you may print the questionnaire and complete by hand or complete as Word Document.

### **COMPLETION AS A WORD DOCUMENT.**

Please **HIGHLIGHT** your answer using the Highlight Button where options are given otherwise please type your answers in to the grey boxes.

When the questionnaire is complete please attach it to an E-mail and send to me at the address below.

### **RETURN OF QUESTIONNAIRE**

#### **BY POST**

If you have been sent the questionnaire by post a prepaid envelope should have been provided. Please use this to return the questionnaire. If not please return to:-

Paul Lehane c/o  
EHTS  
London Borough of Bromley  
Civic Centre Bromley England BR1 3UH

**BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

**BY E-MAIL**

You can return the questionnaire to me at [REDACTED]

**WHY ARE ACCIDENTS INVESTIGATED?**

People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a safety professional please indicate how important each reason is to you.

Circle / highlight one answer from the choices given for each question.

1. To find out the cause and understand what happened.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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2. To prevent similar accidents from happening again.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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3. To meet organizational requirements eg collection of statistics, make insurance claims, staff training etc.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**4. To find out if staff acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**5. To find out if management acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**6. To punish someone for breaking rules and regulations. (Enforce rules or law)**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**7. Please Rank in order of importance the 6 reasons for accident investigation.**

**Rank the most important as =1, the next most important as 2 through to the least important as = 6.**

Please write in the "Rank" boxes to the right of the questions above.

**HOW LIKELY IS IT THAT AN ACCIDENT WILL HAPPEN?**

This section asks you to think about **slipping** hazards in a typical Supermarket and how likely you think an accident might be. I have chosen a Supermarket as I hope it will be familiar to most people.

Thinking about a **spillage of milk** as a slipping hazard please complete questions 9, 10 & 11.

Please Circle / highlight your answer.

9. Please indicate how **likely** it is that a **spillage of milk** will lead to an accident to a member of staff during the next 6 months.

(1)	(2)	(3)	(4)	(5)	(6)
Extremel y <u>Unlikely</u>	Very <u>Unlikel</u> y	Fairly <u>Unlikel</u> y	Fairly Likely	Very Likely	Extremel y Likely

10. Please also score how **confident** you feel making this judgement.

(1)	(2)	(3)	(4)	(5)	(6)
Not at all confident	Not very confiden t	A little confiden t	Quite confide nt	Very confide nt	Certain

11. And lastly how **serious** do you think the outcome of the accident might be.

(1)	(2)	(3)	(4)	(5)	(6)
Trivial	Minor	Quite Serious	Serious	Very serious	Extremel y serious

### **INVESTIGATING A SLIPPING ACCIDENT IN A SUPERMARKET**

In the section that follows you are asked to read about a slipping accident to Mary (a part time checkout operator at ABC Supermarkets) who slipped over on a spillage of milk near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a **safety professional**, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of slipping accidents to add to the information given about the accident.

**Mary is a lady of about 55 years of age who has worked as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

As a safety professional you have received a report on an accident to Mary in ABC Supermarkets

**ABC SUPERMARKET**

**MESSAGE TO** SAFETY OFFICER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and slipped over on some spilt milk and hurt her arm. An ambulance was called to take her to hospital. She has broken her right arm, which has been plastered. She will be off work for at least 3 weeks.

You speak to Jane one of the other checkout operators who witnessed the accident and Bill the Shop Floor Supervisor. These are your notes from your conversations.

- Mary does not usually work on Thursdays but was covering for a friend who was on holiday
- Mary closed her checkout at the usual time for her mid morning break and waited for a friend on the checkout next to her to serve her last customer and they both went to their break together as usual.
- They were walking together past the checkout when Mary slipped over on some spilt milk and fell awkwardly on her right arm.
- The First Aider attended and an ambulance was called to take Mary to hospital.
- At hospital she was found to have a broken right arm. She will be off work for at least 3 weeks with her arm in plaster.
- A customer had seen the milk and reported it to Bill the Supervisor
- Bill confirmed that the spillage had been reported by a customer and the cleaner had been asked to clear it up 5 minutes before the accident but had not got round to dealing with it.

- No warning signs had been put out.
  - It is not known how long the milk had been on the floor before it was reported by the customer
  - Spillages around the checkouts are very common.
  - According to the Accident Book 4 other people had been injured in slipping accidents in the past 6 months
- 

Using the information provided about Mary's accident and your own experience of slipping accidents as a Safety Professional please answer the following questions.

**IT COULD HAVE BEEN DIFFERENT**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder...I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

**12.** After Mary's accident you found yourself thinking "**If only.....**". How would you continue this thought?

If only.....

**.... Things could have been different.**



13 Which **one** of the following people does the sentence above best refer to?

Please circle / highlight your answer

13	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

As a Safety Professional please think back to a point in time **a week before** Mary's accident and complete questions 14,15 & 16.

Please Circle / highlight one option in each row.

A week before <b>Mary's accident I would have rated</b> the likelihood (risk) of a slipping accident from a spillage of milk as						
14	(1)	(2)	(3)	(4)	(5)	(6)
	Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly Unlikely	Fairly Likely	Very Likely	Extremely Likely

Score how <b>confident</b> you feel making this judgement						
15	(1)	(2)	(3)	(4)	(5)	(6)
	Not at all confident	Not very confident	A little confident	Quite confident	Very confident	Certain

**A week before** Mary's accident I would have rated the **seriousness** of a slipping accident on a spillage of milk as

**16**

(1)	(2)	(3)	(4)	(5)	(6)
Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

**COULD MARY’S ACCIDENT HAVE BEEN PREVENTED?**

As a Safety Professional do you believe that Mary's accident could have been prevented?

Please Circle / highlight one answer.

17

Yes (1)	No (2)	Not Sure (3)
------------	-----------	-----------------

If you answered YES please go to question 18. If you answered "No" or "Not sure" please go to question 29

Please indicate how you believe Mary's slipping accident could have been prevented.

18

Mary’s accident could have been prevented.....
--

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

19

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

As a Safety Professional please rate the level of responsibility of the following people for **preventing** Mary's accident.

The higher the number of points the more responsible you believe they were.

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Preventing</b> Mary's accident  0 = minimum & 4 = Maximum					Rank Score 1-8
20	Mary	0	1	2	3	4	(Rank)
21	Bill the Shop floor Supervisor	0	1	2	3	4	(Rank)
22	The Manager	0	1	2	3	4	(Rank)
23	The Store Safety Officer	0	1	2	3	4	(Rank)
24	ABC Supermarkets	0	1	2	3	4	(Rank)
25	Another worker	0	1	2	3	4	(Rank)
26	The Cleaner	0	1	2	3	4	(Rank)
27	A Customer	0	1	2	3	4	(Rank)

28 Please **Rank** these 8 people in order of **importance in preventing Mary's accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Knowing that a slipping accident has just happened. How would you rate/score the chance of **another** slipping accident happening again on **spilt milk** in the next 6 months?

Please Circle / highlight your answer

29

The <b>Likelihood</b> of having <b>another</b> slipping accident on spilt milk in the next 6 months					
(1)	(2)	(3)	(4)	(5)	(6)
Extremely Unlikely	Very <u>Unlikely</u>	Fairly <u>Unlikely</u>	Fairly Likely	Very Likely	Extremely Likely

30

Score how <b>confident</b> you feel making this judgment					
(1)	(2)	(3)	(4)	(5)	(6)
Not at all confident	Not very confident	Confident	Quite confident	Very confident	Certain

31

The <b>Seriousness</b> of an <b>another</b> slipping accident on spilt milk in the next 6 m					
(1)	2	3	4	5	6
Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

**RESPONSIBILITY FOR CAUSING THE ACCIDENT**

As Safety Professional what would you say was **the cause** of Mary's accident?

32 The cause of Mary's accident was...

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

33

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

As a Safety Professional please rate the level of responsibility of the following people for **causing** Mary's accident.

The higher the number of points the more responsible you believe they were.

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident  0 = minimum & 4 = Maximum					Rank Score 1-8
<b>34</b>	Mary	0	1	2	3	4	(Rank)
<b>35</b>	Bill the Shop floor Supervisor	0	1	2	3	4	(Rank)
<b>36</b>	The Manager	0	1	2	3	4	(Rank)
<b>37</b>	The Store Safety Officer	0	1	2	3	4	(Rank)
<b>38</b>	ABC Supermarkets	0	1	2	3	4	(Rank)
<b>39</b>	Another worker	0	1	2	3	4	(Rank)
<b>40</b>	The Cleaner	0	1	2	3	4	(Rank)
<b>41</b>	A Customer	0	1	2	3	4	(Rank)

Please **Rank** these 8 people in order of **importance in causing the accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.** Please write in the "Rank" boxes to the right of the questions above.

**LUCKY OR UNLUCKY?**

Mary’s accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

Thursday at 10.30 Mary closed her checkout to go for her usual mid morning rest break	▼	42 <b>Stage A</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

As usual Mary waited for her friend on the next checkout and they both walked along the front of the checkouts towards the staff room	▼	43 <b>Stage B</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky



Milk had been spilt on the floor	▼	44 <b>Stage C</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

The spillage had been reported 5 minutes ago. The cleaner had been requested to clear up but had not got round to it	▼	45 <b>Stage D</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary did not see the milk on the floor	▼	46 <b>Stage E</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary stepped on the milk	▼	47 <b>Stage F</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary slipped on the milk	▼	48 <b>Stage G</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary lost her balance and fell over	▼	49 <b>Stage H</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary fell awkwardly hurting her right arm.	▼	50 <b>Stage I</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary taken to hospital- her arm was x-rayed and found to be broken . She will be off work for 3 weeks.	▼	51 <b>Stage J</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

52	(1)	(2)	(3)	(4)	(5)
	Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

53	
----	--

Using the Stages A to J in the flowchart please answer questions 54 to 61. Circle or highlight your answer

		Stages A-J					
54	At which stage did the sequence of events change from being normal/routine?	Before A	A	B	C	D	E
		F	G	H	I	J	

55	At which stage did Mary's accident become certain?	Before A	A	B	C	D	E
		F	G	H	I	J	

56	At which stage(s) did Mary have control over the situation?	Before A	A	B	C	D	E
		F	G	H	I	J	

57	At which stage(s) did the Manager have control over the situation	Before A	A	B	C	D	E
		F	G	H	I	J	

58	At which stage or stages did an <u>action</u> of any person become an important factor in Mary's accident	Before A	A	B	C	D	E
		F	G	H	I	J	

59	Who took the action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None

<b>60</b>	At which stage or stages did an <u>inaction</u> (failure to act) of any person become an important factor in Mary's accident	Before	A	B	C	D	E
		F	G	H	I	J	

<b>61</b>	Who failed to take an action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None

## **SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Safety Professional.

If the statement **is** a very good description of you (**very like you**) fill in a **1**, if it **is not** a very good description of you (**not at all like you**) please fill in a **5**.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me  1	Quite a good description /Quite like me  2	Not sure if it describes me.  3	Quite poor description / Quite unlike me.  4	Very poor description / Very unlike me.  5
--	---	---------------------------------------	---	---

(Please write in the grey areas to the right of each statement)

		Score
62	I think about safety in the future and try to influence things by my day to day behaviour	
63	I think about safety in the future and do things now to achieve safety in the years ahead	
64	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
65	What I do about safety is only influenced by how things work out in the short term	
66	My convenience is a big factor in how I make decisions or take actions about safety	
67	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
68	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
69	I think it is more important to do something about serious accidents in the future than minor accidents now.	
70	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
71	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
72	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
73	I believe that safety today is more important than safety at some time in the future.	

**AND LASTLY SOME INFORMATION ABOUT YOU**

**74.** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	<input type="checkbox"/>
6-10 people	(2)	<input type="checkbox"/>
11-15 people	(3)	<input type="checkbox"/>
16-20 people	(4)	<input type="checkbox"/>
21-25 people	(5)	<input type="checkbox"/>
26-30 people	(6)	<input type="checkbox"/>

31-35 people	(8)	<input type="checkbox"/>
36-40 people	(9)	<input type="checkbox"/>
41-45 people	(10)	<input type="checkbox"/>
46-50 people	(11)	<input type="checkbox"/>
More than 51 people	(12)	<input type="checkbox"/>
Not applicable	(13)	<input type="checkbox"/>

**75** Are you (Please Tick)

Male	(1)	<input type="checkbox"/>
Female	(2)	<input type="checkbox"/>



76. Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	<input type="checkbox"/>	Wholesale Shop or warehouse	(7)	<input type="checkbox"/>
Office	(2)	<input type="checkbox"/>	Catering, Restaurant or Bar	(8)	<input type="checkbox"/>
Hotel/ B&B	(3)	<input type="checkbox"/>	Residential Care	(9)	<input type="checkbox"/>
Leisure/ Cultural	(4)	<input type="checkbox"/>	Consumer Services eg hairdresser/ beauty	(10)	<input type="checkbox"/>
Manufacturing	(5)	<input type="checkbox"/>	Construction Industry	(11)	<input type="checkbox"/>
Agriculture	(6)	<input type="checkbox"/>	Central or Local Government	(12)	<input type="checkbox"/>
			Other	(13)	<input type="checkbox"/>

77. Please give your current

age.

78. Which of the following best describes your current working location. (Please tick)

United Kingdom	(1)		Ireland	(6)	
Europe	(2)		North America / Canada	(7)	
South America	(3)		Australia/ New Zealand	(8)	
Middle East	(4)		Africa	(9)	
Far East	(5)		Other	(10)	

79. Which of these best describes you. Please Circle / highlight

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)	University or Neboosh Student studying occupational health/safety (5)
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**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.  
I AM VERY GRATEFUL.  
PLEASE RETURN IT TO ME BY POST, FAX OR E-MAIL.**

**PLEASE DETACH THIS SHEET AND KEEP IT**

## **ACCIDENT INVESTIGATION QUESTIONNAIRE**

**Thank you for completing the questionnaire.  
Research such as this cannot happen with out your help.**

This questionnaire forms part of a study in to the ways in which accidents at work are viewed by Mangers & Supervisors, Safety Professionals and Accident Subjects themselves.

The same questions have been asked of each group and the results will be compared to see if there are any differences or similarities.

This stage of the research is concerned with how people think about hazards before and after an accident has happened and how they see responsibility for cause and prevention.

It is hoped that the results will help to improve our understanding of the ways these groups think about safety and accidents at work and will allow managers / supervisors and Safety Professionals to be better trained in accident investigation.

It is proposed that the results will be published in a professional Safety Journal. All results will be summarized and no individual respondent or employer will be identified. All answers to the questionnaire are treated in the strictest confidence. The information collected will be stored and treated in accordance with the Data Protection Act.

If you need to contact the researcher please do so by e-mail





**ACCIDENT INVESTIGATION QUESTIONNAIRE**  
**FOR SAFETY PROFESSIONALS**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT  
CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

**10**

Research supported by the



Dear Sir/Madam,

I am conducting research into the way in which safety professionals think about accidents at work.

I would be very grateful if you could spare about 15-20 minutes to complete the attached questionnaire. Your participation is entirely voluntary and any information you provide will be confidential, although overall questionnaire results may be published in summary form. In addition, questionnaire completion is anonymous unless you are responding by e-mail or fax. If you have received this electronically but wish to respond anonymously, then simply print the questionnaire off and return by post.

Thank you,

Paul Lehane.

### **INSTRUCTIONS FOR COMPLETION**

Please complete by hand if the questionnaire has been posted to you, writing your answers in the grey shaded boxes or circle / tick the appropriate answer from the choices given.

If you have received the questionnaire by E-mail or downloaded it from the University Internet site you may print the questionnaire and complete by hand or complete as Word Document.

### **COMPLETION AS A WORD DOCUMENT.**

Please **HIGHLIGHT** your answer using the Highlight Button where options are given otherwise please type your answers in to the grey boxes.

When the questionnaire is complete please attach it to an E-mail and send to me at the address below.

## **RETURN OF QUESTIONNAIRE**

### **BY POST**

If you have been sent the questionnaire by post a prepaid envelope should have been provided. Please use this to return the questionnaire. If not please return to:-

Paul Lehane c/o EHTS London Borough of Bromley <b>Civic Centre Bromley England BR1 3UH</b>
---

### **BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

### **BY E-MAIL**

You can return the questionnaire to me at [REDACTED]

**WHY ARE ACCIDENTS INVESTIGATED?**

People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a safety professional please indicate how important each reason is to you.

Circle / highlight one answer from the choices given for each question.

7. To find out the cause and understand what happened.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

8. To prevent similar accidents from happening again.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

9. To meet organizational requirements e.g. collection of statistics, make insurance claims, staff training etc.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**10. To find out if staff acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**11. To find out if management acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**12. To punish someone for breaking rules and regulations. (Enforce rules or law)**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

7. Please **Rank in order of importance** the 6 reasons for accident investigation.

**Rank the most important as =1, the next most important as 2 through to the least important as = 6.**

Please write in the "Rank" boxes to the right of the questions above.

**HOW LIKELY IS IT THAT AN ACCIDENT WILL HAPPEN?**

This section asks you to think about slipping hazards in a typical Supermarket and how likely you think an accident might be. I have chosen a Supermarket as I hope it will be familiar to most people.



Thinking about a **spillage of milk** as a slipping hazard please complete questions 9, 10 & 11.

Please Circle / highlight your answer.

9. Please indicate how **likely** it is that a **spillage of milk** will lead to an accident to a member of staff during the next 6 months.

(1)	(2)	(3)	(4)	(5)	(6)
Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly <u>Unlikely</u>	Fairly Likely	Very Likely	Extremely Likely

10. Please also score how **confident** you feel making this prediction.

1)	(2)	(3)	(4)	(5)	(6)
Not at all confident	Not very confident	A little confident	Quite confident	Very confident	Certain

11. And lastly how **serious** do you think the outcome of the accident might be.

(1)	(2)	(3)	(4)	(5)	(6)
Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

## **INVESTIGATING A SLIPPING ACCIDENT IN A SUPERMARKET**

In the section that follows you are asked to read about a slipping accident to Mary (a part time checkout operator at ABC Supermarkets) who slipped over on a spillage of milk near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a **safety professional**, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of slipping accidents to add to the information given about the accident.

---

**Mary is a lady of about 55 years of age who has worked for as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

As a safety professional you have received a report on an accident to Mary in ABC Supermarkets

### **ABC SUPERMARKET**

**MESSAGE TO** SAFETY OFFICER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and slipped over on some spilt milk and hurt her arm. An ambulance was called to take her to hospital. She has broken her right arm, which has been plastered. She will be off work for at least 3 weeks.

Using the information provided about Mary's accident and your own experience of slipping accidents as a Safety Professional please answer the following questions.

**IT COULD HAVE BEEN DIFFERENT**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder...I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

**12.** After Mary’s accident you found yourself thinking “**If only.....**” . How would you continue this thought?

If only.....

**.... Things could have been different.**

**13** Which one of the following people does the sentence above best refer to?

Please circle / highlight your answer

13	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

As a Safety Professional please think back to a point in time **a week before** Mary's accident and complete questions 14,15 & 16.

Please Circle / highlight one option in each row.

A week before <b>Mary's accident I would have rated</b> the likelihood (risk) of a <b>slipping accident from a spillage of milk as</b>						
14	(1)	(2)	(3)	(4)	(5)	(6)
	Extremely <u>Un</u> likely	Very <u>Un</u> likely	Fairly Unlikely	Fairly Likely	Very Likely	Extremely Likely

Score how <b>confident</b> you feel making this judgement						
15	(1)	(2)	(3)	(4)	(5)	(6)
	Not at all confident	Not very confident	A little confident	Quite confident	Very confident	Certain

<b>A week before</b> Mary's accident I would have rated the <b>seriousness</b> of a slipping accident on a spillage of milk as						
16	(1)	(2)	(3)	(4)	(5)	(6)
	Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

**COULD MARY’S ACCIDENT HAVE BEEN PREVENTED?**

As a Safety Professional do you believe that Mary's accident could have been prevented?

Please Circle / highlight one answer.

17

Yes (1)	No (2)	Not Sure (3)
------------	-----------	-----------------

If you answered YES please go to question 18. If you answered "No" or "Not sure" please go to question 29

Please indicate how you believe Mary's slipping accident could have been prevented.

18

Mary’s accident could have been prevented.....
--

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

19

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

As a Safety Professional please rate the level of responsibility of the following people for **preventing** Mary's accident.

The higher the number of points the more responsible you believe they were.

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Preventing</b> Mary's accident  0 = minimum & 4 = Maximum					Rank Score 1-8
20	Mary	0	1	2	3	4	(Rank)
21	Bill the Shop floor Supervisor	0	1	2	3	4	(Rank)
22	The Manager	0	1	2	3	4	(Rank)
23	The Store Safety Officer	0	1	2	3	4	(Rank)
24	ABC Supermarkets	0	1	2	3	4	(Rank)
25	Another worker	0	1	2	3	4	(Rank)
26	The Cleaner	0	1	2	3	4	(Rank)
27	A Customer	0	1	2	3	4	(Rank)

28 Please **Rank** these 8 people in order of **importance in preventing** Mary’s accident.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Knowing that a slipping accident has just happened. How would you rate/score the chance of **another** slipping accident happening again on **spilt milk** in the next 6 months?

Please Circle / highlight your answer

The <b>Likelihood</b> of having <b>another</b> slipping accident on spilt milk in the next 6 months						
.29	(1)	(2)	(3)	(4)	(5)	(6)
	Extremely <u>Un</u> likely	Very <u>Un</u> likely	Fairly <u>Un</u> likely	Fairly Likely	Very Likely	Extremely Likely

Score how <b>confident</b> you feel making this judgment						
30	(1)	(2)	(3)	(4)	(5)	(6)
	Not at all confident	Not very confident	Confident	Quite confident	Very confident	Certain

The <b>Seriousness</b> of an <b>another</b> slipping accident on spilt milk in the next 6 months.						
31	(1)	2	3	4	5	6
	Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

**RESPONSIBILITY FOR CAUSING THE ACCIDENT**

As Safety Professional what would you say was **the cause** of Mary's accident?

32 The cause of Mary's accident was...

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

33

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these



As a Safety Professional please rate the level of responsibility of the following people for **causing** Mary's accident.

The higher the number of points the more responsible you believe they were.

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident						Rank Score 1-8
		0 = minimum & 4 = Maximum						
34	Mary	0	1	2	3	4		(Rank)
35	Bill the Shop floor Supervisor	0	1	2	3	4		(Rank)
36	The Manager	0	1	2	3	4		(Rank)
37	The Store Safety Officer	0	1	2	3	4		(Rank)
38	ABC Supermarkets	0	1	2	3	4		(Rank)
39	Another worker	0	1	2	3	4		(Rank)
40	The Cleaner	0	1	2	3	4		(Rank)
41	A Customer	0	1	2	3	4		(Rank)

Please **Rank** these 8 people in order of **importance in causing the accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

**LUCKY OR UNLUCKY?**

Mary’s accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

Thursday at 10.30 Mary went for her rest break	▼	42 <b>Stage A</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary walked towards the Staff Room	▼	43 <b>Stage B</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Milk had been spilt on the floor	▼	44 <b>Stage C</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

The spillage had not been cleared up.	▼	45 <b>Stage D</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary did not see the milk on the floor	▼	46 <b>Stage E</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary stepped on the milk	▼	47 <b>Stage F</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary slipped on the milk	▼	48 <b>Stage G</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary lost her balance and fell over	▼	49 <b>Stage H</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary fell awkwardly hurting her right arm.	▼	50 <b>Stage I</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary taken to hospital- her arm was x-rayed and found to be broken. She will be off work for 3 weeks.	▼	51 <b>Stage J</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

(1)	(2)	(3)	(4)	(5)
Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

53

Using the Stages A to J in the flowchart please answer questions 54 to 61. Circle or highlight your answer

		<b>Stages A-J</b>					
<b>54</b>	At which stage did the sequence of events change from being normal/routine?	Before A	A	B	C	D	E
		F	G	H	I	J	

<b>55</b>	At which stage did Mary's accident become certain?	Before A	A	B	C	D	E
		F	G	H	I	J	

<b>56</b>	At which stage(s) did Mary have control over the situation?	Before A	A	B	C	D	E
		F	G	H	I	J	

57	At which stage(s) did the Manager have control over the situation	Before A	A	B	C	D	E
		F	G	H	I	J	

58	At which stage or stages did an <u>action</u> of any person become an important factor in Mary's accident	Before A	A	B	C	D	E
		F	G	H	I	J	

59	Who took the action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None

60	At which stage or stages did an <u>inaction</u> (failure to act) of any person become an important factor in Mary's accident	Before A	A	B	C	D	E
		F	G	H	I	J	

61	Who failed to take an action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None

## **SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Safety Professional.

If the statement **is** a very good description of you (**very like you**) fill in a **1**, if it is **not** a very good description of you (**not at all like you**) please fill in a **5**.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me  1	Quite a good description /Quite like me  2	Not sure if it describes me.  3	Quite poor description / Quite unlike me.  4	Very poor description / Very unlike me.  5
---	--	--	--	--

(Please write in the grey areas to the right of each statement)

		Score
62	I think about safety in the future and try to influence things by my day to day behaviour	
63	I think about safety in the future and do things now to achieve safety in the years ahead	
64	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
65	What I do about safety is only influenced by how things work out in the short term	
66	My convenience is a big factor in how I make decisions or take actions about safety	
67	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
68	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
69	I think it is more important to do something about serious accidents in the future than minor accidents now.	
70	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
71	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
72	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
73	I believe that safety today is more important than safety at some time in the future.	



**AND LASTLY SOME INFORMATION ABOUT YOU**

**74.** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	
6-10 people	(2)	
11-15 people	(3)	
16-20 people	(4)	
21-25 people	(5)	
26-30 people	(6)	

31-35 people	(8)	
36-40 people	(9)	
41-45 people	(10)	
46-50 people	(11)	
More than 51 people	(12)	
Not applicable	(13)	

**75.** Are you (Please Tick)

Male	(1)	
Female	(2)	

76. Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	<input type="checkbox"/>
Office	(2)	<input type="checkbox"/>
Hotel/ B&B	(3)	<input type="checkbox"/>
Leisure/ Cultural	(4)	<input type="checkbox"/>
Manufacturing	(5)	<input type="checkbox"/>
Agriculture	(6)	<input type="checkbox"/>

Wholesale Shop or warehouse	(7)	<input type="checkbox"/>
Catering, Restaurant or Bar	(8)	<input type="checkbox"/>
Residential Care	(9)	<input type="checkbox"/>
Consumer Services eg hairdresser/ beauty	(10)	<input type="checkbox"/>
Construction Industry	(11)	<input type="checkbox"/>
Central or Local Government	(12)	<input type="checkbox"/>
Other	(13)	<input type="checkbox"/>

77. Please give your current

age.

78. Which of the following best describes your current working location. (Please tick)

United Kingdom	(1)	
Europe	(2)	
South America	(3)	
Middle East	(4)	
Far East	(5)	

Ireland	(6)	
North America / Canada	(7)	
Australia/ New Zealand	(8)	
Africa	(9)	
Other	(10)	

79. Which of these best describes you. Please Circle / highlight

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)	University or Nebosh Student studying occupational health /safety (5)
--------------------------	----------------------------	---	---	---

**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.  
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**PLEASE DETACH THIS SHEET AND KEEP IT**

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This stage of the research is concerned with how people think about hazards before and after an accident has happened and how they see responsibility for cause and prevention.

It is hoped that the results will help to improve our understanding of the ways these groups think about safety and accidents at work and will allow managers / supervisors and Safety Professionals to be better trained in accident investigation.

It is proposed that the results will be published in a professional Safety Journal. All results will be summarized and no individual respondent or employer will be identified. All answers to the questionnaire are treated in the strictest confidence. The information collected will be stored and treated in accordance with the Data Protection Act.

If you need to contact the researcher please do so by e-mail





**ACCIDENT INVESTIGATION QUESTIONNAIRE**  
**FOR SAFETY PROFESSIONALS**

SEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

**11**

Research supported by the



Dear Sir/Madam,

I am conducting research into the way in which safety professionals think about accidents at work.

I would be very grateful if you could spare about 15-20 minutes to complete the attached questionnaire. Your participation is entirely voluntary and any information you provide will be confidential, although overall questionnaire results may be published in summary form. In addition, questionnaire completion is anonymous unless you are responding by e-mail or fax. If you have received this electronically but wish to respond anonymously, then simply print the questionnaire off and return by post.

Thank you,

Paul Lehane.

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Please **HIGHLIGHT** your answer using the Highlight Button where options are given otherwise please type your answers in to the grey boxes.

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Paul Lehane c/o  
EHTS  
London Borough of Bromley  
**Civic Centre Bromley England BR1 3UH**

**BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

**BY E-MAIL**

You can return the questionnaire to me at [REDACTED]

**WHY ARE ACCIDENTS INVESTIGATED?**

People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a safety professional please indicate how important each reason is to you.

Circle / highlight one answer from the choices given for each question.

1 To find out the cause and understand what happened.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

2 To prevent similar accidents from happening again.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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3 To meet organizational requirements eg collection of statistics, make insurance claims, staff training etc.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------



**4 To find out if staff acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**5 To find out if management acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**6 To punish someone for breaking rules and regulations. (Enforce the rules or law)**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

7. Please **Rank in order of importance** the 6 reasons for accident investigation .

**Rank the most important as =1, the next most important as 2 through to the least important as = 6.**

Please write in the "Rank" boxes to the right of the questions above.

**HOW LIKELY IS IT THAT AN ACCIDENT WILL HAPPEN?**

This section asks you to think about **slipping** hazards in a typical Supermarket and how likely you think an accident might be. I have chosen a Supermarket as I hope it will be familiar to most people.

Thinking about a **spillage of milk** as a slipping hazard please complete questions 9, 10 & 11.

Please Circle / highlight your answer.

9. Please indicate how **likely** it is that a **spillage of milk** will lead to an accident to a member of staff during the next 6 months.

(1)	(2)	(3)	(4)	(5)	(6)
Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly <u>Unlikely</u>	Fairly Likely	Very Likely	Extremely Likely

10. Please also score how **confident** you feel making this prediction.

(1)	(2)	(3)	(4)	(5)	(6)
Not at all confident	Not very confident	A little confident	Quite confident	Very confident	Certain

11. And lastly how **serious** do you think the outcome of the accident might be.

(1)	(2)	(3)	(4)	(5)	(6)
Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

## **INVESTIGATING A SLIPPING ACCIDENT IN A SUPERMARKET**

In the section that follows you are asked to read about a slipping accident to Mary (a part time checkout operator at ABC Supermarkets) who slipped over on a spillage of milk near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a **safety professional**, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of slipping accidents to add to the information given about the accident.

---

**Mary is a lady of about 55 years of age who has worked for as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

As a safety professional you have received a report on an accident to Mary in ABC Supermarkets

### **ABC SUPERMARKET**

**MESSAGE TO** SAFETY OFFICER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and slipped over on some spilt milk and hurt her arm. An ambulance was called to take her to hospital. She has strained her right wrist, and she will be returning to work tomorrow.

You speak to Jane one of the other checkout operators who witnessed the accident and Bill the Shop Floor Supervisor. These are the notes from your conversations.

- Mary does not usually work on Thursdays but was covering for a friend who was on holiday
  - Mary closed her checkout at the usual time for her mid morning break and waited for a friend on the checkout next to her to serve her last customer and they both went to their break together as usual.
  - They were walking together past the checkouts when Mary slipped over on some spilt milk and fell awkwardly on her right arm.
  - The First Aider attended and an ambulance was called to take Mary to hospital.
  - At hospital she was found to have strained her right wrist. She will be back at work tomorrow.
  - A customer had seen the milk and reported it to Bill the Supervisor
  - Bill confirmed that the spillage had been reported by a customer and the cleaner had been asked to clear it up 5 minutes before the accident but had not got round to dealing with it.
  - No warning signs had been put out.
  - It is not known how long the milk had been on the floor before it was reported by the customer
  - Spillage's around the checkouts are very common.
  - According to the Accident Book 4 other people had been injured in slipping accidents in the past 6 months
- 

Using the information provided about Mary's accident and your own experience of slipping accidents as a Safety Professional please answer the following questions.

### **IT COULD HAVE BEEN DIFFERENT**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder...I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

**12.** After Mary's accident you found yourself thinking "**If only.....**". How would you continue this thought?

If only.....

**.... Things could have been different.**

13 Which one of the following people does the sentence above best refer to?

Please circle / highlight your answer

13	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

As a Safety Professional please think back to a point in time **a week before** Mary's accident and complete questions 14,15 & 16.

Please Circle / highlight one option in each row.

<i>A week before Mary's accident I would have rated the likelihood (risk) of a slipping accident from a spillage of milk as</i>						
14	(1)	(2)	(3)	(4)	(5)	(6)
	Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly Unlikely	Fairly Likely	Very Likely	Extremely Likely

Score how <b><u>confident</u></b> you feel making this judgement						
15	(1)	(2)	(3)	(4)	(5)	(6)
	Not at all confident	Not very confident	A little confident	Quite confident	Very confident	Certain

<b>16</b>	<b>A week before</b> Mary's accident I would have rated the <b>seriousness</b> of a slipping accident on a spillage of milk as					
	(1) Trivial	(2) Minor	(3) Quite Serious	(4) Serious	(5) Very serious	(6) Extremely serious

**COULD MARY'S ACCIDENT HAVE BEEN PREVENTED?**

As a Safety Professional do you believe that Mary's accident could have been prevented?

Please Circle / highlight one answer.

<b>17</b>	Yes (1)	No (2)	Not Sure (3)
-----------	------------	-----------	-----------------

If you answered YES please go to question 18. If you answered "No" or "Not Sure" please go to question 29

Please indicate how you believe Mary's slipping accident could have been prevented.

<b>18</b>	Mary's accident could have been prevented.....
-----------	--

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

19

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

As a Safety Professional please rate the level of responsibility of the following people for **preventing** Mary's accident.

The higher the number of points the more responsible you believe they were.

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Preventing</b> Mary's accident						Rank Score 1-8
		0 = minimum & 4 = Maximum						
20	Mary	0	1	2	3	4		(Rank)
21	Bill the Shop floor Supervisor	0	1	2	3	4		(Rank)
22	The Manager	0	1	2	3	4		(Rank)
23	The Store Safety Officer	0	1	2	3	4		(Rank)
24	ABC Supermarkets	0	1	2	3	4		(Rank)
25	Another worker	0	1	2	3	4		(Rank)
26	The Cleaner	0	1	2	3	4		(Rank)
27	A Customer	0	1	2	3	4		(Rank)

**28** Please **Rank** these 8 people in order of **importance in preventing Mary’s accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.** Please write in the "Rank" boxes to the right of the questions above.



Knowing that a slipping accident has just happened. How would you rate/score the chance of **another** slipping accident happening again on **spilt milk** in the next 6 months?

Please Circle / highlight your answer

The <b>Likelihood</b> of having <b>another</b> slipping accident on spilt milk in the next 6 months						
29	(1)	(2)	(3)	(4)	(5)	(6)
	Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly <u>Unlikely</u>	Fairly Likely	Very Likely	Extremely Likely

Score how <b>confident</b> you feel making this judgment						
30	(1)	(2)	(3)	(4)	(5)	(6)
	Not at all confident	Not very confident	Confident	Quite confident	Very confident	Certain

The <b>Seriousness</b> of an <b>another</b> slipping accident on spilt milk in the next 6 months.						
31	(1)	2	3	4	5	6
	Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

**RESPONSIBILITY FOR CAUSING THE ACCIDENT**

As Safety Professional what would you say was **the cause** of Mary's accident?

32    The cause of Mary's accident was...

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

33

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

As a Safety Professional please rate the level of responsibility of the following people for causing Mary's accident.

The higher the number of points the more responsible you believe they were.

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident						Rank Score 1-8
		0 = minimum & 4 = Maximum						
34	Mary	0	1	2	3	4		(Rank)
35	Bill the Shop floor Supervisor	0	1	2	3	4		(Rank)
36	The Manager	0	1	2	3	4		(Rank)
37	The Store Safety Officer	0	1	2	3	4		(Rank)
38	ABC Supermarkets)	0	1	2	3	4		(Rank)
39	Another worker	0	1	2	3	4		(Rank)
40	The Cleaner	0	1	2	3	4		(Rank)
41	A Customer	0	1	2	3	4		(Rank)

Please **Rank** these 8 people in order of **importance in causing the accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

**LUCKY OR UNLUCKY?**

Mary’s accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

Thursday at 10.30 Mary closed her till to go for her usual mid morning rest break	▼	42 <b>Stage A</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

As usual Mary waited for her friend on the next checkout and they both walked along the front of the tills towards the staff room	▼	43 <b>Stage B</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Milk had been spilt on the floor	▼	44 <b>Stage C</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

The spillage had been reported 5 minutes ago. The cleaner had been requested to clear up but had not got round to it	▼	45 <b>Stage D</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary did not see the milk on the floor	▼	46 <b>Stage E</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary stepped on the milk	▼	47 <b>Stage F</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary slipped on the milk	▼	48 <b>Stage G</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary lost her balance and fell over	▼	49 <b>Stage H</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary fell awkwardly hurting her right arm.	▼	50 <b>Stage I</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary taken to hospital- Right wrist found to be strained. She will return to work tomorrow	▼	51 <b>Stage J</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

(1)	(2)	(3)	(4)	(5)
Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

53

Using the Stages A to J in the flowchart please answer questions 54 to 61. Circle or highlight your answers

		Stages A-J					
54	At which stage did the sequence of events change from being normal/routine?	Before A	A	B	C	D	E
		F	G	H	I	J	

55	At which stage did Mary's accident become certain?	Before A	A	B	C	D	E
		F	G	H	I	J	

56	At which stage(s) did Mary have control over the situation?	Before A	A	B	C	D	E
		F	G	H	I	J	

57	At which stage(s) did the	Before A	A	B	C	D	E
----	---------------------------	-------------	---	---	---	---	---

Manager have control over the situation	F	G	H	I	J	
---	---	---	---	---	---	--

58	At which stage or stages did an <u>action</u> of any person become an important factor in Mary's accident	Before A	A	B	C	D	E
		F	G	H	I	J	

59	Who took the action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None

60	At which stage or stages did an <u>inaction</u> (failure to act) of any person become an important factor in Mary's accident	Before A	A	B	C	D	E
		F	G	H	I	J	

61	Who failed to take an action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None



## **SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Safety Professional.

If the statement **is** a very good description of you (**very like you**) fill in a **1**, if it is **not** a very good description of you (**not at all like you**) please fill in a **5**.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me  1	Quite a good description /Quite like me  2	Not sure if it describes me.  3	Quite poor description / Quite unlike me.  4	Very poor description / Very unlike me.  5
---	--	--	---	---

(Please write in the grey areas to the right of each statement)

		Score
62	I think about safety in the future and try to influence things by my day to day behaviour	
63	I think about safety in the future and do things now to achieve safety in the years ahead	
64	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
65	What I do about safety is only influenced by how things work out in the short term	
66	My convenience is a big factor in how I make decisions or take actions about safety	
67	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
68	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
69	I think it is more important to do something about serious accidents in the future than minor accidents now.	
70	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
71	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
72	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
73	I believe that safety today is more important than safety at some time in the future.	

**AND LASTLY SOME INFORMATION ABOUT YOU**

**74.** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	
6-10 people	(2)	
11-15 people	(3)	
16-20 people	(4)	
21-25 people	(5)	
26-30 people	(6)	

31-35 people	(8)	
36-40 people	(9)	
41-45 people	(10)	
46-50 people	(11)	
More than 51 people	(12)	
Not applicable	(13)	

**75.** Are you (Please Tick)

Male	(1)	
Female	(2)	

76. Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	<input type="checkbox"/>
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Manufacturing	(5)	<input type="checkbox"/>
Agriculture	(6)	<input type="checkbox"/>

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Catering, Restaurant or Bar	(8)	<input type="checkbox"/>
Residential Care	(9)	<input type="checkbox"/>
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Central or Local Government	(12)	<input type="checkbox"/>
Other	(13)	<input type="checkbox"/>

77. Please give your current

age.

78. Which of the following best describes your current working location. (Please tick)

United Kingdom	(1)	
Europe	(2)	
South America	(3)	
Middle East	(4)	
Far East	(5)	

Ireland	(6)	
North America / Canada	(7)	
Australia/ New Zealand	(8)	
Africa	(9)	
Other	(10)	

79. Which of these best describes you. Please Circle / highlight

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)	University or Nebosh Student studying occupational health /safety (5)
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If you need to contact the researcher please do so by e-mail

██



**ACCIDENT INVESTIGATION QUESTIONNAIRE**  
**FOR SAFETY PROFESSIONALS**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT  
CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

**12**

Research supported by the



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Thank you,

Paul Lehane.

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Paul Lehane c/o EHTS London Borough of Bromley <b>Civic Centre Bromley England BR1 3UH</b>
---

### **BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

### **BY E-MAIL**

You can return the questionnaire to me at [REDACTED]

**WHY ARE ACCIDENTS INVESTIGATED?**

People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a safety professional please indicate how important each reason is to you.

Circle / highlight one answer from the choices given for each question.

7 To find out the cause and understand what happened.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**8 To prevent similar accidents from happening again.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**9 To meet organizational requirements eg collection of statistics, make insurance claims, staff training etc.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**10 To find out if staff acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**11 To find out if management acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**12 To punish someone for breaking rules and regulations. (Enforce rules or law)**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

7. Please **Rank in order of importance** the 6 reasons for accident investigation.

**Rank the most important as =1, the next most important as 2 through to the least important as = 6.**

Please write in the "Rank" boxes to the right of the questions above.

HOW LIKELY IS IT THAT AN ACCIDENT WILL HAPPEN?

This section asks you to think about **slipping** hazards in a typical Supermarket and how likely you think an accident might be. I have chosen a Supermarket as I hope it will be familiar to most people.

Thinking about a **spillage of milk** as a slipping hazard please complete questions 9, 10 & 11.

Please Circle / highlight your answer.

9. Please indicate how **likely** it is that a **spillage of milk** will lead to an accident to a member of staff during the next 6 months.

(1)	(2)	(3)	(4)	(5)	(6)
Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly <u>Unlikely</u>	Fairly Likely	Very Likely	Extremely Likely

10. Please also score how **confident** you feel making this prediction.

(1)	(2)	(3)	(4)	(5)	(6)
Not at all confident	Not very confident	A little confident	Quite confident	Very confident	Certain

11. And lastly how **serious** do you think the outcome of the accident might be.

(1)	(2)	(3)	(4)	(5)	(6)
Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

## **INVESTIGATING A SLIPPING ACCIDENT IN A SUPERMARKET**

In the section that follows you are asked to read about a slipping accident to Mary (a part time checkout operator at ABC Supermarkets) who slipped over on a spillage of milk near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a **safety professional**, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of slipping accidents to add to the information given about the accident.

---

**Mary is a lady of about 55 years of age who has worked for as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

As a safety professional you have received a report on an accident to Mary in ABC Supermarkets

### **ABC SUPERMARKET**

**MESSAGE TO** SAFETY OFFICER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and slipped over on some spilt milk and hurt her arm. An ambulance was called to take her to hospital. She has strained her right wrist, and she will be returning to work tomorrow.

Using the information provided about Mary's accident and your own experience of slipping accidents as a Safety Professional please answer the following questions.

## IT COULD HAVE BEEN DIFFERENT

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder...I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

**12.** After Mary's accident you found yourself thinking "**If only.....**". How would you continue this thought?

If only.....

.... Things could have been different.

13 Which one of the following people does the sentence above best refer to?

Please circle / highlight your answer

13	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

As a Safety Professional please think back to a point in time **a week before** Mary's accident and complete questions 14,15 & 16.

Please Circle / highlight one option in each row.

<i>A week before Mary's accident I would have rated the likelihood (risk) of a slipping accident from a spillage of milk as</i>						
14	(1)	(2)	(3)	(4)	(5)	(6)
	Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly Unlikely	Fairly Likely	Very Likely	Extremely Likely

Score how <b><u>confident</u></b> you feel making this judgement						
15	(1)	(2)	(3)	(4)	(5)	(6)
	Not at all confident	Not very confident	A little confident	Quite confident	Very confident	Certain

<p><b>A week before</b> Mary's accident I would have rated the <b>seriousness</b> of a slipping accident on a spillage of milk as</p>						
16	(1)	(2)	(3)	(4)	(5)	(6)
	Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

**COULD MARY'S ACCIDENT HAVE BEEN PREVENTED?**

As a Safety Professional do you believe that Mary's accident could have been prevented?

Please Circle / highlight one answer.

17	Yes (1)	No (2)	Not Sure (3)
----	------------	-----------	-----------------

If you answered YES please go to question 18. If you answered "No" or "Not Sure" please go to question 29

Please indicate how you believe Mary's slipping accident could have been prevented.

18	<p>Mary's accident could have been prevented.....</p>
----	---



Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

**A week before** Mary's accident I would have rated the **seriousness** of a slipping accident on a spillage of milk as

19

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

As a Safety Professional please rate the level of responsibility of the following people for **preventing** Mary's accident.

The higher the number of points the more responsible you believe they were.

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Preventing</b> Mary's accident						Rank Score 1-8
		0 = minimum & 4 = Maximum						
20	Mary	0	1	2	3	4		(Rank)
21	Bill the Shop floor Supervisor	0	1	2	3	4		(Rank)
22	The Manager	0	1	2	3	4		(Rank)
23	The Store Safety Officer	0	1	2	3	4		(Rank)
24	ABC Supermarkets	0	1	2	3	4		(Rank)
25	Another worker	0	1	2	3	4		(Rank)
26	The Cleaner	0	1	2	3	4		(Rank)
27	A Customer	0	1	2	3			(Rank)

**28** Please **Rank** these 8 people in order of **importance in preventing Mary’s accident.**

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Knowing that a slipping accident has just happened. How would you rate/score the chance of **another** slipping accident happening again on **spilt milk** in the next 6 months?

Please Circle / highlight your answer

29

The <b>Likelihood</b> of having <b>another</b> slipping accident on spilt milk in the next 6 months					
(1)	(2)	(3)	(4)	(5)	(6)
Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly <u>Unlikely</u>	Fairly Likely	Very Likely	Extremely Likely

30

Score how <b>confident</b> you feel making this judgment					
(1)	(2)	(3)	(4)	(5)	(6)
Not at all confident	Not very confident	Confident	Quite confident	Very confident	Certain

31

The <b>Seriousness</b> of an <b>another</b> slipping accident on spilt milk in the next 6 months.					
(1)	2	3	4	5	6
Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

**RESPONSIBILITY FOR CAUSING THE ACCIDENT**

As Safety Professional what would you say was **the cause** of Mary's accident?

32    The cause of Mary's accident was...

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

33

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

As a Safety Professional please rate the level of responsibility of the following people for **causing** Mary's accident.

The higher the number of points the more responsible you believe they were.

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident					Rank Score 1-8	
		0 = minimum & 4 = Maximum						
34	Mary	0	1	2	3	4		(Rank)
35	Bill the Shop floor Supervisor	0	1	2	3	4		(Rank)
36	The Manager	0	1	2	3	4		(Rank)
37	The Store Safety Officer	0	1	2	3	4		(Rank)
38	ABC Supermarkets	0	1	2	3	4		(Rank)
39	Another worker	0	1	2	3	4		(Rank)
40	The Cleaner	0	1	2	3	4		(Rank)
41	A Customer	0	1	2	3	4		(Rank)

Please **Rank** these 8 people in order of **importance in causing the accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

**LUCKY OR UNLUCKY?**

Mary’s accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

Thursday at 10.30 Mary went for her rest break	▼	42 <b>Stage A</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary walked towards the Staff Room	▼	43 <b>Stage B</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Milk had been spilt on the floor	▼	44 <b>Stage C</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

The spillage had not been cleared up	▼	45 <b>Stage D</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary did not see the milk on the floor	▼	46 <b>Stage E</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary stepped on the milk	▼	47 <b>Stage F</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary slipped on the milk	▼	48 <b>Stage G</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary lost her balance and fell over	▼	49 <b>Stage H</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary fell awkwardly hurting her right arm.	▼	50 <b>Stage I</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary taken to hospital- Right wrist found to be strained. She will return to work tomorrow	▼	51 <b>Stage J</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky



Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

52	(1)	(2)	(3)	(4)	(5)
	Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

53

Using the Stages A to J in the flowchart please answer questions 54 to 61. Circle or highlight your answers

		<b>Stages A-J</b>					
54	At which stage did the sequence of events change from being normal/routine?	Before A	A	B	C	D	E
		F	G	H	I	J	

55	At which stage did Mary's accident become certain?	Before A	A	B	C	D	E
		F	G	H	I	J	

56	At which stage(s) did Mary have control over the situation?	Before A	A	B	C	D	E
		F	G	H	I	J	

57	At which stage(s) did the	Before A	A	B	C	D	E
----	---------------------------	----------	---	---	---	---	---

Manager have control over the situation	F	G	H	I	J	
---	---	---	---	---	---	--

58	At which stage or stages did an <u>action</u> of any person become an important factor in Mary's accident	Before A	A	B	C	D	E
		F	G	H	I	J	

59	Who took the action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None

60	At which stage or stages did an <u>inaction</u> (failure to act) of any person become an important factor in Mary's accident	Before A	A	B	C	D	E
		F	G	H	I	J	

61	Who failed to take an action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None

**SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Safety Professional.

If the statement **is** a very good description of you (**very like you**) fill in a **1**, if it **is not** a very good description of you (**not at all like you**) please fill in a **5**.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me  1	Quite a good description /Quite like me  2	Not sure if it describes me.  3	Quite poor description / Quite unlike me.  4	Very poor description / Very unlike me.  5
--	---	---------------------------------------	---	---

(Please write in the grey areas to the right of each statement)

		Score
62	I think about safety in the future and try to influence things by my day to day behaviour	
63	I think about safety in the future and do things now to achieve safety in the years ahead	
64	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
65	What I do about safety is only influenced by how things work out in the short term	
66	My convenience is a big factor in how I make decisions or take actions about safety	
67	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
68	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
69	I think it is more important to do something about serious accidents in the future than minor accidents now.	
70	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
71	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
72	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
73	I believe that safety today is more important than safety at some time in the future.	

**AND LASTLY SOME INFORMATION ABOUT YOU**

**74.** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	
6-10 people	(2)	
11-15 people	(3)	
16-20 people	(4)	
21-25 people	(5)	
26-30 people	(6)	

31-35 people	(8)	
36-40 people	(9)	
41-45 people	(10)	
46-50 people	(11)	
More than 51 people	(12)	
Not applicable	(13)	

**75.** Are you (Please Tick)

Male	(1)	
Female	(2)	

76. Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	<input type="checkbox"/>
Office	(2)	<input type="checkbox"/>
Hotel/ B&B	(3)	<input type="checkbox"/>
Leisure/ Cultural	(4)	<input type="checkbox"/>
Manufacturing	(5)	<input type="checkbox"/>
Agriculture	(6)	<input type="checkbox"/>

Wholesale Shop or warehouse	(7)	<input type="checkbox"/>
Catering, Restaurant or Bar	(8)	<input type="checkbox"/>
Residential Care	(9)	<input type="checkbox"/>
Consumer Services eg hairdresser/ beauty	(10)	<input type="checkbox"/>
Construction Industry	(11)	<input type="checkbox"/>
Central or Local Government	(12)	<input type="checkbox"/>
Other	(13)	<input type="checkbox"/>

77. Please give your current

age.

78. Which of the following best describes your current working location. (Please tick)

United Kingdom	(1)		Ireland	(6)	
Europe	(2)		North America / Canada	(7)	
South America	(3)		Australia/ New Zealand	(8)	
Middle East	(4)		Africa	(9)	
Far East	(5)		Other	(10)	

79. Which of these best describes you. Please Circle / highlight

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)	University or Nebosh Student studying occupational safety /health (5)
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**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.  
I AM VERY GRATEFUL.  
PLEASE RETURN IT TO ME BY POST, FAX OR E-MAIL.  
PLEASE DETACH THIS SHEET AND KEEP IT**

## **ACCIDENT INVESTIGATION QUESTIONNAIRE**

**Thank you for completing the questionnaire.  
Research such as this cannot happen without your help.**

This questionnaire forms part of a study into the ways in which accidents at work are viewed by Managers & Supervisors, Safety Professionals and Accident Subjects themselves.

The same questions have been asked of each group and the results will be compared to see if there are any differences or similarities.

This stage of the research is concerned with how people think about hazards before and after an accident has happened and how they see responsibility for cause and prevention.

It is hoped that the results will help to improve our understanding of the ways these groups think about safety and accidents at work and will allow managers / supervisors and Safety Professionals to be better trained in accident investigation.

It is proposed that the results will be published in a professional Safety Journal. All results will be summarized and no individual respondent or employer will be identified. All answers to the questionnaire are treated in the strictest confidence. The information collected will be stored and treated in accordance with the Data Protection Act.

If you need to contact the researcher please do so by e-mail

██





# **ACCIDENT INVESTIGATION QUESTIONNAIRE**

## **FOR SAFETY PROFESSIONALS**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

# 13

Research supported by the



Dear Sir/Madam,

I am conducting research into the way in which safety professionals think about accidents at work.

I would be very grateful if you could spare about 15-20 minutes to complete the attached questionnaire. Your participation is entirely voluntary and any information you provide will be confidential, although overall questionnaire results may be published in summary form. In addition, questionnaire completion is anonymous unless you are responding by e-mail or fax. If you have received this electronically but wish to respond anonymously, then simply print the questionnaire off and return by post.

Thank you,

Paul Lehane.

### **INSTRUCTIONS FOR COMPLETION**

Please complete by hand if the questionnaire has been posted to you, writing your answers in the grey shaded boxes or circle / tick the appropriate answer from the choices given.

If you have received the questionnaire by E-mail or downloaded it from the University Internet site you may print the questionnaire and complete by hand or complete as Word Document.

### **COMPLETION AS A WORD DOCUMENT.**

Please **HIGHLIGHT** your answer using the Highlight Button where options are given otherwise please type your answers in to the grey boxes.

When the questionnaire is complete please attach it to an E-mail and send to me at the address below.

## **RETURN OF QUESTIONNAIRE**

### **BY POST**

If you have been sent the questionnaire by post a prepaid envelope should have been provided. Please use this to return the questionnaire. If not please return to:-

Paul Lehane c/o EHTS London Borough of Bromley <b>Civic Center Bromley England BR1 3UH</b>
---

### **BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

### **BY E-MAIL**

You can return the questionnaire to me at [REDACTED]

**WHY ARE ACCIDENTS INVESTIGATED?**

People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a **safety professional** please indicate how important each reason is to you.

Circle / highlight one answer from the choices given for each question.

1. To find out the cause and understand what happened.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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2. To prevent similar accidents from happening again.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

3. To meet organizational requirements eg collection of statistics, make insurance claims, staff training etc.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**4. To find out if staff acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**5. To find out if management acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**6. To punish someone for breaking rules and regulations. (Enforce rules or law)**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**7. Please Rank in order of importance the 6 reasons for accident investigation.**

**Rank the most important as =1, the next most important as 2 through to the least important as = 6.**

Please write in the "Rank" boxes to the right of the questions above.

HOW LIKELY IS IT THAT AN ACCIDENT WILL HAPPEN?

This section asks you to think about **tripping** hazards in a typical Supermarket and how likely you think an accident might be. I have chosen a Supermarket as I hope it will be familiar to most people.

Thinking about a **box** as a tripping hazard please complete questions 9, 10 & 11.

Please Circle / highlight your answer.

9. Please indicate how **likely** it is that a **box** will lead to an accident to a member of staff during the next 6 months.

(1)	(2)	(3)	(4)	(5)	(6)
Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly <u>Unlikely</u>	Fairly Likely	Very Likely	Extremely Likely

10. Please also score how **confident** you feel making this judgment.

(1)	(2)	(3)	(4)	(5)	(6)
Not at all confident	Not very confident	A little confident	Quite confident	Very confident	Certain

11. And lastly how **serious** do you think the outcome of the accident might be.

(1)	(2)	(3)	(4)	(5)	(6)
Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

## **INVESTIGATING A TRIPPING ACCIDENT IN A SUPERMARKET**

In the section that follows you are asked to read about a tripping accident to Mary (a part time checkout operator at ABC Supermarkets) who tripped over on a box near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a **safety professional**, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of tripping accidents to add to the information given about the accident.

---

**Mary is a lady of about 55 years of age who has worked as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

As a safety professional you have received a report on an accident to Mary in ABC Supermarkets

### **ABC SUPERMARKET**

**MESSAGE TO** SAFETY OFFICER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and tripped over on a box and hurt her arm. An ambulance was called to take her to hospital. She has broken her right arm, which has been plastered. She will be off work for at least 3 weeks.

**You speak to Jane one of the other checkout operators who witnessed the accident and Bill the Shop Floor Supervisor. These are the notes from your conversations.**

- Mary does not usually work on Thursdays but was covering for a friend who was on holiday
  - Mary closed her checkout at the usual time for her mid morning break and waited for a friend on the checkout next to her to serve her last customer and they both went to their break together as usual.
  - They were walking together past the checkouts when Mary tripped over a box and fell awkwardly on her right arm.
  - The First Aider attended and an ambulance was called to take Mary to hospital.
  - At hospital she was found to have a broken right arm. She will be off work for at least 3 weeks with her arm in plaster.
  - A customer had seen the box and reported it to Bill the Supervisor
  - Bill confirmed that the box had been reported by a customer and the cleaner had been asked to clear it up 5 minutes before the accident but had not got round to dealing with it.
  - No warning signs had been put out.
  - It is not known how long the box had been on the floor before it was reported by the customer
  - The area round the checkouts often gets untidy.
  - According to the Accident Book 4 other people had been injured in tripping accidents in the past 6 months
- 

Using the information provided about Mary's accident and your own experience of tripping accidents as a Safety Professional please answer the following questions.

### **IT COULD HAVE BEEN DIFFERENT**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder....I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

**12.** After Mary's accident you found yourself thinking **"If only....."** . How would you continue this thought?



If only.....

.... Things could have been different.

**13** Which **one** of the following people does the sentence above best refer to?

Please circle / highlight your answer

13	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

As a Safety Professional please think back to a point in time **a week before** Mary's accident and complete questions 14,15 & 16.

Please Circle / highlight one option in each row.

14

<i>A week before Mary's accident I would have rated the likelihood (risk) of a tripping accident from a box on the floor as</i>					
(1)	(2)	(3)	(4)	(5)	(6)
Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly Unlikely	Fairly Likely	Very Likely	Extremely Likely

15

score how <b>confident</b> you feel making this judgment.					
(1)	(2)	(3)	(4)	(5)	(6)
Not at all confident	Not very confident	A little confident	Quite confident	Very confident	Certain

16

<b>A week before</b> Mary's accident I would have rated the <b>seriousness</b> of a tripping accident on a box on the floor as					
(1)	(2)	(3)	(4)	(5)	(6)
Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

**COULD MARY’S ACCIDENT HAVE BEEN PREVENTED?**

As a Safety Professional do you believe that Mary's accident could have been prevented?

Please Circle / highlight one answer.

**17**

Yes (1)	No (2)	Not Sure (3)
------------	-----------	-----------------

If you answered YES please go to question 18. If you answered "No" or "Not sure" please go to question 29

Please indicate how you believe Mary's tripping accident could have been prevented.

**18** Mary’s accident could have been prevented.....

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

19

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

As a Safety Professional please rate the level of responsibility for the following people for **preventing** Mary’s accident

The higher the number of points the more responsible you believe they were.

Please circle a number for **each** of the people in the table below

		Responsibility for <b><u>Preventing</u></b> Mary's accident						Rank Score 1-8
		0 = minimum & 4 = Maximum						
20	Mary	0	1	2	3	4		(Rank)
21	Bill the Shop floor Supervisor	0	1	2	3	4		(Rank)
22	The Manager	0	1	2	3	4		(Rank)
23	The Store Safety Officer	0	1	2	3	4		(Rank)
24	ABC Supermarkets	0	1	2	3	4		(Rank)
25	Another worker	0	1	2	3	4		(Rank)
26	The Cleaner	0	1	2	3			(Rank)
27	A Customer	0	1	2	3	4		(Rank)

**28** Please **Rank** these 8 people in order of **importance in preventing Mary’s accident.**

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Knowing that a tripping accident has just happened. How would you rate/score the chance of **another** tripping accident happening again on a box in the next 6 months?

Please Circle / highlight your answer

The <b>Likelihood</b> of having <b>another</b> tripping accident from a box on the floor in the next 6 months						
29	(1)	(2)	(3)	(4)	(5)	(6)
	Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly <u>Unlikely</u>	Fairly Likely	Very Likely	Extremely Likely

How <b>confident</b> you feel making this judgment						
30	(1)	(2)	(3)	(4)	(5)	(6)
	Not at all confident	Not very confident	Confident	Quite confident	Very confident	Certain

The <b>Seriousness</b> of an <b>another</b> tripping accident from a box on the floor in the next 6 months.						
31	(1)	2	3	4	5	6
	Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

**RESPONSIBILITY FOR CAUSING THE ACCIDENT**

As Safety Professional what would you say was **the cause** of Mary's accident?

32    The cause of Mary's accident was...

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

33

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

As a Safety Professional please rate the level of responsibility for the following people in **causing** this tripping accident

The higher the number of points the more responsible you believe they were.

Please circle a number along side **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident 0 = minimum & 4 = Maximum					Rank Score 1-8	
34	Mary	0	1	2	3	4		(Rank)
35	Bill the Shop floor Supervisor	0	1	2	3	4		(Rank)
36	The Manager	0	1	2	3	4		(Rank)
37	The Store Safety Officer	0	1	2	3	4		(Rank)
38	ABC Supermarkets	0	1	2	3	4		(Rank)
39	Another worker	0	1	2	3	4		(Rank)
40	The Cleaner	0	1	2	3	4		(Rank)
41	A Customer	0	1	2	3	4		(Rank)

Please **Rank** these 8 people in order of **importance in causing the accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.



**LUCKY OR UNLUCKY?**

Mary’s accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

Thursday at 10.30 Mary closed her checkout to go for her usual mid morning rest break	▼	42 <b>Stage A</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

As usual Mary waited for her friend on the next checkout and they both walked along the front of the checkouts towards the staff room	▼	43 <b>Stage B</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

A box had been left on the floor	▼	44 <b>Stage C</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

The box had been reported 5 minutes ago. The cleaner had been requested to clear up but had not got round to it	▼	45 <b>Stage D</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary did not see the box on the floor	▼	46 <b>Stage E</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary 's foot caught the box	▼	47 <b>Stage F</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary tripped over the box	▼	48 <b>Stage G</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary lost her balance and fell over	▼	49 <b>Stage H</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary fell awkwardly hurting her right arm.	▼	50 <b>Stage I</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary taken to hospital-her arm was x-rayed and found to be broken. She will be off work for 3 weeks.	▼	51 <b>Stage J</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

(1)	(2)	(3)	(4)	(5)
Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

53

Using the Stages A to J in the flowchart please answer questions 54 to 61. Circle or highlight your answers

		<b>Stages A-J</b>					
<b>54</b>	At which stage did the sequence of events change from being normal/routine?	Before A	A	B	C	D	E
		F	G	H	I	J	

<b>55</b>	At which stage did Mary's accident become certain?	Before A	A	B	C	D	E
		F	G	H	I	J	

<b>56</b>	At which stage(s) did Mary have control over the situation?	Before A	A	B	C	D	E
		F	G	H	I	J	

<b>57</b>	At which stage(s) did the	Before A	A	B	C	D	E

Manager have control over the situation	F	G	H	I	J	
---	---	---	---	---	---	--

58	At which stage or stages did an <u>action</u> of any person become an important factor in Mary's accident	Before A	A	B	C	D	E
		F	G	H	I	J	

59	Who took the action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None

60	At which stage or stages did an <u>inaction</u> (failure to act) of any person become an important factor in Mary's accident	Before A	A	B	C	D	E
		F	G	H	I	J	

61	Who failed to take an action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None

## **SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Safety Professional.

If the statement **is** a very good description of you (**very like you**) fill in a **1**, if it is **not** a very good description of you (**not at all like you**) please fill in a **5**.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me  1	Quite a good description /Quite like me  2	Not sure if it describes me.  3	Quite poor description / Quite unlike me.  4	Very poor description / Very unlike me.  5
---	--	--	---	---

(Please write in the grey areas to the right of each statement)

		Score
62	I think about safety in the future and try to influence things by my day to day behaviour	
63	I think about safety in the future and do things now to achieve safety in the years ahead	
64	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
65	What I do about safety is only influenced by how things work out in the short term	
66	My convenience is a big factor in how I make decisions or take actions about safety	
67	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
68	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
69	I think it is more important to do something about serious accidents in the future than minor accidents now.	
70	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
71	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
72	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
73	I believe that safety today is more important than safety at some time in the future.	

**AND LASTLY SOME INFORMATION ABOUT YOU**

**74** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	<input type="checkbox"/>
6-10 people	(2)	<input type="checkbox"/>
11-15 people	(3)	<input type="checkbox"/>
16-20 people	(4)	<input type="checkbox"/>
21-25 people	(5)	<input type="checkbox"/>
26-30 people	(6)	<input type="checkbox"/>

31-35 people	(8)	<input type="checkbox"/>
36-40 people	(9)	<input type="checkbox"/>
41-45 people	(10)	<input type="checkbox"/>
46-50 people	(11)	<input type="checkbox"/>
More than 51 people	(12)	<input type="checkbox"/>
Not applicable	(13)	<input type="checkbox"/>

**75.** Are you (Please Tick)

Male	(1)	<input type="checkbox"/>
Female	(2)	<input type="checkbox"/>



76. Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	<input type="checkbox"/>
Office	(2)	<input type="checkbox"/>
Hotel/ B&B	(3)	<input type="checkbox"/>
Leisure/ Cultural	(4)	<input type="checkbox"/>
Manufacturing	(5)	<input type="checkbox"/>
Agriculture	(6)	<input type="checkbox"/>

Wholesale Shop or warehouse	(7)	<input type="checkbox"/>
Catering, Restaurant or Bar	(8)	<input type="checkbox"/>
Residential Care	(9)	<input type="checkbox"/>
Consumer Services eg hairdresser/ beauty	(10)	<input type="checkbox"/>
Construction Industry	(11)	<input type="checkbox"/>
Central or Local Government	(12)	<input type="checkbox"/>
Other	(13)	<input type="checkbox"/>

77. Please give your current

age.

**78. Which of the following best describes your current working location. (Please tick)**

United Kingdom	(1)		Ireland	(6)	
Europe	(2)		North America / Canada	(7)	
South America	(3)		Australia/ New Zealand	(8)	
Middle East	(4)		Africa	(9)	
Far East	(5)		Other	(10)	

**79. Which of these best describes you. Please Circle / highlight**

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)	University or Nebosh Student studying occupational health / safety (5)
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**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.  
I AM VERY GRATEFUL.  
PLEASE RETURN IT TO ME BY POST, FAX OR E-MAIL.**

**PLEASE DETACH THIS SHEET AND KEEP IT**

## **ACCIDENT INVESTIGATION QUESTIONNAIRE**

**Thank you for completing the questionnaire.  
Research such as this cannot happen with out your help.**

This questionnaire forms part of a study in to the ways in which accidents at work are viewed by Mangers & Supervisors, Safety Professionals and Accident Subjects themselves.

The same questions have been asked of each group and the results will be compared to see if there are any differences or similarities.

This stage of the research is concerned with how people think about hazards before and after an accident has happened and how they see responsibility for cause and prevention.

It is hoped that the results will help to improve our understanding of the ways these groups think about safety and accidents at work and will allow managers / supervisors and Safety Professionals to be better trained in accident investigation.

It is proposed that the results will be published in a professional Safety Journal. All results will be summarized and no individual respondent or employer will be identified. All answers to the questionnaire are treated in the strictest confidence. The information collected will be stored and treated in accordance with the Data Protection Act.

If you need to contact the researcher please do so by e-mail

██



**ACCIDENT INVESTIGATION QUESTIONNAIRE**  
**FOR SAFETY PROFESSIONALS**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

**14**

Research supported by the



Dear Sir/Madam,

I am conducting research into the way in which safety professionals think about accidents at work.

I would be very grateful if you could spare about 15-20 minutes to complete the attached questionnaire. Your participation is entirely voluntary and any information you provide will be confidential, although overall questionnaire results may be published in summary form. In addition, questionnaire completion is anonymous unless you are responding by e-mail or fax. If you have received this electronically but wish to respond anonymously, then simply print the questionnaire off and return by post.

Thank you,

Paul Lehane.

### **INSTRUCTIONS FOR COMPLETION**

Please complete by hand if the questionnaire has been posted to you, writing your answers in the grey shaded boxes or circle / tick the appropriate answer from the choices given.

If you have received the questionnaire by E-mail or downloaded it from the University Internet site you may print the questionnaire and complete by hand or complete as Word Document.

### **COMPLETION AS A WORD DOCUMENT.**

Please **HIGHLIGHT** your answer using the Highlight Button where options are given otherwise please type your answers in to the grey boxes.

When the questionnaire is complete please attach it to an E-mail and send to me at the address below.

### **RETURN OF QUESTIONNAIRE**

**BY POST**

If you have been sent the questionnaire by post a prepaid envelope should have been provided. Please use this to return the questionnaire. If not please return to:-

**Paul Lehane c/o  
EHTS  
London Borough of Bromley  
Civic Centre Bromley England BR1 3UH**

**BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

**BY E-MAIL**

You can return the questionnaire to me at [REDACTED]

**WHY ARE ACCIDENTS INVESTIGATED?**

People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a safety professional please indicate how important each reason is to you.

Circle / highlight one answer from the choices given for each question.

**1 To find out the cause and understand what happened.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**2 To prevent similar accidents from happening again.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**3 To meet organizational requirements e.g. collection of statistics, make insurance claims, staff training etc.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**4 To find out if staff acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
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**5 To find out if management acted correctly or incorrectly.**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**6 To punish someone for breaking rules and regulations. (Enforce rules or law)**

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

**7. Please Rank in order of importance** the 6 reasons for accident investigation.

**Rank the most important as =1, the next most important as 2 through to the least important as = 6.**

Please write in the "Rank" boxes to the right of the questions above.



HOW LIKELY IS IT THAT AN ACCIDENT WILL HAPPEN?

This section asks you to think about **tripping** hazards in a typical Supermarket and how likely you think an accident might be. I have chosen a Supermarket as I hope it will be familiar to most people.

Thinking about a **box** as a tripping hazard please complete questions 9, 10 & 11.

Please Circle / highlight your answer.

8. Please indicate how **likely** it is that a **box** will lead to an accident to a member of staff during the next 6 months.

(1)	(2)	(3)	(4)	(5)	(6)
Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly <u>Unlikely</u>	Fairly Likely	Very Likely	Extremely Likely

- 9 Please also score how **confident** you feel making this prediction.

(1)	(2)	(3)	(4)	(5)	(6)
Not at all confident	Not very confident	A little confident	Quite confident	Very confident	Certain

- 10 And lastly how **serious** do you think the outcome of the accident might be.

(1)	(2)	(3)	(4)	(5)	(6)
Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

## **INVESTIGATING A TRIPPING ACCIDENT IN A SUPERMARKET**

In the section that follows you are asked to read about a tripping accident to Mary (a part time checkout operator at ABC Supermarkets) who tripped over on a box near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a **safety professional**, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of tripping accidents to add to the information given about the accident.

---

**Mary is a lady of about 55 years of age who has worked for as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

As a safety professional you have received a report on an accident to Mary in ABC Supermarkets

### **ABC SUPERMARKET**

**MESSAGE TO** SAFETY OFFICER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and tripped over a box and hurt her arm. An ambulance was called to take her to hospital. She has broken her right arm, which has been plastered. She will be off work for at least 3 weeks.

Using the information provided about Mary's accident and your own experience of tripping accidents as a Safety Professional please answer the following questions.

**IT COULD HAVE BEEN DIFFERENT**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder...I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

**11.** After Mary’s accident you found yourself thinking “**If only.....**” . How would you continue this thought?

If only.....

**.... Things could have been different.**

**12** Which one of the following people does the sentence above best refer to?

Please circle / highlight your answer

13

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

As a Safety Professional please think back to a point in time **a week before** Mary's accident and complete questions 14,15 & 16.

Please Circle / highlight one option in each row.

14

A week before <b>Mary's accident</b> I would have rated the likelihood (risk) of a tripping accident from a box on the floor as					
(1)	(2)	(3)	(4)	(5)	(6)
Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly Unlikely	Fairly Likely	Very Likely	Extremely Likely

15

score how <b>confident</b> you feel making this prediction.					
(1)	(2)	(3)	(4)	(5)	(6)
Not at all confident	Not very confident	A little confident	Quite confident	Very confident	Certain

16

A week before Mary's accident I would have rated the <b>seriousness</b> of a tripping accident on a box on the floor as					
(1)	(2)	(3)	(4)	(5)	(6)
Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

**COULD MARY’S ACCIDENT HAVE BEEN PREVENTED?**

As a Safety Professional do you believe that Mary's accident could have been prevented?

Please Circle / highlight one answer.

17

Yes (1)	No (2)	Not Sure (3)
------------	-----------	-----------------

If you answered YES please go to question 18. If you answered "No" or "Not sure" please go to question 29

Please indicate how you believe Mary's tripping accident could have been prevented.

18

Mary’s accident could have been prevented.....
--

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

19

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

As a Safety Professional please rate the level of responsibility for the following people for **preventing** Mary’s accident

The higher the number of points the more responsible you believe they were.

Please circle a number for **each** of the people in the table below

		Responsibility for <b><u>Preventing</u></b> Mary's accident					Rank Score 1-8	
		0 = minimum & 4 = Maximum						
20	Mary	0	1	2	3	4		(Rank)
21	Bill the Shop floor Supervisor	0	1	2	3	4		(Rank)
22	The Manager	0	1	2	3	4		(Rank)
23	The Store Safety Officer	0	1	2	3	4		(Rank)
24	ABC Supermarkets	0	1	2	3	4		(Rank)
25	Another worker	0	1	2	3	4		(Rank)
26	The Cleaner	0	1	2	3	4		(Rank)
27	A Customer	0	1	2	3	4		(Rank)

**28** Please **Rank** these 8 people in order of **importance in preventing Mary’s accident.**

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Knowing that a tripping accident has just happened. How would you rate/score the chance of **another** tripping accident happening again a box on the floor in the next 6 months?

Please Circle / highlight your answer

The <b>Likelihood</b> of having <b>another</b> tripping accident from a box on the floor in the next 6 months						
<b>.29</b>	(1)	(2)	(3)	(4)	(5)	(6)
	Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly <u>Unlikely</u>	Fairly Likely	Very Likely	Extremely Likely

Score how <b>confident</b> you feel making this judgment						
<b>30</b>	(1)	(2)	(3)	(4)	(5)	(6)
	Not at all confident	Not very confident	Confident	Quite confident	Very confident	Certain

The <b>Seriousness</b> of an another tripping accident from a box on the floor in the next 6 months.						
<b>31</b>	(1)	2	3	4	5	6
	Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

**RESPONSIBILITY FOR CAUSING THE ACCIDENT**

As Safety Professional what would you say was **the cause** of Mary's accident?

32 The cause of Mary's accident was...

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

33

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these



As a Safety Professional please rate the level of responsibility for the following people in **causing** this tripping accident

The higher the number of points the more responsible you believe they were.

Please circle a number along side **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident						Rank Score 1-8
		0 = minimum & 4 = Maximum						
34	Mary	0	1	2	3	4		(Rank)
35	Bill the Shop floor Supervisor	0	1	2	3	4		(Rank)
36	The Manager	0	1	2	3	4		(Rank)
37	The Store Safety Officer	0	1	2	3	4		(Rank)
38	ABC Supermarkets	0	1	2	3	4		(Rank)
39	Another worker	0	1	2	3	4		(Rank)
40	The Cleaner	0	1	2	3	4		(Rank)
41	A Customer	0	1	2	3	4		(Rank)

Please **Rank** these 8 people in order of **importance in causing the accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

**LUCKY OR UNLUCKY?**

Mary’s accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

Thursday at 10.30 Mary went for her rest break	▼	42 <b>Stage A</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary walked towards the Staff Room	▼	43 <b>Stage B</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

A box had been left on the floor	▼	44 <b>Stage C</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

The box had not been cleared up.	▼	45 <b>Stage D</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary did not see the box on the floor	▼	46 <b>Stage E</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary's foot caught the box	▼	47 <b>Stage F</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary tripped on the box	▼	48 <b>Stage G</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary lost her balance and fell over	▼	49 <b>Stage H</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary fell awkwardly hurting her right arm.	▼	50 <b>Stage I</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Mary taken to hospital-her arm was x-rayed and found to be broken. She will be off work for 3 weeks.	▼	51 <b>Stage J</b>				
		(1) Very Unlucky	(2) Unlucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky

Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

(1)	(2)	(3)	(4)	(5)
Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

53

Using the Stages A to J in the flowchart please answer questions 54 to 61. Circle or highlight your answers

		Stages A-J					
54	At which stage did the sequence of events change from being normal/routine?	Before A	A	B	C	D	E
		F	G	H	I	J	
55	At which stage did Mary's accident become certain?	Before A	A	B	C	D	E
		F	G	H	I	J	
56	At which stage(s) did Mary have control over the situation?	Before A	A	B	C	D	E
		F	G	H	I	J	
57	At which stage(s) did the	Before A	A	B	C	D	E

Manager have control over the situation	F	G	H	I	J	
---	---	---	---	---	---	--

58	At which stage or stages did an <u>action</u> of any person become an important factor in Mary's accident	Before A	A	B	C	D	E
		F	G	H	I	J	

59	Who took the action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None

60	At which stage or stages did an <u>inaction</u> (failure to act) of any person become an important factor in Mary's accident	Before A	A	B	C	D	E
		F	G	H	I	J	

61	Who failed to take an action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None

**SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Safety Professional.

If the statement **is** a very good description of you (**very like you**) fill in a **1**, if it is **not** a very good description of you (**not at all like you**) please fill in a **5**.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me 1	Quite a good description / Quite like me 2	Not sure if it describes me. 3	Quite poor description / Quite unlike me. 4	Very poor description / Very unlike me. 5
---	---	-----------------------------------	--	--

(Please write in the grey areas to the right of each statement)

		Score
62	I think about safety in the future and try to influence things by my day to day behaviour	
63	I think about safety in the future and do things now to achieve safety in the years ahead	
64	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
65	What I do about safety is only influenced by how things work out in the short term	
66	My convenience is a big factor in how I make decisions or take actions about safety	
67	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
68	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
69	I think it is more important to do something about serious accidents in the future than minor accidents now.	
70	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
71	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
72	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
73	I believe that safety today is more important than safety at some time in the future.	



**AND LASTLY SOME INFORMATION ABOUT YOU**

**74.** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	<input type="checkbox"/>
6-10 people	(2)	<input type="checkbox"/>
11-15 people	(3)	<input type="checkbox"/>
16-20 people	(4)	<input type="checkbox"/>
21-25 people	(5)	<input type="checkbox"/>
26-30 people	(6)	<input type="checkbox"/>

31-35 people	(8)	<input type="checkbox"/>
36-40 people	(9)	<input type="checkbox"/>
41-45 people	(10)	<input type="checkbox"/>
46-50 people	(11)	<input type="checkbox"/>
More than 51 people	(12)	<input type="checkbox"/>
Not applicable	(13)	<input type="checkbox"/>

**75.** Are you (Please Tick)

Male	(1)	<input type="checkbox"/>
Female	(2)	<input type="checkbox"/>

76. Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	<input type="checkbox"/>
Office	(2)	<input type="checkbox"/>
Hotel/ B&B	(3)	<input type="checkbox"/>
Leisure/ Cultural	(4)	<input type="checkbox"/>
Manufacturing	(5)	<input type="checkbox"/>
Agriculture	(6)	<input type="checkbox"/>

Wholesale Shop or warehouse	(7)	<input type="checkbox"/>
Catering, Restaurant or Bar	(8)	<input type="checkbox"/>
Residential Care	(9)	<input type="checkbox"/>
Consumer Services eg hairdresser/ beauty	(10)	<input type="checkbox"/>
Construction Industry	(11)	<input type="checkbox"/>
Central or Local Government	(12)	<input type="checkbox"/>
Other	(13)	<input type="checkbox"/>

77. Please give your current

age.

**78. Which of the following best describes your current working location. (Please tick)**

United Kingdom	(1)		Ireland	(6)	
Europe	(2)		North America / Canada	(7)	
South America	(3)		Australia/ New Zealand	(8)	
Middle East	(4)		Africa	(9)	
Far East	(5)		Other	(10)	

**79. Which of these best describes you. Please Circle / highlight**

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)	University or Nebosh Student studying occupational health / safety (5)
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**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.  
I AM VERY GRATEFUL.  
PLEASE RETURN IT TO ME BY POST, FAX OR E-MAIL.**

**PLEASE DETACH THIS SHEET AND KEEP IT**

## **ACCIDENT INVESTIGATION QUESTIONNAIRE**

**Thank you for completing the questionnaire.  
Research such as this cannot happen with out your help.**

This questionnaire forms part of a study in to the ways in which accidents at work are viewed by Mangers & Supervisors, Safety Professionals and Accident Subjects themselves.

The same questions have been asked of each group and the results will be compared to see if there are any differences or similarities.

This stage of the research is concerned with how people think about hazards before and after an accident has happened and how they see responsibility for cause and prevention.

It is hoped that the results will help to improve our understanding of the ways these groups think about safety and accidents at work and will allow managers / supervisors and Safety Professionals to be better trained in accident investigation.

It is proposed that the results will be published in a professional Safety Journal. All results will be summarized and no individual respondent or employer will be identified. All answers to the questionnaire are treated in the strictest confidence. The information collected will be stored and treated in accordance with the Data Protection Act.

If you need to contact the researcher please do so by e-mail

**[REDACTED]**



**ACCIDENT INVESTIGATION QUESTIONNAIRE**  
**FOR SAFETY PROFESSIONALS**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

**15**

Research supported by the



Dear Sir/Madam,

I am conducting research into the way in which safety professionals think about accidents at work.

I would be very grateful if you could spare about 15-20 minutes to complete the attached questionnaire. Your participation is entirely voluntary and any information you provide will be confidential, although overall questionnaire results may be published in summary form. In addition, questionnaire completion is anonymous unless you are responding by e-mail or fax. If you have received this electronically but wish to respond anonymously, then simply print the questionnaire off and return by post.

Thank you,

Paul Lehane.

### **INSTRUCTIONS FOR COMPLETION**

Please complete by hand if the questionnaire has been posted to you, writing your answers in the grey shaded boxes or circle / tick the appropriate answer from the choices given.

If you have received the questionnaire by E-mail or downloaded it from the University Internet site you may print the questionnaire and complete by hand or complete as Word Document.

### **COMPLETION AS A WORD DOCUMENT.**

Please **HIGHLIGHT** your answer using the Highlight Button where options are given otherwise please type your answers in to the grey boxes.

When the questionnaire is complete please attach it to an E-mail and send to me at the address below.

### **RETURN OF QUESTIONNAIRE**

**BY POST**

If you have been sent the questionnaire by post a prepaid envelope should have been provided. Please use this to return the questionnaire. If not please return to:-

Paul Lehane c/o  
EHTS  
London Borough of Bromley  
Civic Centre Bromley England BR1 3UH

**BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

**BY E-MAIL**

You can return the questionnaire to me at [REDACTED]

**WHY ARE ACCIDENTS INVESTIGATED?**

People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a safety professional please indicate how important each reason is to you.

Circle / highlight one answer from the choices given for each question.

1 To find out the cause and understand what happened.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

2 To prevent similar accidents from happening again.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

3 To meet organizational requirements eg collection of statistics, make insurance claims, staff training etc.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------



4 To find out if staff acted correctly or incorrectly.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

5 To find out if management acted correctly or incorrectly.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

6 To punish someone for breaking rules and regulations. (Enforce the rules or law)

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

7. Please **Rank in order of importance** the 6 reasons for accident investigation .

**Rank the most important as =1, the next most important as 2 through to the least important as = 6.**

Please write in the "Rank" boxes to the right of the questions above.

**HOW LIKELY IS IT THAT AN ACCIDENT WILL HAPPEN?**

This section asks you to think about **tripping** hazards in a typical Supermarket and how likely you think an accident might be. I have chosen a Supermarket as I hope it will be familiar to most people.

Thinking about a **box** as a tripping hazard please complete questions 9, 10 & 11.

Please Circle / highlight your answer.

**8** Please indicate how **likely** it is that a **box** will lead to an accident to a member of staff during the next 6 months.

(1)	(2)	(3)	(4)	(5)	(6)
Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly <u>Unlikely</u>	Fairly Likely	Very Likely	Extremely Likely

**9** Please also score how **confident** you feel making this judgement.

(1)	(2)	(3)	(4)	(5)	(6)
Not at all confident	Not very confident	A little confident	Quite confident	Very confident	Certain

10. And lastly how serious do you think the outcome of the accident might be.

(1)	(2)	(3)	(4)	(5)	(6)
Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

### **INVESTIGATING A TRIPPING ACCIDENT IN A SUPERMARKET**

In the section that follows you are asked to read about a tripping accident to Mary (a part time checkout operator at ABC Supermarkets) who tripped over on a box near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a safety professional, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of tripping accidents to add to the information given about the accident.

---

**Mary is a lady of about 55 years of age who has worked for as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

As a safety professional you have received a report on an accident to Mary in ABC Supermarkets

**ABC SUPERMARKET**

**MESSAGE TO** SAFETY OFFICER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and tripped over a box and hurt her arm. An ambulance was called to take her to hospital. She has strained her right wrist, and she will be returning to work tomorrow.

You speak to Jane one of the other checkout operators who witnessed the accident and Bill the Shop Floor Supervisor. These are the notes from your conversations.

- Mary does not usually work on Thursdays but was covering for a friend who was on holiday
  - Mary closed her checkout at the usual time for her mid morning break and waited for a friend on the checkout next to her to serve her last customer and they both went to their break together as usual.
  - They were walking together past the checkouts when Mary tripped over on a box and fell awkwardly on her right arm.
  - The First Aider attended and an ambulance was called to take Mary to hospital.
  - At hospital she was found to have strained her right wrist. She will be back at work tomorrow.
  - A customer had seen the box and reported it to Bill the Supervisor
  - Bill confirmed that the box had been reported by a customer and the cleaner had been asked to clear it up 5 minutes before the accident but had not got round to dealing with it.
  - No warning signs had been put out.
  - It is not known how long the box had been on the floor before it was reported by the customer
  - The area round the checkouts often gets untidy.
  - According to the Accident Book 4 other people had been injured in tripping accidents in the past 6 months
-

Using the information provided about Mary’s accident and your own experience of tripping accidents as a Safety Professional please answer the following questions.

**IT COULD HAVE BEEN DIFFERENT**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder....I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

**11.** After Mary’s accident you found yourself thinking “**If only.....**” . How would you continue this thought?

If only.....

.... **Things could have been different.**

**12** Which one of the following people does the sentence above best refer to?

Please circle / highlight your answer

12	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

As a Safety Professional please think back to a point in time **a week before** Mary's accident and complete questions 13, 14,& 15.

Please Circle / highlight one option in each row.

Score how <b>confident</b> you feel making this judgement.						
13	(1)	(2)	(3)	(4)	(5)	(6)
	Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly Unlikely	Fairly Likely	Very Likely	Extremely Likely

<b>A week before</b> Mary's accident I would have rated my <b>confidence</b> for judging the likelihood (risk) of an accident from a box on the floor as						
14	(1)	(2)	(3)	(4)	(5)	(6)
	Not at all confident	Not very confident	A little confident	Quite confident	Very confident	Certain

<b>A week before</b> Mary's accident I would have rated the <b>seriousness</b> of a tripping accident on a box on the floor as						
15	(1)	(2)	(3)	(4)	(5)	(6)
	Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

**COULD MARY'S ACCIDENT HAVE BEEN PREVENTED?**

As a Safety Professional do you believe that Mary's accident could have been prevented?

Please Circle / highlight one answer.

16

Yes	No	Not Sure
(1)	(2)	(3)

If you answered YES please go to question 18. If you answered "No" or "Not Sure" please go to question 29

Please indicate how you believe Mary's tripping accident could have been prevented.

17

Mary's accident could have been prevented.....
--

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

18

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

As a Safety Professional please rate the level of responsibility for the following people for **preventing Mary’s accident**

The higher the number of points the more responsible you believe they were.

Please circle a number for **each** of the people in the table below

		Responsibility for <b><u>Preventing</u></b> Mary's accident  0 = minimum & 4 = Maximum					Rank Score 1-8
19	Mary	0	1	2	3	4	(Rank)
20	Bill the Shop floor Supervisor	0	1	2	3	4	(Rank)
21	The Manager	0	1	2	3	4	(Rank)
22	The Store Safety Officer	0	1	2	3	4	(Rank)
23	ABC Supermarkets	0	1	2	3	4	(Rank)
24	Another worker	0	1	2	3	4	(Rank)
25	The Cleaner	0	1	2	3	4	(Rank)
26	A Customer	0	1	2	3		(Rank)



27 Please **Rank** these 8 people in order of **importance in preventing Mary's accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.** Please write in the "Rank" boxes to the right of the questions above.

Knowing that a tripping accident has just happened. How would you rate/score the chance of **another** tripping accident happening again on a box in the next 6 months?

Please Circle / highlight your answer

The <b>Likelihood</b> of having <b>another</b> tripping accident from a box on the floor in the next 6 months						
28	(1)	(2)	(3)	(4)	(5)	(6)
	Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly <u>Unlikely</u>	Fairly Likely	Very Likely	Extremely Likely

How <b>confident</b> you feel making this judgment						
29	(1)	(2)	(3)	(4)	(5)	(6)
	Not at all confident	Not very confident	Confident	Quite confident	Very confident	Certain

The <b>Seriousness</b> of an <b>another</b> tripping from a box on the floor in the next 6 months.						
30	(1)	2	3	4	5	6
	Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

**RESPONSIBILITY FOR CAUSING THE ACCIDENT**

As Safety Professional what would you say was **the cause** of Mary's accident?

31 The cause of Mary's accident was...

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

32

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

As a Safety Professional please rate responsibility for the following people in **causing** this tripping accident

The higher the number of points the more responsible you believe they were for the accident happening.

Please circle a number along side **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident						Rank Score 1-8
		0 = minimum & 4 = Maximum						
33	Mary	0 None	1	2	3	4 Maximum		(Rank)
34	Bill the Shop floor Supervisor	0 None	1	2	3	4 Maximum		(Rank)
35	The Manager	0 None	1	2	3	4 Maximum		(Rank)
36	The Store Safety Officer	0 None	1	2	3	4 Maximum		(Rank)
37	ABC Supermarkets  The Employer	0 None	1	2	3	4 Maximum		(Rank)
38	Another worker	0 None	1	2	3	4 Maximum		(Rank)
39	The Cleaner	0 None	1	2	3	4 Maximum		(Rank)
40	A Customer	0 None	1	2	3	4 Maximum		(Rank)

Please **Rank** these 8 people in order of **importance in causing the accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

**LUCKY OR UNLUCKY?**

Mary’s accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

Thursday at 10.30  
Mary closed her checkout to go for her usual mid morning rest break

41	<b>Stage A</b>				
(1)	(2)	(3)	(4)	(5)	
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky	

As usual Mary waited for her friend on the next checkout and they both walked along the front of the checkouts towards the staff room

42	<b>Stage B</b>				
(1)	(2)	(3)	(4)	(5)	
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky	

A box had been left on the floor

43	<b>Stage C</b>				
(1)	(2)	(3)	(4)	(5)	
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky	

The box had been reported 5 minutes ago. The cleaner had been requested to clear up but had not got round to it

▼

44 Stage D				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary did not see the box on the floor

▼

45 Stage E				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary's foot caught the box

▼

46 Stage F				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary tripped on the box

▼

47 Stage G				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary lost her balance and fell over

▼

48 Stage H				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary fell awkwardly hurting her right arm.

▼

49 Stage I				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary taken to hospital- Right wrist found to be strained. She will return to work tomorrow

▼

50 Stage J				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

<b>51</b>	(1)	(2)	(3)	(4)	(5)
	Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

**52**

Using the Stages A to J in the flowchart please answer questions 54 to 61. Circle or highlight your answer.

		Stages A-J					
<b>53</b>	At which stage did the sequence of events change from being normal/routine?	Before A	A	B	C	D	E
		F	G	H	I	J	
<b>54</b>	At which stage did Mary's accident become certain?	Before A	A	B	C	D	E
		F	G	H	I	J	
<b>55</b>	At which stage(s) did Mary have control over the situation?	Before A	A	B	C	D	E
		F	G	H	I	J	
<b>56</b>	At which stage(s) did the Manager have control over the situation	Before A	A	B	C	D	E
		F	G	H	I	J	



57	At which stage or stages did an <u>action</u> of any person become an important factor in Mary's accident	Before A	A	B	C	D	E
		F	G	H	I	J	

58	Who took the action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None

59	At which stage or stages did an <u>inaction</u> ( failure to act) of any person become an important factor in Mary's accident	Before A	A	B	C	D	E
		F	G	H	I	J	

60	Who failed to take an action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None

## **SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Safety Professional.

If the statement **is** a very good description of you (**very like you**) fill in a **1**, if it is **not** a very good description of you (**not at all like you**) please fill in a **5**.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me  1	Quite a good description /Quite like me  2	Not sure if it describes me.  3	Quite poor description / Quite unlike me.  4	Very poor description / Very unlike me.  5
---	--	--	---	---

(Please write in the grey areas to the right of each statement)

		Score
61	I think about safety in the future and try to influence things by my day to day behaviour	
62	I think about safety in the future and do things now to achieve safety in the years ahead	
63	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
64	What I do about safety is only influenced by how things work out in the short term	
65	My convenience is a big factor in how I make decisions or take actions about safety	
66	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
67	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
68	I think it is more important to do something about serious accidents in the future than minor accidents now.	
69	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
70	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
71	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
72	I believe that safety today is more important than safety at some time in the future.	

**AND LASTLY SOME INFORMATION ABOUT YOU**

**73.** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	<input type="checkbox"/>
6-10 people	(2)	<input type="checkbox"/>
11-15 people	(3)	<input type="checkbox"/>
16-20 people	(4)	<input type="checkbox"/>
21-25 people	(5)	<input type="checkbox"/>
26-30 people	(6)	<input type="checkbox"/>

31-35 people	(8)	<input type="checkbox"/>
36-40 people	(9)	<input type="checkbox"/>
41-45 people	(10)	<input type="checkbox"/>
46-50 people	(11)	<input type="checkbox"/>
More than 51 people	(12)	<input type="checkbox"/>
Not applicable	(13)	<input type="checkbox"/>

**74** Are you (Please Tick)

Male	(1)	<input type="checkbox"/>
Female	(2)	<input type="checkbox"/>

**75.** Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	<input type="checkbox"/>
Office	(2)	<input type="checkbox"/>
Hotel/ B&B	(3)	<input type="checkbox"/>
Leisure/ Cultural	(4)	<input type="checkbox"/>
Manufacturing	(5)	<input type="checkbox"/>
Agriculture	(6)	<input type="checkbox"/>

Wholesale Shop or warehouse	(7)	<input type="checkbox"/>
Catering, Restaurant or Bar	(8)	<input type="checkbox"/>
Residential Care	(9)	<input type="checkbox"/>
Consumer Services eg hairdresser/ beauty	(10)	<input type="checkbox"/>
Construction Industry	(11)	<input type="checkbox"/>
Central or Local Government	(12)	<input type="checkbox"/>
Other	(13)	<input type="checkbox"/>

**76.** Please give your current age.

77. Which of the following best describes your current working location. (Please tick)

United Kingdom	(1)	
Europe	(2)	
South America	(3)	
Middle East	(4)	
Far East	(5)	

Ireland	(6)	
North America / Canada	(7)	
Australia/ New Zealand	(8)	
Africa	(9)	
Other	(10)	

78. Which of these best describes you. Please Circle / highlight

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)	University or Nebosh Student studying occupational health /safety (5)
--------------------------	----------------------------	---	---	---

**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.  
I AM VERY GRATEFUL.  
PLEASE RETURN IT TO ME BY POST, FAX OR E-MAIL.**

**PLEASE DETACH THIS SHEET AND KEEP IT**

## **ACCIDENT INVESTIGATION QUESTIONNAIRE**

**Thank you for completing the questionnaire.  
Research such as this cannot happen with out your help.**

This questionnaire forms part of a study in to the ways in which accidents at work are viewed by Mangers & Supervisors, Safety Professionals and Accident Subjects themselves.

The same questions have been asked of each group and the results will be compared to see if there are any differences or similarities.

This stage of the research is concerned with how people think about hazards before and after an accident has happened and how they see responsibility for cause and prevention.

It is hoped that the results will help to improve our understanding of the ways these groups think about safety and accidents at work and will allow managers / supervisors and Safety Professionals to be better trained in accident investigation.

It is proposed that the results will be published in a professional Safety Journal. All results will be summarized and no individual respondent or employer will be identified. All answers to the questionnaire are treated in the strictest confidence. The information collected will be stored and treated in accordance with the Data Protection Act.

If you need to contact the researcher please do so by e-mail

**[REDACTED]**



**ACCIDENT INVESTIGATION QUESTIONNAIRE**  
**FOR SAFETY PROFESSIONALS**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

**16**

Research supported by the





Dear Sir/Madam,

I am conducting research into the way in which safety professionals think about accidents at work.

I would be very grateful if you could spare about 15-20 minutes to complete the attached questionnaire. Your participation is entirely voluntary and any information you provide will be confidential, although overall questionnaire results may be published in summary form. In addition, questionnaire completion is anonymous unless you are responding by e-mail or fax. If you have received this electronically but wish to respond anonymously, then simply print the questionnaire off and return by post.

Thank you,

Paul Lehane.

### **INSTRUCTIONS FOR COMPLETION**

Please complete by hand if the questionnaire has been posted to you, writing your answers in the grey shaded boxes or circle / tick the appropriate answer from the choices given.

If you have received the questionnaire by E-mail or downloaded it from the University Internet site you may print the questionnaire and complete by hand or complete as Word Document.

### **COMPLETION AS A WORD DOCUMENT.**

Please **HIGHLIGHT** your answer using the Highlight Button where options are given otherwise please type your answers in to the grey boxes.

When the questionnaire is complete please attach it to an E-mail and send to me at the address below.

**RETURN OF QUESTIONNAIRE**

**BY POST**

If you have been sent the questionnaire by post a prepaid envelope should have been provided. Please use this to return the questionnaire. If not please return to:-

Paul Lehane c/o  
EHTS  
London Borough of Bromley  
Civic Center Bromley England BR1 3UH

**BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

**BY E-MAIL**

You can return the questionnaire to me at [REDACTED]

**WHY ARE ACCIDENTS INVESTIGATED?**

People have different views about why accidents are investigated.

Six reasons for accident investigation are given below. As a safety professional please indicate how important each reason is to you.

Circle / highlight one answer from the choices given for each question.

1. To find out the cause and understand what happened.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

2 To prevent similar accidents from happening again.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

3 To meet organizational requirements eg collection of statistics, make insurance claims, staff training etc.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

4 To find out if staff acted correctly or incorrectly.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

5 To find out if management acted correctly or incorrectly.

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

6 To punish someone for breaking rules and regulations. (Enforce rules or law)

(5) Very Important	(4) Fairly Important	(3) Important	(2) Not very Important	(1) Of no Importance	Rank
-----------------------	-------------------------	------------------	---------------------------	-------------------------	------

7. Please **Rank in order of importance** the 6 reasons for accident investigation.

**Rank the most important as =1, the next most important as 2 through to the least important as = 6.**

Please write in the "Rank" boxes to the right of the questions above.

HOW LIKELY IS IT THAT AN ACCIDENT WILL HAPPEN?

This section asks you to think about **tripping** hazards in a typical Supermarket and how likely you think an accident might be. I have chosen a Supermarket as I hope it will be familiar to most people.

Thinking about a **box** as a tripping hazard please complete questions 9, 10 & 11.

Please Circle / highlight your answer.

9. Please indicate how **likely** it is that a **box** will lead to an accident to a member of staff during the next 6 months.

(1)	(2)	(3)	(4)	(5)	(6)
Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly <u>Unlikely</u>	Fairly Likely	Very Likely	Extremely Likely

10. Please also score how **confident** you feel making this judgement.

(1)	(2)	(3)	(4)	(5)	(6)
Not at all confident	Not very confident	A little confident	Quite confident	Very confident	Certain

11. And lastly how **serious** do you think the outcome of the accident might be.

(1)	(2)	(3)	(4)	(5)	(6)
Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

## INVESTIGATING A TRIPPING ACCIDENT IN A SUPERMARKET

In the section that follows you are asked to read about a tripping accident to Mary (a part time checkout operator at ABC Supermarkets) who tripped over on a box near to the checkouts as she was going to the staff room for her mid morning break.

When answering the questions that follow please do so as a **safety professional**, responding in the same way as you would in your own workplace.

Use your own knowledge or experience of tripping accidents to add to the information given about the accident.

---

**Mary is a lady of about 55 years of age who has worked for as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

As a safety professional you have received a report on an accident to Mary in ABC Supermarkets

### ABC SUPERMARKET

**MESSAGE TO** SAFETY OFFICER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and tripped over a box and hurt her arm. An ambulance was called to take her to hospital. She has strained her right wrist, and she will be returning to work tomorrow.



As a Safety Professional please think back to a point in time **a week before** Mary's accident and complete questions 14,15 & 16.

Please Circle / highlight one option in each row.

A week before <b>Mary's</b> accident I would have rated the likelihood (risk) of a tripping accident from a box on the floor as						
14	(1)	(2)	(3)	(4)	(5)	(6)
	Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly Unlikely	Fairly Likely	Very Likely	Extremely Likely

Score how <b><u>confident</u></b> you feel making this prediction						
15	(1)	(2)	(3)	(4)	(5)	(6)
	Not at all confident	Not very confident	A little confident	Quite confident	Very confident	Certain

<b>A week before</b> Mary's accident I would have rated the <b>seriousness</b> of a tripping accident on a box on the floor as						
16	(1)	(2)	(3)	(4)	(5)	(6)
	Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

**COULD MARY'S ACCIDENT HAVE BEEN PREVENTED?**



As a Safety Professional do you believe that Mary's accident could have been prevented?

Please Circle / highlight one answer.

<b>17</b>	Yes	No	Not Sure
	(1)	(2)	(3)

If you answered YES please go to question 18. If you answered "No" or "Not Sure" please go to question 29

Please indicate how you believe Mary's tripping accident could have been prevented.

<b>18</b>	Mary's accident could have been prevented.....
-----------	--

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

<b>19</b>	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

As a Safety Professional please rate the level of responsibility for the following people for **preventing** Mary’s accident

The higher the number of points the more responsible you believe they were.

Please circle a number for **each** of the people in the table below

		Responsibility for <b><u>Preventing</u></b> Mary's accident						Rank Score 1-8
		0 = minimum & 4 = Maximum						
20	Mary	0	1	2	3	4		(Rank)
21	Bill the Shop floor Supervisor	0	1	2	3	4		(Rank)
22	The Manager	0	1	2	3	4		(Rank)
23	The Store Safety Officer	0	1	2	3	4		(Rank)
24	ABC Supermarkets)	0	1	2	3	4		(Rank)
25	Another worker	0	1	2	3	4		(Rank)
26	The Cleaner	0	1	2	3	4		(Rank)
27	A Customer	0	1	2	3	4		(Rank)

28 Please **Rank** these 8 people in order of **importance in preventing Mary's accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Knowing that a tripping accident has just happened. How would you rate/score the chance of **another** tripping accident happening again on a box in the next 6 months?

Please Circle / highlight your answer

The <b>Likelihood</b> of having <b>another</b> tripping accident from a box on the floor in the next 6 months						
29	(1)	(2)	(3)	(4)	(5)	(6)
	Extremely <u>Unlikely</u>	Very <u>Unlikely</u>	Fairly <u>Unlikely</u>	Fairly Likely	Very Likely	Extremely Likely

Score how <b>confident</b> you feel making this judgment						
30	(1)	(2)	(3)	(4)	(5)	(6)
	Not at all confident	Not very confident	Confident	Quite confident	Very confident	Certain

The **Seriousness** of an **another** tripping accident from a bx on the floor in the next 6 months.

31

	(1)	2	3	4	5	6
	Trivial	Minor	Quite Serious	Serious	Very serious	Extremely serious

**RESPONSIBILITY FOR CAUSING THE ACCIDENT**

As Safety Professional what would you say was **the cause** of Mary's accident?

32    The cause of Mary's accident was...

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

33

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

As a Safety Professional please rate the level of responsibility for the following people in **causing** this tripping accident

The higher the number of points the more responsible you believe they were.

Please circle a number along side **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident						Rank Score 1-8
		0 = minimum & 4 = Maximum						
34	Mary	0	1	2	3	4		(Rank)
35	Bill the Shop floor Supervisor	0	1	2	3	4		(Rank)
36	The Manager	0	1	2	3	4		(Rank)
37	The Store Safety Officer	0	1	2	3	4		(Rank)
38	ABC Supermarkets	0	1	2	3	4		(Rank)
39	Another worker	0	1	2	3	4		(Rank)
40	The Cleaner	0	1	2	3	4		(Rank)
41	A Customer	0	1	2	3	4		(Rank)

Please **Rank** these 8 people in order of **importance in causing the accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

**LUCKY OR UNLUCKY?**

Mary’s accident might be shown in a flow diagram something like the following one.

Please enter a score in the grey boxes for how **lucky** or **unlucky** you feel Mary was at each stage.

Thursday at 10.30  
Mary went for her rest  
break

42	<b>Stage A</b>				
(1)	(2)	(3)	(4)	(5)	
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky	

Mary walked towards  
the Staff Room

43	<b>Stage B</b>				
(1)	(2)	(3)	(4)	(5)	
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky	

A box had been left on  
the floor

44	<b>Stage C</b>				
(1)	(2)	(3)	(4)	(5)	
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky	

The box had not been cleared up

▼

45 Stage D				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary did not see the box on the floor

▼

46 Stage E				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary stepped on the box

▼

47 Stage F				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary tripped on the box

▼

48 Stage G				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky



Mary lost her balance and fell over

49 <b>Stage H</b>				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary fell awkwardly hurting her right arm.

50 <b>Stage I</b>				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Mary taken to hospital-  
Right wrist found to be  
strained. She will  
return to work  
tomorrow

51 <b>Stage J</b>				
(1)	(2)	(3)	(4)	(5)
Very Unlucky	Unlucky	Neither lucky or unlucky	Lucky	Very Lucky

Overall how would you rate the outcome for Mary following her accident?

Please Circle / highlight your answer.

(1)	(2)	(3)	(4)	(5)
Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

Please give your reasons in the box below

**53**

Using the Stages A to J in the flowchart please answer questions 54 to 61. Circle or highlight your answers

		Stages A-J					
<b>54</b>	At which stage did the sequence of events change from being normal/routine?	Before A	A	B	C	D	E
		F	G	H	I	J	
<b>55</b>	At which stage did Mary's accident become certain?	Before A	A	B	C	D	E
		F	G	H	I	J	
<b>56</b>	At which stage(s) did Mary have control over the situation?	Before A	A	B	C	D	E
		F	G	H	I	J	
<b>57</b>	At which stage(s) did the	Before A	A	B	C	D	E

Manager have control over the situation	F	G	H	I	J	
---	---	---	---	---	---	--

58	At which stage or stages did an <u>action</u> of any person become an important factor in Mary's accident	Before A	A	B	C	D	E
		F	G	H	I	J	

59	Who took the action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None

60	At which stage or stages did an <u>inaction</u> (failure to act) of any person become an important factor in Mary's accident	Before A	A	B	C	D	E
		F	G	H	I	J	

61	Who failed to take an action	Mary	Bill	Manager	Safety Officer
		Another worker	Cleaner	Customer	None

## **SAFETY NOW AND IN THE FUTURE**

For each of the following statements please indicate how well they describe you as a Safety Professional.

If the statement **is** a very good description of you (**very like you**) fill in a **1**, if it is **not** a very good description of you (**not at all like you**) please fill in a **5**.

Use the other numbers if you fall between 1-5.

Scale

Very good description / Very like me  1	Quite a good description /Quite like me  2	Not sure if it describes me.  3	Quite poor description / Quite unlike me.  4	Very poor description / Very unlike me.  5
---	--	--	---	---

(Please write in the grey areas to the right of each statement)

		Score
62	I think about safety in the future and try to influence things by my day to day behaviour.	
63	I think about safety in the future and do things now to achieve safety in the years ahead	
64	Thinking about safety I only do things to deal with the immediate situation, not worrying about the future	
65	What I do about safety is only influenced by how things work out in the short term	
66	My convenience is a big factor in how I make decisions or take actions about safety	
67	I am willing to put in extra time, effort and money now to ensure that the job is safe in the future.	
68	I think it is important to take warnings about safety seriously, even if it is unlikely that an accident will happen for many years.	
69	I think it is more important to do something about serious accidents in the future than minor accidents now.	
70	I generally ignore warnings about possible risks in the future, because they generally get sorted out before that happen	
71	I think it is unnecessary to change things now to prevent a possible future accident as problems can be dealt with nearer the time.	
72	I only act when there is an immediate risk, I prefer to take care of future problems that may occur at a later date	
73	I believe that safety today is more important than safety at some time in the future.	

**AND LASTLY SOME INFORMATION ABOUT YOU**

**74.** How many people do you have responsibility for either as a Manager or Supervisor

Please tick against one answer

1-5 people	(1)	<input type="checkbox"/>
6-10 people	(2)	<input type="checkbox"/>
11-15 people	(3)	<input type="checkbox"/>
16-20 people	(4)	<input type="checkbox"/>
21-25 people	(5)	<input type="checkbox"/>
26-30 people	(6)	<input type="checkbox"/>

31-35 people	(8)	<input type="checkbox"/>
36-40 people	(9)	<input type="checkbox"/>
41-45 people	(10)	<input type="checkbox"/>
46-50 people	(11)	<input type="checkbox"/>
More than 51 people	(12)	<input type="checkbox"/>
Not applicable	(13)	<input type="checkbox"/>

**75.** Are you (Please Tick)

Male	(1)	<input type="checkbox"/>
Female	(2)	<input type="checkbox"/>

**76** Which of the following categories best describes your organization. (Please Tick)

Retail Shop	(1)	<input type="checkbox"/>
Office	(2)	<input type="checkbox"/>
Hotel/ B&B	(3)	<input type="checkbox"/>
Leisure/ Cultural	(4)	<input type="checkbox"/>
Manufacturing	(5)	<input type="checkbox"/>
Agriculture	(6)	<input type="checkbox"/>

Wholesale Shop or warehouse	(7)	<input type="checkbox"/>
Catering, Restaurant or Bar	(8)	<input type="checkbox"/>
Residential Care	(9)	<input type="checkbox"/>
Consumer Services eg hairdresser/ beauty	(10)	<input type="checkbox"/>
Construction Industry	(11)	<input type="checkbox"/>
Central or Local Government	(12)	<input type="checkbox"/>
Other	(13)	<input type="checkbox"/>

**77.** Please give your current

age.

**78.** Which of the following best describes your current working location. (Please tick)

United Kingdom	(1)	
Europe	(2)	
South America	(3)	
Middle East	(4)	
Far East	(5)	

Ireland	(6)	
North America / Canada	(7)	
Australia/ New Zealand	(8)	
Africa	(9)	
Other	(10)	

**79.** Which of these best describes you. Please Circle / highlight

Manager / Supervisor (1)	Company Safety Officer (2)	Health and Safety Enforcement Officer (3)	Someone who has had an accident at work (4)	University or Nebosh Student studying occupational health /safety (5)
-----------------------------	-------------------------------	--	---	--

**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.  
I AM VERY GRATEFUL.  
PLEASE RETURN IT TO ME BY POST, FAX OR E-MAIL.**



**PLEASE DETACH THIS SHEET AND KEEP IT**

## **ACCIDENT INVESTIGATION QUESTIONNAIRE**

**Thank you for completing the questionnaire.  
Research such as this cannot happen with out your help.**

This questionnaire forms part of a study in to the ways in which accidents at work are viewed by Mangers & Supervisors, Safety Professionals and Accident Subjects themselves.

The same questions have been asked of each group and the results will be compared to see if there are any differences or similarities.

This stage of the research is concerned with how people think about hazards before and after an accident has happened and how they see responsibility for cause and prevention.

It is hoped that the results will help to improve our understanding of the ways these groups think about safety and accidents at work and will allow managers / supervisors and Safety Professionals to be better trained in accident investigation.

It is proposed that the results will be published in a professional Safety Journal. All results will be summarized and no individual respondent or employer will be identified. All answers to the questionnaire are treated in the strictest confidence. The information collected will be stored and treated in accordance with the Data Protection Act.

If you need to contact the researcher please do so by e-mail

██



## **THINKING ABOUT ACCIDENTS**

### **A QUESTIONNAIRE FOR PEOPLE WHO HAVE HAD AN ACCIDENT**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

**PSYCHOLOGY DEPARTMENT**

**CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT**

**17S**

Research supported by the



Dear Sir/Madam,

I am conducting research into how people think about accidents after they have happened.

I am particularly interested in your views, as you have been involved in an accident of some type in the last year.

I would be very grateful if you could spare about 10 minutes to complete the attached questionnaire. Your participation is entirely voluntary and any information you provide will be confidential, although questionnaire results may be published summarizing the findings. In addition, questionnaire completion is anonymous if you use the envelope provided.

Thank you,

Paul Lehane.

### **INSTRUCTIONS FOR COMPLETION**

Please try to answer as many of the questions as you can.

Any answers that you can provide are helpful so please return your form to me even if you do not complete all the questions.

Please write your answers in the grey shaded boxes or circle / tick the appropriate answer from the choices given.

### **RETURN OF QUESTIONNAIRE**

#### **BY POST**

If you have been sent the questionnaire by post a prepaid envelope should have been provided. Please use this to return the questionnaire. If not please return to:-

Paul Lehane c/o EHTS London Borough of Bromley Civic Centre Bromley England BR1 3UH
--

#### **BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

## THINKING ABOUT A SLIPPING ACCIDENT IN A SUPERMARKET

In the section that follows you are asked to read about a slipping accident to Mary (a part time checkout operator at ABC Supermarkets) who slipped over on a spillage of milk near to the checkouts as she was going to the staff room for her mid morning break.

Please try to imagine how **you** would feel if **you** were "Mary" and had been involved in the accident in the way it is described. It may help you to read the information several times to help you to do this

Use your own knowledge or experience of slipping accidents to add to the information given about the accident.

---

### THE ACCIDENT.

**Mary is a lady of about 55 years of age who has worked as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

Please imagine that you are "Mary" the person who has had an accident at ABC Supermarket

### ABC SUPERMARKET

MESSAGE TO STORE MANAGER

FROM BILL SHOP FLOOR SUPERVISOR

DATE THURSDAY 10 AUGUST

TIME 11.30 HRS

SUBJECT - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and slipped over on some spilt milk and hurt her arm. An ambulance was called to take her to hospital. She has **broken her right arm**, which has been plastered. **She will be off work for at least 3 weeks.**

The Store Manager spoke to Jane one of the other checkout operators who witnessed your accident and Bill the Shop Floor Supervisor. These are the notes from his conversations.

- Mary does not usually work on Thursdays but was covering for a friend who was on holiday
- Mary closed her checkout at the usual time for her mid morning break and waited for a friend on the checkout next to her to serve her last customer and they both went to their break together as usual.
- They were walking together past the checkouts when Mary slipped over on some spilt milk and fell awkwardly on her right arm.
- The First Aider attended and an ambulance was called to take Mary to hospital.
- At hospital she was found to have a broken right arm. She will be off work for at least 3 weeks with her arm in plaster.
- A customer had seen the milk and reported it to Bill the Supervisor
- Bill confirmed that the spillage had been reported by a customer and the cleaner had been asked to clear it up 5 minutes before the accident but had not got round to dealing with it.
- No warning signs had been put out.
- It is not known how long the milk had been on the floor before it was reported by the customer
- Spillages around the checkouts are very common.
- According to the Accident Book 4 other people had been injured in slipping accidents in the past 6 months

Imagining yourself as Mary and using your own experience of slipping accidents please answer the following questions.

### **IT COULD HAVE BEEN DIFFERENT "IF ONLY....."**

After an unwanted outcome such as failing an exam, missing a flight or an accident, people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder....I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

1. Following **your** (Mary's) accident you found yourself thinking **"If only....."** . How would you continue this to bring about a different outcome?

If only.....

.... Things could have been different.

2. Which **one** of the following people does the sentence above best refer to?

Please circle / highlight your answer

2	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

**COULD MARY'S ACCIDENT HAVE BEEN PREVENTED?**

Imagining yourself as Mary do you believe **your** accident could have been **prevented**?

Please Circle / highlight one answer.

3	Yes	No	Not Sure
	(1)	(2)	(3)

If you answered YES please go to question 4. If you answered "No" or "Not Sure" please go to question 6

Please indicate how you believe Mary's (**your**) slipping accident could have been prevented.

4

Mary's (My) accident could have been prevented.....
---

Which **one** of the following people does the answer above best refer to?

Please circle / highlight your answer

5

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

Imagining yourself as Mary please rate the level responsibility for **each** of the following people for **preventing** your (Mary’s) accident.

The higher the number of points the more responsible you believe they were.

(0= No responsibility, 4 = maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b><u>Preventing</u></b> Mary's accident					Rank Score
		0 = minimum & 4 = Maximum					1-8
6	Mary (You)	0 None	1	2	3	4 Maximum	(Rank)
7	Bill the Shop floor Supervisor	0 None	1	2	3	4 Maximum	(Rank)
8	The Manager	0 None	1	2	3	4 Maximum	(Rank)
9	The Store Safety Officer	0 None	1	2	3	4 Maximum	(Rank)
10	ABC Supermarkets (The Employer)	0 None	1	2	3	4 Maximum	(Rank)
11	Another worker	0 None	1	2	3	4 Maximum	(Rank)
12	The Cleaner	0 None	1	2	3	4 Maximum	(Rank)
13	A Customer	0 None	1	2	3	4 Maximum	(Rank)



14. Now please **Rank** these 8 people **in order of importance in preventing**  
**Mary's accident.**

**Rank the most important as =1, the next most important as 2 and the least  
important as = 8.**

Please write in the "**Rank**" boxes to the right of the questions above.

## WHO WAS RESPONSIBLE FOR CAUSING MARY'S ACCIDENT

Imagining yourself as Mary, what would you say was **the cause** of **your** (Mary's) accident?

15 The cause of Mary's accident was...

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

16

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

Imagining yourself as Mary please rate the level responsibility for **each** of the following people in **causing** your (Mary's) accident.

The higher the number of points the more responsible you believe they were.

(0= No responsibility, 4 = maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident					Rank Score 1-8
		0 = minimum & 4 = Maximum					
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23	The Cleaner	0	1	2	3	4	(Rank)
24	A Customer	0	1	2	3	4	(Rank)

25. Now please **Rank** these 8 people in order of **importance in causing the accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Overall how **lucky** or **unlucky** would you rate yourself (Mary) following the accident?

Please Circle / highlight your answer.

26	(1) Very <u>Un</u> lucky	(2) <u>U</u> n lucky	(3) Neither lucky or unlucky	(4) Lucky	(5) Very Lucky
----	--------------------------------	----------------------------	---------------------------------------	--------------	-------------------

**AND LASTLY SOME INFORMATION ABOUT YOU AND YOUR ACCIDENT**

27. Are you (Please Tick)

28

Male	(1)	
Female	(2)	

Please give your current age.	
-------------------------------	--

Thinking about **your own** recent accident, which of the following best describes what happened? Please tick the box

**29**

Hit by a moving, flying or falling object	1
Injured while handling, lifting or carrying	3
Hit by a moving vehicle	5
Fell from a height	7
Drowned or asphyxiated	9
Exposed to fire	11
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Slipped, tripped or fell on the same level	4
Hit something fixed or stationary	6
Trapped by something collapsing	8
Exposed to, or in contact with, a harmful substance	10
Exposed to an explosion	12
Injured by an animal	14
other	16

After your accident did you think about how things could have been different.

**30**

Yes (1)	No (2)	Cannot remember (3)
---------	--------	---------------------

If you answered "Yes" please answer question 31

31. If after your accident you found yourself thinking “If only.....” how did you continue this thought?

If only.....

.... Things could have been different.

**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE  
THIS QUESTIONNAIRE.  
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**[REDACTED]**



## **THINKING ABOUT ACCIDENTS**

### **A QUESTIONNAIRE FOR PEOPLE WHO HAVE HAD AN ACCIDENT**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

**PSYCHOLOGY DEPARTMENT**

**CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT**

**18S**

Research supported by the





Dear Sir/Madam,

I am conducting research into how people think about accidents after they have happened.

I am particularly interested in your views, as you have been involved in an accident of some type in the last year.

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Thank you,

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Paul Lehane c/o EHTS London Borough of Bromley Civic Centre Bromley England BR1 3UH
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## THINKING ABOUT A SLIPPING ACCIDENT IN A SUPERMARKET

In the section that follows you are asked to read about a slipping accident to Mary (a part time checkout operator at ABC Supermarkets) who slipped over on a spillage of milk near to the checkouts as she was going to the staff room for her mid morning break.

Please try to imagine how **you** would feel if **you** were "Mary" and had been involved in the accident in the way it is described. It may help you to read the information several times to help you to do this

Use your own knowledge or experience of slipping accidents to add to the information given about the accident.

---

**Mary is a lady of about 55 years of age who has worked as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

Please imagine that you are "Mary" the person who has had an accident at ABC Supermarket

### ABC SUPERMARKET

**MESSAGE TO** STORE MANAGER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and slipped over on some spilt milk and hurt her arm. An ambulance was called to take her to hospital. She has **broken her right arm**, which has been plastered. **She will be off work for at least 3 weeks.**

Imagining yourself as Mary and using your own experience of slipping accidents please answer the following questions.

**IT COULD HAVE BEEN DIFFERENT “IF ONLY.....”**

After an unwanted outcome such as failing an exam, missing a flight or an accident, people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder...I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

**1. Following your (Mary's) accident you found yourself thinking “If only.....” . How would you continue this to bring about a different outcome?**

If only.....

**.... Things could have been different.**

**2. Which one of the following people does the sentence above best refer to?**

Please circle / highlight your answer

2	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

**COULD MARY’S ACCIDENT HAVE BEEN PREVENTED?**

Imagining yourself as Mary do you believe that **your** accident could have been prevented?

Please Circle / highlight one answer.

3


Yes	No	Not Sure
(1)	(2)	(3)

If you answered YES please go to question 4. If you answered "No" or "Not Sure" please go to question 6

Please indicate how you believe Mary's (**your**) slipping accident could have been prevented.

4

Mary’s accident could have been prevented.....



Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

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Mary	Bill Shop Supervisor	Store Manager
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Imagining yourself as Mary please rate the level responsibility for **each** of the following people for **preventing** your (Mary’s) accident.

The higher the number of points the more responsible you believe they were.

(0= No responsibility, 4 = maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b><u>Preventing</u></b> Mary's accident					Rank Score
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- 14.** Now please **Rank** these 8 people **in order of importance in preventing Mary’s accident. Rank the most important as =1, the next most important as 2 and the least important as = 8.**

Please write in the "**Rank**" boxes to the right of the questions above.

**WHO WAS RESPONSIBLE FOR CAUSING MARY'S ACCIDENT**

Imagining yourself as Mary, what would you say was **the cause** of **your** (Mary's) accident?

15    The cause of Mary's accident was...

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

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Mary	Bill Shop Supervisor	Store Manager
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The cleaner	A customer	None of these

Imagining yourself as Mary please rate the level responsibility for **each** of the following people in **causing** your (Mary's) accident.

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25. Now please **Rank** these 8 people in order of **importance in causing the accident**.  
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Please write in the "Rank" boxes to the right of the questions above.



Overall how **lucky** or **unlucky** would you rate yourself (Mary) following the accident?

Please Circle / highlight your answer.

26	(1)	(2)	(3)	(4)	(5)
	Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

**AND LASTLY SOME INFORMATION ABOUT YOU AND YOUR ACCIDENT**

27. Are you (Please Tick)

28

Male	(1)	
Female	(2)	

Please give your current age.	
-------------------------------	--

Thinking about **your own** recent accident, which of the following best describes what happened? Please tick the box

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Exposed to, or in contact with, a harmful substance	10
Exposed to an explosion	12
Injured by an animal	14
other	16

After your accident did you think about how things could have been different.

3 0	Yes (1)	No (2)	Cannot remember (3)

If you answered "Yes" please answer question 31

**31.** If after your accident you found yourself thinking “**If only.....**” how did you continue this thought?

<p>If only.....</p> <p>.... Things could have been different.</p>
---

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## **THINKING ABOUT ACCIDENTS**

### **A QUESTIONNAIRE FOR PEOPLE WHO HAVE HAD AN ACCIDENT**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

**PSYCHOLOGY DEPARTMENT**

**CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT**

**19S**

Research supported by the



Dear Sir/Madam,

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I am particularly interested in your views, as you have been involved in an accident of some type in the last year.

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Thank you,

Paul Lehane.

### **INSTRUCTIONS FOR COMPLETION**

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In the section that follows you are asked to read about a slipping accident to Mary (a part time checkout operator at ABC Supermarkets) who slipped over on a spillage of milk near to the checkouts as she was going to the staff room for her mid morning break.

Please try to imagine how **you** would feel if **you** were "Mary" and had been involved in the accident in the way it is described. It may help you to read the information several times to help you to do this

Use your own knowledge or experience of slipping accidents to add to the information given about the accident.

---

### THE ACCIDENT

**Mary is a lady of about 55 years of age who has worked as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

Please imagine that you are "Mary" the person who has had an accident at ABC Supermarket

#### ABC SUPERMARKET

**MESSAGE TO** STORE MANAGER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and slipped over on some spilt milk and hurt her arm. An ambulance was called to take her to hospital. She has **strained her right wrist**, and she will be **returning to work tomorrow**.

The Store Manager spoke to Jane one of the other checkout operators who witnessed your accident and Bill the Shop Floor Supervisor. These are the notes from his conversations.

- Mary does not usually work on Thursdays but was covering for a friend who was on holiday
- Mary closed her checkout at the usual time for her mid morning break and waited for a friend on the checkout next to her to serve her last customer and they both went to their break together as usual.
- They were walking together past the checkouts when Mary slipped over on some spilt milk and fell awkwardly on her right arm.
- The First Aider attended and an ambulance was called to take Mary to hospital.
- At hospital she was found to have strained her right wrist. She will be returning to work tomorrow.
- A customer had seen the milk and reported it to Bill the Supervisor
- Bill confirmed that the spillage had been reported by a customer and the cleaner had been asked to clear it up 5 minutes before the accident but had not got round to dealing with it.
- No warning signs had been put out.
- It is not known how long the milk had been on the floor before it was reported by the customer
- Spillages around the checkouts are very common.
- According to the Accident Book 4 other people had been injured in slipping accidents in the past 6 months





**COULD MARY’S ACCIDENT HAVE BEEN PREVENTED?**

Imagining yourself as Mary do you believe that the accident could have been prevented?

Please Circle / highlight one answer.

3

Yes	No	Not Sure
(1)	(2)	(3)

If you answered YES please go to question 4. If you answered "No" or "Not Sure" please go to question 6

Please indicate how you believe Mary's slipping accident could have been prevented.

4

Mary’s accident could have been prevented.....
--

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

5

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

Imagining yourself as Mary please rate the level responsibility for **each** of the following people for **preventing** your (Mary’s) accident

The higher the number of points the more responsible you believe they were.

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**14.** Now please **Rank** these 8 people **in order of importance in preventing Mary’s accident.**

**Rank the most important as =1, the next most important as 2 and the least important as = 8.**

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Imagining yourself as Mary, what would you say was **the cause** of your (Mary's) accident?

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Which **one** of the following people does the answer above best refer to?

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Please give your current age.	
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RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

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In the section that follows you are asked to read about a slipping accident to Mary (a part time checkout operator at ABC Supermarkets) who slipped over on a spillage of milk near to the checkouts as she was going to the staff room for her mid morning break.

Please try to imagine how **you** would feel if **you** were "Mary" and had been involved in the accident in the way it is described. It may help you to read the information several times to help you to do this

Use your own knowledge or experience of slipping accidents to add to the information given about the accident.

---

### THE ACCIDENT

**Mary is a lady of about 55 years of age who has worked as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

Please imagine that you are "Mary" the person who has had an accident at ABC Supermarket

### ABC SUPERMARKET

**MESSAGE TO** STORE MANAGER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and slipped over on some spilt milk and hurt her arm. An ambulance was called to take her to hospital. She has **strained her right wrist**, and she will be **returning to work tomorrow**.

Imagining yourself as Mary and using your own experience of slipping accidents please answer the following questions.

**IT COULD HAVE BEEN DIFFERENT “IF ONLY.....”**

After an unwanted outcome such as failing an exam, missing a flight or an accident, people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder....I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

**1.** Following your (Mary's) accident you found yourself thinking **“If only.....”** . How would you continue this thought to bring about a different outcome?

If only.....

**.... Things could have been different.**

2. Which **one** of the following people does the sentence above best refer to?

Please circle / highlight your answer

2	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

**COULD MARY’S ACCIDENT HAVE BEEN PREVENTED?**

Imagining yourself as Mary do you believe that the accident could have been prevented?

Please Circle / highlight one answer.

3	Yes	No	Not Sure
	(1)	(2)	(3)

If you answered YES please go to question 4. If you answered "No" or "Not Sure" please go to question 6

Please indicate how you believe Mary's slipping accident could have been prevented.

4	Mary’s accident could have been prevented.....
---	--

Which **one** of the following people does the answer above best refer to?

Please circle / highlight your answer

5

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

Imagining yourself as Mary please rate the level responsibility for **each** of the following people for **preventing** your (Mary’s) accident.

The higher the number of points the more responsible you believe they were.

(0= No responsibility, 4 = maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Preventing</b> Mary's accident					Rank Score 1-8
		0 = minimum & 4 = Maximum					
<b>6</b>	Mary (You)	0	1	2	3	4	(Rank)
<b>7</b>	Shop floor Supervisor	0	1	2	3	4	(Rank)
<b>8</b>	The Manager	0	1	2	3	4	(Rank)
<b>9</b>	The Store Safety Officer	0	1	2	3	4	(Rank)
<b>10</b>	ABC Supermarkets	0	1	2	3	4	(Rank)
<b>11</b>	Another worker	0	1	2	3	4	(Rank)
<b>12</b>	The Cleaner	0	1	2	3	4	(Rank)
<b>13</b>	A Customer	0	1	2	3	4	(Rank)

**14** Now please **Rank** these 8 people in order of **importance in preventing Mary's accident.**

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.



**WHO WAS RESPONSIBLE FOR CAUSING MARY'S ACCIDENT**

Imagining yourself as Mary, what would you say was **the cause** of **your** (Mary's) accident?

15 

	The cause of Mary's accident was...
--	-------------------------------------

Which one of the following people does the answer above best refer to?

Please circle / highlight your answer

16

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

Imagining yourself as Mary please rate the level responsibility for **each** of the following people in **causing** your (Mary's) accident.

The higher the number of points the more responsible you believe they were.

(0= No responsibility, 4 = maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident					Rank
		0 = minimum & 4 = Maximum					Score
							1-8
17	Mary (You)	0	1	2	3	4	(Rank)
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22	Another worker	0	1	2	3	4	(Rank)
23	The Cleaner	0	1	2	3	4	(Rank)
24	A Customer	0	1	2	3	4	(Rank)

25. Now please **Rank** these 8 people in order of **importance in causing the accident**.

**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.

Overall how **lucky** or **unlucky** would you rate yourself (Mary) following the accident?

Please Circle / highlight your answer.

26	(1)	(2)	(3)	(4)	(5)
	Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

**AND LASTLY SOME INFORMATION ABOUT YOU AND YOUR ACCIDENT**

27. Are you (Please Tick)

Male	(1)	
Female	(2)	

28

Please give your current age.	
-------------------------------	--

Thinking about **your own** recent accident, which of the following best describes what happened? Please tick the box

29

Hit by a moving, flying or falling object	1
Injured while handling, lifting or carrying	3
Hit by a moving vehicle	5
Fell from a height	7
Drowned or asphyxiated	9
Exposed to fire	11
Contact with electricity or an electrical discharge	13
Physically assaulted by a person	15

Contact with moving machinery or material being machined	2
Slipped, tripped or fell on the same level	4
Hit something fixed or stationary	6
Trapped by something collapsing	8
Exposed to, or in contact with, a harmful substance	10
Exposed to an explosion	12
Injured by an animal	14
other	16



## **ACCIDENT INVESTIGATION QUESTIONNAIRE**

**Thank you for completing the questionnaire.  
Research such as this cannot happen without your help.**

This questionnaire forms part of a study into the ways in which accidents at work are viewed by Managers & Supervisors, Safety Professionals and Accident Subjects themselves.

The same questions have been asked of each group and the results will be compared to see if there are any differences or similarities.

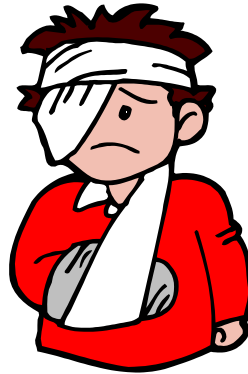
This stage of the research is concerned with how people think about hazards before and after an accident has happened and how they see responsibility for cause and prevention.

It is hoped that the results will help to improve our understanding of the ways these groups think about safety and accidents at work and will allow managers / supervisors and Safety Professionals to be better trained in accident investigation.

It is proposed that the results will be published in a professional Safety Journal. All results will be summarized and no individual respondent or employer will be identified. All answers to the questionnaire are treated in the strictest confidence. The information collected will be stored and treated in accordance with the Data Protection Act.

If you need to contact the researcher please do so by e-mail

██



## **THINKING ABOUT ACCIDENTS**

### **A QUESTIONNAIRE FOR PEOPLE WHO HAVE HAD AN ACCIDENT**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

**21S**

Research supported by the



Dear Sir/Madam,

I am conducting research into how people think about accidents after they have happened.

I am particularly interested in your views, as you have been involved in an accident of some type in the last year.

I would be very grateful if you could spare about 10 minutes to complete the attached questionnaire. Your participation is entirely voluntary and any information you provide will be confidential, although questionnaire results may be published summarizing the findings. In addition, questionnaire completion is anonymous if you use the envelope provided.

Thank you,

Paul Lehane.

### **INSTRUCTIONS FOR COMPLETION**

Please try to answer as many of the questions as you can.

Any answers that you can provide are helpful so please return your form to me even if you do not complete all the questions.

Please write your answers in the grey shaded boxes or circle / tick the appropriate answer from the choices given.

### **RETURN OF QUESTIONNAIRE**

#### **BY POST**

If you have been sent the questionnaire by post a prepaid envelope should have been provided. Please use this to return the questionnaire. If not please return to:-

Paul Lehane c/o <b>EHTS</b> <b>London Borough of Bromley</b> <b>Civic Centre Bromley England BR1 3UH</b>
---

#### **BY FAX**

You may Fax your completed questionnaire to me on XXXXXXXXXX

## THINKING ABOUT A TRIPPING ACCIDENT IN A SUPERMARKET

In the section that follows you are asked to read about a tripping accident to Mary (a part time checkout operator at ABC Supermarkets) who tripped over a box near to the checkouts as she was going to the staff room for her mid morning break.

Please try to imagine how **you** would feel if **you** were "Mary" and had been involved in the accident in the way it is described. It may help you to read the information several times to help you to do this

Use your own knowledge or experience of tripping accidents to add to the information given about the accident.

---

### THE ACCIDENT

**Mary is a lady of about 55 years of age who has worked as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

Please imagine that you are "Mary" the person who has had an accident at ABC Supermarket

#### ABC SUPERMARKET

**MESSAGE TO** STORE MANAGER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and tripped over on a box and hurt her arm. An ambulance was called to take her to hospital. She has **broken her right arm**, which has been plastered. **She will be off work for at least 3 weeks.**



The Store Manager spoke to Jane one of the other checkout operators who witnessed your accident and Bill the Shop Floor Supervisor. These are the notes from his conversations.

- Mary does not usually work on Thursdays but was covering for a friend who was on holiday
- Mary closed her checkout at the usual time for her mid morning break and waited for a friend on the checkout next to her to serve her last customer and they both went to their break together as usual.
- They were walking together past the checkouts when Mary tripped over a box on the floor and fell awkwardly on her right arm.
- The First Aider attended and an ambulance was called to take Mary to hospital.
- At hospital she was found to have a broken right arm. She will be off work for at least 3 weeks with her arm in plaster.
- A customer had seen the box and reported it to Bill the Supervisor
- Bill confirmed that the box had been reported by a customer and the cleaner had been asked to clear it up 5 minutes before the accident but had not got round to dealing with it.
- No warning signs had been put out.
- It is not known how long the box had been on the floor before it was reported by the customer
- The area round the checkouts often gets untidy.
- According to the Accident Book 4 other people had been injured in tripping accidents in the past 6 months

Imagining yourself as Mary and using your own experience of tripping accidents please answer the following questions.

### **IT COULD HAVE BEEN DIFFERENT “IF ONLY.....”**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say, "If only ... I had worked harder....I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

1. Following **your** (Mary's) accident you found yourself thinking “**If only.....**” . How would you continue this to bring about a different outcome?

If only.....

.... Things could have been different.

2. Which **one** of the following people does the sentence above best refer to?

Please circle / highlight your answer

2	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

**COULD MARY’S ACCIDENT HAVE BEEN PREVENTED?**

Imagining yourself as Mary do you believe that **your** accident could have been **prevented?**

Please Circle / highlight one answer.

3

Yes (1)	No (2)	Not Sure (3)
------------	-----------	-----------------

If you answered YES please go to question 4. If you answered "No" or "Not sure" please go to question 6

Please indicate how you believe Mary's (**your**) tripping accident could have been prevented.

4

Mary’s accident could have been prevented.....
--

Which **one** of the following people does the answer above best refer to?

Please circle / highlight your answer

5

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

Imagining yourself as Mary please rate the responsibility for **each** of the following people for **preventing** your (Mary’s) accident.

The higher the number of points the more responsible you believe they were.

(0= No responsibility, 4 = maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b><u>Preventing</u></b> Mary's accident  0 = minimum & 4 = Maximum					Rank Score 1-8
<b>6</b>	Mary (You)	0	1	2	3	4	(Rank)
<b>7</b>	Shop floor Supervisor	0	1	2	3	4	(Rank)
<b>8</b>	The Manager	0	1	2	3	4	(Rank)
<b>9</b>	The Store Safety Officer	0	1	2	3	4	(Rank)
<b>10</b>	ABC Supermarkets	0	1	2	3	4	(Rank)
<b>11</b>	Another worker	0	1	2	3	4	(Rank)
<b>12</b>	The Cleaner	0	1	2	3	4	(Rank)
<b>13</b>	A Customer	0	1	2	3		(Rank)

14. Now please **Rank** these 8 people in order of importance in **preventing** Mary's accident. Rank the most important as =1, the next most important as 2 and the least important as = 8.

Please write in the "**Rank**" boxes to the right of the questions above.

**WHO WAS RESPONSIBLE FOR CAUSING MARY'S ACCIDENT**

Imagining yourself as Mary, what would you say was **the cause** of **your** (Mary's) accident?

15 The cause of Mary's accident was...

Which **one** of the following people does the answer above best refer to?

Please circle / highlight your answer

16

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

Imagining yourself as Mary please rate responsibility for **each** of the following people in **causing** your (Mary's) accident

The higher the number of points the more responsible you believe they were.

(0= No responsibility, 4 = maximum responsibility)

Please circle a number for **each** of the people in the table below

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22	Another worker	0	1	2	3	4	(Rank)
23	The Cleaner	0	1	2	3	4	(Rank)
24	A Customer	0	1	2	3	4	(Rank)

25. Now please **Rank** these 8 people **in order of importance in preventing Mary's accident.**

**Rank the most important as =1, the next most important as 2 and the least important as = 8.**

Please write in the "**Rank**" boxes to the right of the questions above.

Overall how **lucky** or **unlucky** would you rate yourself (Mary) following the accident?

Please Circle / highlight your answer.

26	(1)	(2)	(3)	(4)	(5)
	Very <u>Un</u> lucky	<u>Un</u> lucky	Neither lucky or unlucky	Lucky	Very Lucky

**AND LASTLY SOME INFORMATION ABOUT YOU AND YOUR ACCIDENT**

27. Are you (Please Tick)

28

Male	(1)	
Female	(2)	

Please give your current age.	
-------------------------------	--



Thinking about **your own** recent accident, which of the following best describes what happened? Please tick the box

29	Hit by a moving, flying or falling object	1	Contact with moving machinery or material being machined	2
	Injured while handling, lifting or carrying	3	Slipped, tripped or fell on the same level	4
	Hit by a moving vehicle	5	Hit something fixed or stationary	6
	Fell from a height	7	Trapped by something collapsing	8
	Drowned or asphyxiated	9	Exposed to, or in contact with, a harmful substance	10
	Exposed to fire	11	Exposed to an explosion	12
	Contact with electricity or an electrical discharge	13	Injured by an animal	14
	Physically assaulted by a person	15	other	16

After your accident did you think about how things could have been different.

30	Yes (1)	No (2)	Cannot remember (3)
----	---------	--------	---------------------

If you answered "Yes" please answer question 31

**31.** If after your accident you found yourself thinking “**If only.....**” how did you continue this thought?

If only.....

.... Things could have been different.

**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE  
THIS QUESTIONNAIRE.  
I AM VERY GRATEFUL.  
PLEASE RETURN IT TO ME BY POST, FAX.**

.

**PLEASE DETACH THIS SHEET AND KEEP IT**

## **ACCIDENT INVESTIGATION QUESTIONNAIRE**

**Thank you for completing the questionnaire.  
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If you need to contact the researcher please do so by e-mail

██



## **THINKING ABOUT ACCIDENTS**

### **A QUESTIONNAIRE FOR PEOPLE WHO HAVE HAD AN ACCIDENT**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

PSYCHOLOGY DEPARTMENT

CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT

**22S**

Research supported by the



Dear Sir/Madam,

I am conducting research into how people think about accidents after they have happened.

I am particularly interested in your views, as you have been involved in an accident of some type in the last year.

I would be very grateful if you could spare about 10 minutes to complete the attached questionnaire. Your participation is entirely voluntary and any information you provide will be confidential, although questionnaire results may be published summarizing the findings. In addition, questionnaire completion is anonymous if you use the envelope provided.

Thank you,

Paul Lehane.

### **INSTRUCTIONS FOR COMPLETION**

Please try to answer as many of the questions as you can.

Any answers that you can provide are helpful so please return your form to me even if you do not complete all the questions.

Please write your answers in the grey shaded boxes or circle / tick the appropriate answer from the choices given.

### **RETURN OF QUESTIONNAIRE**

#### **BY POST**

If you have been sent the questionnaire by post a prepaid envelope should have been provided. Please use this to return the questionnaire. If not please return to:-

Paul Lehane c/o EHTS London Borough of Bromley Civic Centre Bromley England BR1 3UH
--

#### **BY FAX**

You may Fax your completed questionnaire to me on [REDACTED]

## THINKING ABOUT A TRIPPING ACCIDENT IN A SUPERMARKET

In the section that follows you are asked to read about a tripping accident to Mary (a part time checkout operator at ABC Supermarkets) who tripped over on a box near to the checkouts as she was going to the staff room for her mid morning break.

Please try to imagine how you would feel if you were "Mary" and had been involved in the accident in the way it is described. It may help you to read the information several times to help you to do this

Use your own knowledge or experience of tripping accidents to add to the information given about the accident.

---

### THE ACCIDENT

**Mary is a lady of about 55 years of age who has worked as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

Please imagine that you are "Mary" the person who has had an accident at ABC Supermarket

#### ABC SUPERMARKET

MESSAGE TO STORE MANAGER

FROM BILL SHOP FLOOR SUPERVISOR

DATE THURSDAY 10 AUGUST

TIME 11.30 HRS

SUBJECT - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and tripped over on a box and hurt her arm. An ambulance was called to take her to hospital. She has **broken her right arm**, which has been plastered. **She will be off work for at least 3 weeks.**

Imagining yourself as Mary and using your own experience of tripping accidents please answer the following questions.

**IT COULD HAVE BEEN DIFFERENT “IF ONLY.....”**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder....I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

**1. Following your (Mary's) accident you found yourself thinking “If only.....” . How would you continue this to bring about a different outcome?**

If only.....

.... Things could have been different.

**2. Which one of the following people does the sentence above best refer to?**

Please circle / highlight your answer

2

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**COULD MARY’S ACCIDENT HAVE BEEN PREVENTED?**

Imagining yourself as Mary do you believe that **your** accident could have been **prevented?**

Please Circle / highlight one answer.

3

Yes	No	Not Sure
(1)	(2)	(3)

If you answered YES please go to question 4. If you answered "No" or "Not Sure" please go to question 6

Please indicate how you believe Mary's tripping accident could have been prevented.

4

Mary’s (My) accident could have been prevented.....
---

Which **one** of the following people does the answer above best refer to?

Please circle / highlight your answer

5

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these



WHO HAD RESPONSIBILITY FOR PREVENTING MARY'S ACCIDENT?

Imagining yourself as Mary please rate the level of responsibility for **each** of the following people for **preventing** your (Mary's) accident.

The higher the number of points the more responsible you believe they were.

(0= No responsibility, 4 = maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Preventing</b> Mary's accident  0 = minimum & 4 = Maximum					Rank Score 1-8
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8	The Manager	0	1	2	3	4	(Rank)
9	The Store Safety Officer	0	1	2	3	4	(Rank)
10	ABC Supermarkets	0	1	2	3	4	(Rank)
11	Another worker	0	1	2	3	4	(Rank)
12	The Cleaner	0	1	2	3	4	(Rank)
13	A Customer	0	1	2	3	4	(Rank)

14. Now please **Rank** these 8 people **in order of importance in preventing Mary's accident.**

**Rank the most important as =1, the next most important as 2 and the least important as = 8.**

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Imagining yourself as Mary, what would you say was **the cause** of **your** (Mary's) accident?

15 The cause of Mary's accident was...

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Please write in the "Rank" boxes to the right of the questions above.

Overall how **lucky** or **unlucky** would you rate yourself (Mary) following the accident?

Please Circle / highlight your answer.

26	(1)	(2)	(3)	(4)	(5)
	Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

**AND LASTLY SOME INFORMATION ABOUT YOU AND YOUR ACCIDENT**

27. Are you (Please Tick)

28

Male	(1)	
Female	(2)	

Please give your current age.	
-------------------------------	--

Thinking about **your own** recent accident, which of the following best describes what happened? Please tick the box

29

Hit by a moving, flying or falling object	1
Injured while handling, lifting or carrying	3
Hit by a moving vehicle	5
Fell from a height	7
Drowned or asphyxiated	9
Exposed to fire	11
Contact with electricity or an electrical discharge	13
Physically assaulted by a person	15

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Hit something fixed or stationary	6
Trapped by something collapsing	8
Exposed to, or in contact with, a harmful substance	10
Exposed to an explosion	12
Injured by an animal	14
other	16

After your accident did you think about how things could have been different.

<b>30</b>	Yes (1)	No (2)	Cannot remember (3)
-----------	---------	--------	------------------------

If you answered "Yes" please answer question 31

**31.** If after your accident you found yourself thinking “**If only.....**” how did you continue this thought?

<p>If only.....</p> <p>.... <b>Things could have been different.</b></p>
--

**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE  
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I AM VERY GRATEFUL.  
PLEASE RETURN IT TO ME BY POST, FAX.**

**PLEASE DETACH THIS SHEET AND KEEP IT**

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If you need to contact the researcher please do so by e-mail

██



## **THINKING ABOUT ACCIDENTS**

### **A QUESTIONNAIRE FOR PEOPLE WHO HAVE HAD AN ACCIDENT**

RESEARCHER PAUL LEHANE

SUPERVISOR DR. DAVID HARDMAN

**PSYCHOLOGY DEPARTMENT**

**CALCUTTA HOUSE  
OLD CASTLE STREET LONDON E1 7NT**

**23S**

Research supported by the





Dear Sir/Madam,

I am conducting research into how people think about accidents after they have happened.

I am particularly interested in your views, as you have been involved in an accident of some type in the last year.

I would be very grateful if you could spare about 10 minutes to complete the attached questionnaire. Your participation is entirely voluntary and any information you provide will be confidential, although questionnaire results may be published summarizing the findings. In addition, questionnaire completion is anonymous if you use the envelope provided.

Thank you,

Paul Lehane.

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## THINKING ABOUT A TRIPPING ACCIDENT IN A SUPERMARKET

In the section that follows you are asked to read about a tripping accident to Mary (a part time checkout operator at ABC Supermarkets) who tripped over on a box near to the checkouts as she was going to the staff room for her mid morning break.

Please try to imagine how you would feel if you were "Mary" and had been involved in the accident in the way it is described. It may help you to read the information several times to help you to do this

Use your own knowledge or experience of tripping accidents to add to the information given about the accident.

---

### THE ACCIDENT

**Mary is a lady of about 55 years of age who has worked as a part time checkout operator for about 8 years. She usually works Monday Tuesday and Wednesday but had come in on this particular Thursday to cover for a friend who was on holiday.**

Please imagine that you are "Mary" the person who has had an accident at ABC Supermarket

### ABC SUPERMARKET

**MESSAGE TO** STORE MANAGER

**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

At about 10.30am Mary went for her rest break and tripped over on a box and hurt her arm. An ambulance was called to take her to hospital. She has **strained her right wrist**, and **she will be returning to work tomorrow.**

The Store Manager spoke to Jane one of the other checkout operators who witnessed your accident and Bill the Shop Floor Supervisor. These are the notes from his conversations.

- Mary does not usually work on Thursdays but was covering for a friend who was on holiday
- Mary closed her checkout at the usual time for her mid morning break and waited for a friend on the checkout next to her to serve her last customer and they both went to their break together as usual.
- They were walking together past the tills when Mary tripped over on a box and fell awkwardly on her right arm.
- The First Aider attended and an ambulance was called to take Mary to hospital.
- At hospital she was found to have strained her right wrist. She will be returning to work tomorrow.
- A customer had seen the box and reported it to Bill the Supervisor
- Bill confirmed that the box had been reported by a customer and the cleaner had been asked to clear it up 5 minutes before the accident but had not got round to dealing with it.
- No warning signs had been put out.
- It is not known how long the box had been on the floor before it was reported by the customer
- The area round the checkouts often gets untidy.
- According to the Accident Book 4 other people had been injured in tripping accidents in the past 6 months

Imagining yourself as Mary and using your own experience of tripping accidents please answer the following questions.

### **IT COULD HAVE BEEN DIFFERENT “IF ONLY.....”**

After an unwanted outcome such as failing an exam, missing a flight or an accident people often think about how things could have been different.

For example: -

After failing an exam a student might say "If only ... I had worked harder....I might have passed" and a family who miss their holiday flight might say " If only.... we had left earlier..... we might have caught the flight

**1.** Following **your** (Mary's) accident you found yourself thinking “**If only.....**” . How would you continue this to bring about a different outcome?

If only.....

.... Things could have been different.

2. Which one of the following people does the sentence above best refer to?

Please circle / highlight your answer.

2	Mary	Bill Shop Supervisor	Store Manager
	Safety Officer	ABC Supermarket	Another worker
	The cleaner	A customer	None of these

**COULD MARY’S ACCIDENT HAVE BEEN PREVENTED?**

Imagining yourself as Mary do you believe that **your** accident could have been **prevented?**

Please Circle / highlight one answer.

3

Yes	No	Not Sure
(1)	(2)	(3)

If you answered YES please go to question 4. If you answered "No" or "Not Sure" please go to question 6

Please indicate how you believe (**your**) Mary's tripping accident could have been prevented.

4

Mary’s accident could have been prevented.....
--

Which **one** of the following people does the answer above best refer to?

Please circle / highlight your answer.

5

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

**WHO HAD RESPONSIBILITY FOR PREVENTING MARY’S ACCIDENT?**

Imagining yourself as Mary please rate the level of responsibility of **each** of the following people for **preventing** your (Mary’s) accident.

The higher the number of points the more responsible you believe they were.

(0= No responsibility, 4 = maximum responsibility)

Please circle a number for **each** of the people in the table below

		Responsibility for <b>Preventing</b> Mary's accident					Rank
		0 = minimum & 4 = Maximum					Score
		0	1	2	3	4	1-8
6	Mary (You)	0	1	2	3	4	(Rank)
7	Bill the Supervisor	0	1	2	3	4	(Rank)
8	The Manager	0	1	2	3	4	(Rank)
9	Safety Officer	0	1	2	3	4	(Rank)
10	ABC Supermarkets	0	1	2	3	4	(Rank)
11	Another worker	0	1	2	3	4	(Rank)
12	The Cleaner	0	1	2	3	4	(Rank)
13	A Customer	0	1	2	3	4	(Rank)

14. Now please **Rank** these 8 people **in order of importance in preventing Mary’s accident.**

**Rank the most important as =1, the next most important as 2 and the least important as = 8.**

Please write in the "**Rank**" boxes to the right of the questions above.

**WHO WAS RESPONSIBLE FOR CAUSING MARY'S ACCIDENT**

Imagining yourself as Mary, what would you say was **the cause** of **your** (Mary's) accident?

15 The cause of Mary's accident was...

Which **one** of the following people does the answer above best refer to?

Please circle / highlight your answer

16

Mary	Bill Shop Supervisor	Store Manager
Safety Officer	ABC Supermarket	Another worker
The cleaner	A customer	None of these

Imagining yourself as Mary please rate the level of responsibility for the following people in **causing** your (Mary's) accident

The higher the number of points the more responsible you believe they were.

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Please circle a number for **each** of the people in the table below

		Responsibility for <b>Causing</b> Mary's accident					Rank
		0 = minimum & 4 = Maximum					Score
		0	1	2	3	4	1-8
17	Mary (You)						(Rank)
18	Bill the Shop floor Supervisor						(Rank)
19	The Manager						(Rank)
20	The Store Safety Officer						(Rank)
21	ABC Supermarkets (The Employer)						(Rank)
22	Another worker						(Rank)
23	The Cleaner						(Rank)
24	A Customer						(Rank)

25. Now please **Rank** these 8 people in order of **importance in causing the accident**.  
**Rank the most important as =1, the next most important as 2 through to the least important as = 8.**

Please write in the "Rank" boxes to the right of the questions above.



Overall how **lucky** or **unlucky** would you rate yourself (Mary) following the accident?

Please Circle / highlight your answer.

26	(1)	(2)	(3)	(4)	(5)
	Very <u>Unlucky</u>	<u>Unlucky</u>	Neither lucky or unlucky	Lucky	Very Lucky

**AND LASTLY SOME INFORMATION ABOUT YOU AND YOUR ACCIDENT**

27. Are you (Please Tick)

28

Male	(1)	
Female	(2)	

Please give your current age.	
-------------------------------	--

Thinking about **your own** recent accident, which of the following best describes what happened? Please tick the box

29

Hit by a moving, flying or falling object	1
Injured while handling, lifting or carrying	3
Hit by a moving vehicle	5
Fell from a height	7
Drowned or asphyxiated	9
Exposed to fire	11
Contact with electricity or an electrical discharge	13
Physically assaulted by a person	15

Contact with moving machinery or material being machined	2
Slipped, tripped or fell on the same level	4
Hit something fixed or stationary	6
Trapped by something collapsing	8
Exposed to, or in contact with, a harmful substance	10
Exposed to an explosion	12
Injured by an animal	14
other	16

After your accident did you think about how things could have been different.

30

Yes (1)	No (2)	Cannot remember (3)
---------	--------	---------------------

If you answered "Yes" please answer question 31

**31.** If after your accident you found yourself thinking “**If only.....**” how did you continue this thought?

If only.....

.... Things could have been different.

**THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE  
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### THE ACCIDENT

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#### **ABC SUPERMARKET**

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**FROM** BILL SHOP FLOOR SUPERVISOR

**DATE** THURSDAY 10 AUGUST

**TIME** 11.30 HRS

**SUBJECT** - ACCIDENT TO MARY

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Please Circle / highlight one answer.

<b>3</b>	Yes (1)	No (2)	Not Sure (3)
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**AND LASTLY SOME INFORMATION ABOUT YOU AND YOUR ACCIDENT**

27. Are you (Please Tick)

28

Male (1)	<input type="checkbox"/>
Female (2)	<input type="checkbox"/>

Please give your current age.	<input type="text"/>
----------------------------------	----------------------

Thinking about **your own** recent accident, which of the following best describes what happened? Please tick the box

<b>29</b>	Hit by a moving, flying or falling object	1	Contact with moving machinery or material being machined	2
	Injured while handling, lifting or carrying	3	Slipped, tripped or fell on the same level	4
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	Fell from a height	7	Trapped by something collapsing	8
	Drowned or asphyxiated	9	Exposed to, or in contact with, a harmful substance	10
	Exposed to fire	11	Exposed to an explosion	12
	Contact with electricity or an electrical discharge	13	Injured by an animal	14
	Physically assaulted by a person	15	other	16

After your accident did you think about how things could have been different.

<b>30</b>	Yes (1)	No (2)	Cannot remember (3)
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**31.** If after your accident you found yourself thinking “**If only.....**” how did you continue this thought?

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████████████████████

## **Appendix 5**

### **Respondents' completed counterfactual, prevention and causal sentences**

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Appendix 5 Respondents Completed Sentences

		Counterfactual Sentence	Prevention Sentence	Causal Sentence	Own Accident
1	13 sp	The accident book previous records had been taken into consideration and addressed the issue of previous trips	By person training employees regarding the potential seriousness of leaving boxes unattended. If as happened the box was replaced it should be emphasised in training the need for immediate removal of box	The poor safety culture in ABC Supermarkets	
2	13 sp	Lessons were learnt from the accidents that took place in the last 6 months. Measures should have been put in place to prevent materials being left in walkways by staff training etc	By control measures being put in place, the history of the company shows that these kinds of accidents happened several times before	Inadequate training by management. There were no control measures in place	
3	16 sp	Someone in management had given instructions to employees that boxes should not be left in passageways	Tool box talks to all employees on the need to store boxes in a safe place. Management to provide the facility and supervisors to monitor its implementation	Perhaps management had not introduced /implemented a good housekeeping regime	
4	13 sp	Mary had been concentrating more on where she was going and that Bill had acted in amore positive manner and the management system had been more aware of the general untidiness of the area	If Bill had acted on the information received and not attempted to delegate responsibility	Poor management systems and implementation	

Appendix 5 Respondents Completed Sentences

5	5 man	He had checked his instructions had been carried out including placing warning signs	Supervisor checked stacking staff clear up as they unpack and all ancillary boxes and wrappings are cleaned as they go	Shelf staff careless with materials	
6	21 as	I hadn't changed my shift I wouldn't have been there. And if they kept the area tidy I would not have tripped over	If we had more staff the area would have been tidied up more frequently	A box causing an obstruction	I had not slipped on the ice or it had been gritted before hand
7	18 as				I had seen the ramp. But as I am in my late 70's I did not see it
8	20 as				I hadn't gone to ASDA to shop
9	10 sp	The person who spilt the milk had informed the cleaner	Good signage – informing customers and staff to report all spillages. Better system of work eg staff member to stand over spillage until cleaner arrives	The spilt milk	
10	10 sp	Somebody / anybody had cleaned up the spillage	By encouraging staff to actively hazard spot  By encouraging public to report to staff  By staff not thinking that's not my job –there are cleaners	Lack of housekeeping	

Appendix 5 Respondents Completed Sentences

11	10 sp	Not completed	If there were procedures / courses of action to be taken in the event of a spillage	Mary lost her footing	
12	13 sp	Bill had made sure that the cleaner removed the box immediately	By risk assessment concerning the potential hazard being carried out by the company and a protocol in place to minimise the risk giving procedures and staff responsible	The absence of a risk assessment and action protocol or failure to adhere to a workplace protocol regarding trips and slips by supervisor	
13	7 man	Signs had been put out to make Mary aware of the box, or the box had been moved straight away or the box had not been left there in the first place	As for CFT	That a box had been left in the walk way	
14	10 sp	The person who spilt the milk informed a member of staff who could have taken action to clear it or cordon it  Customer	By better communication and awareness. Letting customers know you need to know. warning staff to be more vigilant  Manager	Slipping on the milk which was split and not cleared away or cordoned off to warn staff and customers to avoid the area until cleared. This process should have been in place.  customer	

Appendix 5 Respondents Completed Sentences

15	16 sp	The box hadn't been there in the first place  Manager	Boxes put away so they do not cause a tripping hazard  employer	Boxes being placed where people could trip over them. No one checking that this doesn't happen. Management and staff to take all responsibility  Employer	
16	14 sp	Mary had moved the box out of the area from the checkout and put it in a storage area on her way to the canteen and if the supervisor had checked the area regularly  Bill	If there was regular spot checks by the supervisor or another worker designated to patrol the area and if there was an area to put boxes allocated by the manager and if Mary could have moved the box  bill	Lack of supervision, training awareness implementation of company policies and procedures  employer	
17	14 sp min	A risk assessment had taken place involving the area and storage etc ... all staff were aware of storage hazards  Safety officer	Informing all staff at induction and continuous training re storage clear pathways etc  Adequate signage  Store manager staff and cleaner being more aware of risks and removing hazards asap  Another	Poor housekeeping  another	

Appendix 5 Respondents Completed Sentences

18	11 sp max	A system was in place for an immediate response to the spillage plus a regular check on the area where milk is likely to be spilt so problem can be identified before a customer reports it  Supervisor	Reassessment of procedure for prevention, immediate clear up regular observation and action plan  Bill / manager	The reason for the milk spilling on to the floor  manager	
19	11 sp max	The management organisation has responded to the fact that spillages around the checkouts are very common and 4 other people had been injured in the past 6 months. They should have set up a system to regularly check the area by staff and the shop floor supervisor have signage adjacent to the area to isolate it, have means to temporarily mop up till cleaner can attend. The cleaner should also regularly check that area.  Employer	Had there been a system in place to check the area for spillages and a response to the find that worked fairly quickly. The cleaner should target the area due to spillages  Employer	Management failure to carry out  A suitable and sufficient risk assessment with the knowledge of previous accidents of this nature  Safety officer	
20	9 sp max	We as a company found out why there were so many spillages around the checkout and put controls in place  Employer	By putting controls in place as there were 4 previous accidents  Employer	That a customer's carton or milk was leaking. ABC put no controls against this  employer	



Appendix 5 Respondents Completed Sentences

21	9 Sp max	<p>We had a better safety culture we would not have to rely on a customer to point out spillages we would all be aware that the checkouts are a common slip hazard and signage would be provided at each one</p> <p>Safety officer</p>	<p>By increased staff awareness</p> <p>Safety officer</p>	<p>Carelessness on behalf of the staff of ABC Supermarkets</p> <p>Employer</p>	
22	9 sp max	<p>Warning signs had been put out immediately after the milk was spilled and if only this was standard practice. If only the accident record book had been investigated as to why other people had been injured in slipping accidents in past 6 months</p> <p>Safety officer</p>	<p>By analysing why so many people had slipping accidents in the previous 6 months, identifying the hazard (hazard analysis) and putting a system in place to prevent further slippages.</p> <p>Safety officer</p>	<p>Existing hazards of spillage being evident from accident records, not analysed and action taken to avoid further accidents</p> <p>Safety officer</p>	
23	22s as min	<p>I hadn't gone to work that day, I was working as a favour. Mind you if I was stupid enough not to look where I was going it really was my fault on the other hand health and safety rules should always be followed at work</p> <p>AS</p>	<p>By following basic health and safety rules and not leave boxes laying around</p> <p>?</p>	<p>My carelessness</p> <p>AS</p>	<p>I had not attempted to carry or lift things to heavy for me</p>

Appendix 5 Respondents Completed Sentences

24	22s as min	99	99	99	99
25	22 as min	I had not come in to work on Thursday to help my friend AS	If she had been looking at the path in front of her and not rushing to her break AS	The person who left the box lying about on the floor Another worker	I had not worn my floppy slippers coming down the stairs
26	9 sp max	99	If action was soon taken from two previous accidents. Supervisor	Due to the spillage, which was not signed off cleared up quickly Employer	
27	22 as min	I had not come in to work to cover for my friend on Thursday AS	If the supermarket had always kept a hard and fast rule that boxes must never be left on the floor of the store anywhere people walk. Safety officer	Negligence on behalf of the person who put box there Another worker	I had not rushed the job and if someone had been helping me
28	21 as max	I had been watching where I was going and not talking. And the supervisor had made it more urgent in his message to the cleaner to remove it or remove it themselves AS / supervisor/ safety officer/ cleaner	By a response time on cleaning and supervisors roaming and checking more on passages , fire exits and doors and a willingness on all staff to tidy up Supervisor/ safety officer/ another	Not looking where you walk and management not making clear the response time to cleaners and other staff to be vigilant Supervisor	99

Appendix 5 Respondents Completed Sentences

29	2 manage r min	Someone had reported the spillage and or cleaned up  Other worker	By staff or public reporting spillage and cleaning staff clearing the milk  Other worker	Failure by staff to notice and take action over slippage, failure of management to plan risk assessments and ensure staff would monitor area.  Manager	
30	1s manage r max	The supervisor had cleared it up immediately  supervisor	Bill could have cleared it up straight away or had a staff member stand over the spillage until the cleaner arrived  Supervisor	Poor procedural training  manager	
31	13 sp max	Management had managed health and safety  manager	Management developing a safety culture throughout the organisation  Employer	Lack of management control  employer	
32	13 sp max	All staff had this mental attitude that safety is ever ones responsibility then this unsafe condition (box) would never have been there in the first place  An other worker	Positive attitude to safety by all staff  Employer	Lack of safety awareness  employer	

Appendix 5 Respondents Completed Sentences

33	14 sp min	Supervision and training had been given to all employees a box nay not have been left in the gangway and had been looked at in a risk assessment by the company  Manager	By boxes being put in an enclosed area or warnings signs being put in place  Safety officer	Poor training  bill	
34	15s sp max	Bill had ensured the spill was cleaned up immediately, if not barriers and warning notices in place  Safety officer	If the box had been removed or not placed there, why wait for a cleaner if the hazard is obvious  Bill	Allowing rubbish to build up around checkout, poor housekeeping regimen poor supervision poor response to spill  bill	
35	15s sp max	The company took hsw more seriously  employer	By the company taking hsw more seriously  employer	Failure to keep floor free of obstructions  employer	
36	16 sp min	Mary had seen the box mary	By ensuring boxes are not left on the floor  manager	Lack of management control / supervision  manager	
37	9 sp max	Bill had ensured that the spillage was cleaned up immediately bill	if there was a procedure in place to make sure that spillages are dealt with immediately and the shop floor is regularly inspected  employer	Not ensuring that the shop floor is kept clean al all times  Manager	

Appendix 5 Respondents Completed Sentences

38	9 sp max	Store had assigned staff to spill duty. procedure should state that if staff cannot attend immediately then a warning notice should be posted by supervisor Manager	Taking immediate corrective measures on being notified of spill, 2 stage corrective measures permanent / temporary  Manager	Failure to put in place an effective policy for dealing with inevitable spillages at checkouts  employer	
39	10 sp min	The milk had been cleared up / warning signs had been put out employer	Spillage being reported / seen. Slipping floor signs being put out. Spillage being mopped wet floor signs in area until floor dry  employer	Lack of effective systems for monitoring the store for spillages, so spillage remained on the floor.  employer	
40	10 sp min	The store had a procedure to deal with spillages which staff were trained to implement Manager	Procedure for clearing up spillages  Training of staff  Checking its happening (monitoring)  Manager	Such spillages are known to occur –therefore need procedure to deal with the hazard and reduce as far as is reasonably practicable.  Cause was failure to deal with spillage  not answered	

Appendix 5 Respondents Completed Sentences

41	11 sp max	Someone had done something about it earlier Employer	Company involvement. Management need to take responsibility and the lead. Accidents have been occurring before, nothing has been done effectively to make staff aware or procedures for preventative training  employer	Poor management systems  employer	
42	11 sp max	It had been cleaned up cleaner	Spilt items taken seriously –mopped up correctly  employer	Staff/ employer not taking slipping accidents seriously  employer	
43	12 sp min	We had identified the spillage hazard (we had taken precautions and set procedures for employees) employer	If the spillage hazard was included in the risk assessment with recommendations and control measures and that this was communicated to all employees at induction on the systems in place  Safety officer	The milk spillage. The lack of safe systems of work and training with staff.  employer	

Appendix 5 Respondents Completed Sentences

44	12 sp min	Basic staff training had instilled a greater level of action by staff to identify and control such spillages or get the person who caused the spillage to report it, sufficient corrective action could have been put in place employer	By identifying the hazard sooner and reacting accordingly. Report the spillage –isolate the spillage clean up the spillage.  mary	Immediate cause unsafe condition slippy floor and unsafe act – not reporting /cleaning up spillage  Basic cause =lack of safe system of work – training - from lack of control  employer	
45	13 sp max	There was greater supervision around the checkout area where according to the accident book 4 other people had become injured Supervisor	Because of previous accidents that happened the area had been identified yet no action was taken to maintain and supervise the area properly  manager	Both neglect and inadequate supervision.  manager	
46	Sp 13 max	Bill had taken the initiative and removed the box , instead of passing responsibility to some one else. bill	If there was good house keeping procedures. Proper storage of goods  manager	Poor housekeeping and not immediate response to hazard that was identified by customer  bill	
47	Sp 14 max	The box wasn't there mary	By removing the box  none	Not seeing the box  mary	

Appendix 5 Respondents Completed Sentences

48	Sp 14 min	Someone had not placed the box there and mary had looked where she was going Another worker	By proper training and supervision of staff in health and safety matters  manager	The placing of the box on the floor near checkouts and the failure to remove it quickly  bill	
49	Sp 15 max	The area around the checkouts were maintained in a clear and tidy condition employer	By stock control, clearance/cleaning, safety culture, h&s actions at all levels, Mary looking where she was going  none	A failure in safety practices re tripping hazard at many levels  none	
50	Sp 15 max	Bill had moved the box Bill	by training after the previous accidents, you must be proactive and not reactive  manager	Lack of safety standards by management. poor housekeeping, a relaxed attitude to hsw  manager	
51	Man 6 min	The box had been put away safely bill	The box should have been placed where it was unlikely to cause accidents bill	The box being placed in an unsafe position  Safety officer	
52	As 22 min	I had said I could not fill in for my friend then I wouldn't be in this position now mary	If the person who left the box on the floor had taken the trouble to put it where no one could fall over it Another worker	The box being left on the floor where people walk  Safety officer	The bloody council put the paving slabs back down properly when they re-laid them



Appendix 5 Respondents Completed Sentences

53	As 22 min	I had looked where I was going not in such a hurry to get to my cuppa mary	By not being in such a hurry, by feeling cross that I had taken on an extra shift when I had so much to do at home mary	Herself mary	Paying more attention to what I was doing
54	As 21 max	People put things away in their proper place Other worker	If I had not been chatting to my colleague mary	Someone not putting box away Another worker	Cannot remember
55	Manager 7 max	Instructions had been communicated to staff following the first incident, clearly stating that boxes were not to be left laying about and all areas kept tidy manager	Instructions had been communicated to staff following the first incident, clearly stating that boxes were not to be left laying about and all areas kept tidy manger	Mary not looking where she was going Mary	
56	Manager 7 max	The cleaner had put warning signs out or removed the box immediately this accident would not have happened and I should have been notified that the area hadn't been cleaned so I could have prevented this from happening manager	By daily checks carried out by Bill (supervisor) or making sure the area was kept clear and the till area should be kept tidy at all times Bill	Because health and safety had lapsed at this store and employees hadn't done their job properly cleaner	

Appendix 5 Respondents Completed Sentences

57	Manager 7 max	People would follow instruction cleaner	More observant and efficient staff : priority of jobs to be done by cleaner cleaner	Staff priorities , the box should have been moved immediately after being reported  cleaner	
58	Manager 6 min	Someone had seen that box there and moved it out of the way An other	By somebody seeing the box and moving it out of the way Not specified	Carelessness / lack of attention  An other	
59	Sp 13 Max	The box had been removed I may not have tripped bill	Ensuring employees are given responsibility for ensuring that either items are removed and that the area round the checkouts kept tidy. Bill and employer	The lack of a robust system for ensuring tripping hazards are dealt with after being identified and reported  employer	
60	Sp 9 max	There has been a greater emphasis put on the necessity to clean up the spillage and the cleaner had been more aware of the severity of the risk involved. If only the accident book had been heeded and its results acted upon employer	Had there been better staff awareness and attention to safety. Responsible staff be it at management level or not have a duty to ensure the safety of others Bill	A lack of care obviously the milk caused it, however the way in which this v basic controllable hazard was dealt with showed a luke warm attitude to safety  bill	

Appendix 5 Respondents Completed Sentences

61	Sp 9 max	Slippy floor signs had been put in place until such time as the slip could be cleaned Bill / employer	If proper procedures had been put in place to ensure that as soon as a spill occurred that it was cordoned off or protected in some way so as to prevent customers or staff walking on or over the spill Safety officer	down to lack of training and supervision. The spill should have been dealt with or made safe  bill	
62	As18 Min	I had seen the spillage, I would have alerted the cleaner and no one would have had an accident Accident subject	The person who spilt the milk could have alerted the cleaner to clean it up and make it safe cleaner	The spilt milk that wasn't reported before the accident, the supervisor who should be watching all that's going on around  Supervisor	
63	As18 Min	The milk spill had been reported and dealt with Another worker	By the person spilling the milk reporting the spill and it being cleaned up Another worker	The spilt milk not being cleared  Another worker	
64	Man7 max	I was more aware of what was going on on the shop floor manager	If everyone did their job effectively Supervisor	Bad management  manager	
65	As23mi n	I had taken the time to stop and deal with the spillage by calling the cleaner or dealing with the matter myself the whole episode / accident could have been prevented Mary /AS	By taking immediate action myself Mary	Negligence on my part , carelessness , lack of immediate response , lack of observation  Mary	I hadn't been so stupid
66	As 24 min	I hadn't come in to work today mary	If the boxes had been stacked or stored properly Another worker	Not looking where she was going  Mary	Na

Appendix 5 Respondents Completed Sentences

67	As21 max	Only the cleaner had moved the box when requested cleaner	If the cleaner had moved the box, if Bill had checked that it was cleared and if Mary had looked where she was going Cleaner/bill/Mary	Carelessness  cleaner	My head didn't hurt so much
68	As24 min	The manager of the store had ensured all staff had been given some health and safety awareness training specifically the shop floor manager.	As an older employee with some hsw awareness training would not have expected to find the boxes in the position they were in. They certainly would not have been there on my usual working days and I had no knowledge of a change in routine manager	Boxes left in an unexpected position  Bill	I had worn stronger shoes I would have had more support to my foot and it may not have been so badly injured
69	As17 max	I had noticed the spilt milk and walked around it, if only someone had put a sign out quicker to make the spill more obvious, if only someone knew the spill was there had told us Mary	If someone had told her or a sign had been erected  Bill / safety officer/ another worker/cleaner	The spilt milk, I had not noticed it, there were no signs  Mary	I had been concentrating , looking where I was stepping
70	As20 min	The cleaner had cleaned up the spillage immediately it happened cleaner	If a barrier had been placed around the spillage and the cleaner or other member of staff had cleaned up the liquid  Bill supervisor	The slip on the wet floor caused by the spillage of milk.  customer	The driver of the other vehicle crossing a major road had seen me coming and stopped

Appendix 5 Respondents Completed Sentences

71	AS 20 min	The milk had been cleaned up or a hazard board put up Safety officer	By all staff being made aware of reporting any hazards immediately to the safety officer and notices instore for customers to also report hazards  Safety officer	Lack of concern for other peoples welfare  Safety officer	The contractors had taken more care whilst building and the borough inspectors had carried out a more thorough inspection
72	As 20 min	I hadn't gone to work on my day off mary	If the spillage had been dealt with promptly then no accident would have occurred  cleaner	Due to the spillage not being observed and immediately dealt with  Supervisor	The management had taken notice of the many complaints from the shop floor about oil spillage on the workshop floor
73	24 AS max	The box had not been left on the shop floor / or had been clearly marked as a hazard Bill/ another worker	Not answered	The box being left in an unexpected position without clear markings  supervisor/ another worker	If I had warmed up adequately for the hurdles event in which I was taking part (for as promotional video). I should have insisted that we had time to warm up and a coach
74	As 24 min	The box had not been obstructing the way. Someone had mentioned /noticed/warned before hand Safety officer	Box had not been left where it was, if it was somewhere not usual place , or dangerously placed, if someone had noticed and moved it or warned someone  Supervisor	Box left obstructing walkway, where it should not have been. It had not been removed or placed in a safe place. Whoever left the box caused the accident  Other worker	The icy pavements had been gritted to prevent the snow / ice freezing. If only I had not taken my attention off walking on ice I would have probably not slipped

Appendix 5 Respondents Completed Sentences

75	AS 20 Min	I hadn't come in this would not have happened as its my day off Mary	The spillage of milk should have been reported  If it was reported it should have been cleared away as soon as possible  Customer / cleaner	The spillage of milk not being cleaned up  cleaner	Not stated
76	9 SP max5	She had gone on her break and not waited for her friend she may have paid more attention to her surroundings Mary	If this area was attended more frequently by a cleaner  manager	Area not being cleaned up quickly enough  supervisor	N/a
77	SP 9 max	Bill the supervisor put our warning signs straight after the spillage had been reported by a customer and that the cleaner had got round to clean it up Supervisor	By having more observation on the shop floor by staff and supervisors, and having warning signs available as this spillage has occurred before.  Employer	Not enough supervision of the floor area  employer	N/a
78	As21 max	Whoever had spilt the milk had cleaned it up Another worker	If Mary had spotted the spilt milk  If the person who spilt the milk had reported it to the supervisor or cleaner  Mary	Depending on how the milk had been spilt it would involve original "spillee" supervisor and cleaner but Mary should have spotted the milk  Mary	The person who loaded my vehicle had done it properly I wouldn't not have had a barrel of beer fall on me

Appendix 5 Respondents Completed Sentences

79	As 17 max	I had attended to the spillage straight away Supervisor	by prompt action , by cordoning off / cleaning up  supervisor	Spilt milk causing slippery surface and not cleaned up  supervisor	The ice had been treated I would not now be inured
80	As 18 min	The management were stricter on reporting / identifying and reducing the risks associated with hazards in the workplace such as milk manager	By the store manager encouraging effective identification and reporting of hazards in the workplace using appropriate training procedures and communication between all employees agents and customers  manager	Lack of adequate hazard / accident prevention procedures manager	I had taken more time to prepare / warm up for the game of badminton ( it may not have made any difference though)
81	AS 18 min	The milk had been cleaned up Another worker	By cleaning up the mess and putting a wet floor hazard sign up  Another worker	Lack of organisation at the work place  manager	Not answered
82	As 18 min	The floor had been kept clean and clear of spills Cleaner	If the floor had been kept clean ( ie the supervisor and cleaner were not doing their job)  supervisor	Either Mary,s lack of care or the responsibility staff (in that part of the store) not arranging a clean up  Safety Officer	The paving slabs had been level and the seat had not been vandalised

Appendix 5 Respondents Completed Sentences

83	AS18 min	I hadn't gone to the toilets I would not have slipped on the milk cleaner	If the cleaner had made sure the floors were dried before leaving or put a sign saying !wet floors!  cleaner	Wet floor  cleaner	I had stayed at home
84	As 18 min	There was a notice warning me mary	By adequate slip notice  supervisor	Spillage of milk  manager	Maintenance of building was better
85	AS23 max	Not completed	Not completed	Not completed	We had shopped elsewhere
86	AS 18 min	Not completed	Not completed	Not completed	The modifications made to the office took into consideration the wishes and needs of staff
87	As 18 min	Not completed	Not completed	Not completed	Government and local councils were more responsible for road maintenance and pavement conditions
88	As 21	Not completed	Not completed	Not completed	A rail had been fixed along the length of the wall
89	As18	Not completed	Not completed	Not completed	The floor had been dry and the leaky roof had been repaired
90	As 18	Not completed	Not completed	Not completed	(employer) policy on certain good was adhered to



Appendix 5 Respondents Completed Sentences

91	As 18	I had been more careful I might not have slipped Customer	If the staff had noticed the milk and attended to it this would not have happened  Safety officer	A careless person spilling the milk and not reporting it  Safety officer	Not completed
92	As 17	The milk had been cleaned up sooner or a sign was put out immediately cleaner	If the cleaner had acted properly  cleaner	Spilt milk that was not cleaned promptly  cleaner	I played a non contact sport
93	As17max	Bill the supervisor had made sure the milk had been cleaned up immediately it was reported , even if that meant doing it himself supervisor	If Bill had acted quicker  supervisor	The milk not being cleaned up as soon as it was reported  supervisor	The oil had been cleaned up when the spillage was found previous
94	As17max	Warning signs had been placed at spillage when the spillage occurred supervisor	If bill the store supervisor had placed warning signs at spillage  supervisor	The initial spillage not being dealt with properly  supervisor	The stainless steel edging had been treaded instead of smooth
95	SP12min	A system of work was in place to ensure all spillages were cleaned up as soon as they occurred manager	If the spillage had not occurred or had been cleared up as soon as it happened  manager	Lack of procedure to monitor contain and clean spills  employer	na

Appendix 5 Respondents Completed Sentences

96	SP 10 min	The milk was in a stronger container. The milk was stored better. If there were rubber mats that you were unable to slip employer	By a better floor surface employer	Workplace design /storage employer	Na
97	Sp 9 max	Bill the shop floor supervisor had taken immediate action when the spill was first reported supervisor	Bill should have taken immediate action ... close checkout, place cone near spill, stand near spill until cleaner arrived supervisor	Failure of management to take immediate action and create a proactive safety culture Supervisor	Na
98	SP14	The box had been stored properly (ie away from obstructing the access route) manager	If items were stored in their correct places and staff members were aware of this Manager	Staff members unclear as to properly store items , the company had not identified the hazard employer	
99	SP16 min	I had put the box on the shelf instead of leaving it on the ground while I went to the bathroom Another worker	If her co worker had thought about fellow employees who use isles of the shop as well Another worker	Incompetence b y co-worker who just leaves down the box and walks away Another worker	Na
100	SP 16 min	The box had been stored in a safer position Another worker	The box could have been stored in a safe position where people could not trip over it Another worker	Lack o f safety training of other employees, poor management control , poor housekeeping manager	Na

Appendix 5 Respondents Completed Sentences

101	AS24 min	I had not agreed to work on Thursday for holiday cover Mary	The store had a safety policy that was enforced  Safety officer	Either lack of safety standards that would have protected staff adequately , or negligence in enforcing them  Safety Officer	My own car had been fixed by the garage on time. I would have been  a. less flustered by unfamiliar car b. less pressured by time c. less distracted
102	AS24 min	The passage way had been left clear of obstructions Store manager	If someone had been given the responsibility to ensure that passageways were free of obstructions at all times  manager	A box was left in an area where people walk and which was below the line of sight.  manager	The manager of Holland and Barrett had not put a box just inside their entrance
103	As 23 MAX	The cleaner had done what she was supposed to do cleaner	If the box was not put on the floor in the first place  Supervisor	That the box was in an unsafe place and Mary was walking talking to her friend and not keeping her eyes on the floor  Mary	Not completed
104	AS21 max	I had not decided to work on Thursday and perhaps not waited for my friend or if I had removed the box myself Mary	If she had removed the box herself and perhaps paid more attention to where she was stepping.  mary	The box being on the floor near the checkout which was known to be an untidy area and should not have been left  Safety Officer	I had not gone to kick boxing

Appendix 5 Respondents Completed Sentences

105	AS19 max	The milk had been cleared up when reported cleaner	If the cleaner had done her job cleaner	The spillage not being attended to cleaner	There had been a warning sign to alert people to keep to the sides of the raised area
106	AS19 max	It had been cleaned away when the milk was first reported Cleaner	The milk would have been cleaned up and a warning sign would have been put up to let her know to walk around that area.  Cleaner	Milk on the floor which should not be there  Safety officer	The floor was cleaned or a warning sign was put up
107	As17 max	She was looking on where she was going or if someone had told her that the floor was wet supervisor	If the person who spill the milk would have cleaned the mess  supervisor	No action on cleaning and no caution (warning) on the area  supervisor	I did not water the plants.
108	AS17 max	Incorrectly completed	Incorrectly completed	Incorrectly completed	I had had help
109	As 18 min	People did their jobs correctly. The people who caused the spillage had cleaned it up themselves or put a spillage sign out.	If other people did their jibs correctly , cleaning up after themselves, putting a spillage sign out  Safety officer	People not doing their jobs.	Not answered correctly

Appendix 5 Respondents Completed Sentences

110	As 18 min	Not answered correctly	Not answered correctly	Not answered correctly	I had not ventured (out) through necessity that day. My arm would not have been broken and caused me an awful lot of inconvenience
111	AS18 min	There was no water on the floor the accident would not have appended  Another worker	Special care was taken whilst cleaning floors, also signs put up if wet spilt.  Another worker	Drops of water was spilt on the floor had no wet signs beside it  Other worker	There was no water on the floor I would not have slipped and broke my wrist
112	As 18 min	Not answered correctly	Not answered correctly	Not answered correctly	I had checked platform and steps
113	As18 min	I had not covered for my friend and if only the milk had been cleaned up  mary	If the staff had been alert to the potential danger of the spillage  supervisor	Failure for the milk to be cleaned up as soon as it was spilt  supervisor	There had been protective mats round the soft fruit are of the sales floor – I had not gone in that store at that time
114	AS19 max	Not completed properly	Not completed properly	Not completed properly	Coffee had not been spilt on the floor by the coffee machine I would not have slipped and broken my wrist
115	As19 max	Warning signs had been put out  Supervisor	If warning signs should have been put out , cleaner should have reacted immediately  Supervisor	No warning signs  Safety officer	The speed hump hadn't been uneven I would not have tripped.

Appendix 5 Respondents Completed Sentences

116	SP15 max	The person discovering the box had removed it or stayed with it until it was removed to a safer place  If only Mary had been more observant  employer	Safety procedures for clearing walkways, informed employees and monitoring of safety procedures by management  employer	Failure of the management to ensure that the safety procedures for removing tripping hazards from walkways . lack of attention on Marys part  manager	Na
117	SP 15 max	The spilt milk had been cleaned up immediately  supervisor	If systems had been in place to ensure that the store is kept tidy at all times (including checkouts) and that spills are either cleaned up or segregated from people immediately  manager	Lack of action to ensure that systems are in place to clear areas in the store – no systems in place to react when incidents occur  manager	Na
118	SP 15 max	Somebody had removed the box  Store staff appreciated the potential hazard  supervisor	If staff especially bill were more safety conscious  supervisor	Her inability to see the box. Bills failure to pick it up  Mary	Na
119	SP 15 max	There was a system to monitor housekeeping standards  employer	Management system –housekeeping  employer	Lack of management control  Inattention  employer	Na

Appendix 5 Respondents Completed Sentences

120	AS24 min	I had taken more notice of /been more aware of where I was walking and what was on the floor  Mary	The box not being there, being more observant  Bill / another worker	Not observant enough, carelessness by whoever responsible for the box being there  Mary.	I had insisted the stairs were inspected by a professional and altered as they have been now
121	As24 min	I had not come in on over time to cover for my friend the accident would not have happened  Mary	By whoever left the box near the checkouts.  supervisor	Carelessness  Another worker	Another member of staff had seen the spillage it should have been cleared up. This included managers
122	AS23 max	Staff took health and safety more seriously  employer	By ensuring all staff were made aware of potential dangers and the risk they pose, and emphasising that staff and management were active in accident prevention  employer	As the area round the tills was often untidy , poor management and lack of attention to health and safety caused the accident  manager	No CFT
123	AS23 max	While waiting for my friend to go on our break I (Mary ) had moved the boxes to a safer area to be properly disposed of by a cleaner  Mary	If the supervisor had warned Mary of the hazard and then put out some warning signs until the cleaner arrived to remove the box  Supervisor	Poor housekeeping due to lack of staff and poor health and safety training  employer	I had waited for assistance to carry the heavy case instead of trying to do it by myself

Appendix 5 Respondents Completed Sentences

124	Manager 4 min	Incorrectly answered	Because she already worked there for 8 years she knows the ins and outs of the ABC store  Bill	She might be rushing to her chair or a customer might have spilt milk while loading her trolley and the can might be open and she did not inform her supervisor  NA	Na
125	AS24 min	The person who left the box on the floor was more safety conscious and management pressed home the relevance of safety in work  Another worker	The person who left the box on the floor was more safety conscious and management pressed home the relevance of safety in work  Another worker	Somebody not being safety conscious by leaving the box where they did . Management not pressing health and safety  Another worker	People in work and management pushed home work health and safety my accident wouldn't have happened
126	AS22 min	I was looking where I was going or I was not on rushing  Mary	By the box not being in the wrong place  Supervisor	The box  supervisor	I was looking where I was going
127	AS23 max	We were all more aware of potential hazards and removed them "now" instead of waiting for someone else to do it.  "All employees"	By making sure all potential hazards are removed immediately  "All employees"	The box should have been cleared away  (Whoever left it there)	They had kept the car parks clean and tidy



Appendix 5 Respondents Completed Sentences

128	AS19 max	I had paid more attention  Mary	By better spillage control ie immediately that a spillage is reported it should be sealed off or if in a checkout the checkout should be closed then cleaned up  Supervisor	Negligence  Supervisor	No CFT
129	AS19 max	Its fate ! just the way it is, wrong place , wrong time	The person who spilt the milk should have done something about it immediately	Lack of responsibility , whoever spilt the milk should have done something about it immediate.	No cft
130	AS19 max	For health and safety reasons the area was inspected on a regular basis, there was a previous history of slipping accidents over a very short period. . If only Bill had put up a hazard notice at the time it was reported. Supervisor	If proper health and safety regulations were adhered to  Supervisor	The person who spilt the milk, the safety officer, bill the supervisor. There were no written policies and procedures I presume  Supervisor	I had insisted on a blood test, if only I had not taken the medicine. If only I went to aq different doctor

Appendix 5 Respondents Completed Sentences

131	AS17max	Not answered Supervisor	Bill the supervisor should have made arrangements after the customer reported the spillage or put a barrier so customers and staff would not walk there until it was cleaned and allow the floor to dry before removing the barrier  Cleaner	Not answered	I had walked round the tank instead of using the small step
132	AS17max	Bill the supervisor has put a hazard sign by the milk I would have avoided slipping on it as it would have been clearly marked supervisor	If bill the supervisor had put a hazard sign next to the spillage or gay a member of staff to stand near the spillage while he got the cleaner  Supervisor	Bill the supervisor for not taking immediate action  Supervisor	Noel hadn't pushed the door so hard he wouldn't have knocked me against the wall banging my head against it giving me concussion
133	AS17max	Someone had put a wet floor sign down I would have seen the wet area Supervisor	By the area being cleaned or closed off  Supervisor	Improper health and safety on Bills part for not blocking the wet area until it was cleaned  Supervisor	my supervisor had not broken the draw that broke my hand. If only the management had fixed it during the 8 months that I had been complaining.
134	As17max	The spill had been dealt with immediately Supervisor	If the spill had been dealt with right away  Supervisor	Negligence in clearing the spill right away  Supervisor	Not answered

Appendix 5 Respondents Completed Sentences

135	As17 max	The spilt milk had been cleared up or had a warning sign against it , I would not have gone near it Supervisor	If the milk had been cleared up when the cleaner was told to , also if there were signs up  Supervisor	Incompetence by managers  Supervisor	The lights above the cooker had been fixed when they were reported
136	SP15 Max	Someone had taken responsibility and moved the box Employer	If the company had a strong safety culture where tripping hazards were a high priority  Manager	There was more than one cause however the proximate cause was the box on the floor.  Employer	N/A
137	SP13 Max	There was a more pro-active approach by everyone to taking responsibility for safety and when the customer reported the box to Bill he should have removed it and not waited for someone else to take care of it. Furthermore if only the person who left the box there in the first place was not in the habit of leaving boxes near the check out or any walkway. Supervisor	By ensuring good housekeeping around check out area.  Manager	The box being left on the floor.  The Company.	N/A
138	MAN6 Min	Good Housekeeping standards had been adhered to and a box had not been left out Manager	Thorough training of safety officer and staff to not leave hazards on the shop floor.  Manager	Poor Training  Manager	N/A
139	SP13 Max	I had cleared the box away immediately Supervisor	By keeping check out areas clear  Supervisor	Checkout partially blocked  Supervisor	N/A

Appendix 5 Respondents Completed Sentences

140	AS24 Min	The box had not been left in such a silly place Another Worker	If the box had not been left where it was but put in its appropriate place.  Another Worker	The inappropriate positioning of a box  Another Worker	The shelving had not had a lip around its base that my knee hit when I knelt down
141	MAN7 Max	We had set up a rota to regularly keep the area round the checkouts clear. Supervisor	By clearing the shop floor at regular intervals.  Another Worker	Negligence  Supervisor	N/A
142	MAN1 Max	Facilities for immediate marking of spillage hazards until they are cleared. Set target times for clearing up spillages etc Manager	Had immediate marking of spillage hazards and setting target times for clearing up spillages etc. been in place.  Manager	Failure to have an affective strategy for clearing hazards  The Company	N/A
143	MAN2 Min	Staff had been alert to the danger and acted to prevent accident Safety Officer	If Staff had been alert to the danger and acted to prevent accident Safety Officer	Staff had not being alert to the danger and not acting to prevent accident Safety Officer	N/A
144	MAN7 Max	The area around the checkout was kept tidy Store Manager	If area around checkout was kept tidy Store Manager	Mary not looking where she was going Accident subject	N/A
145	MAN4 Min	I knew what the circumstances were that led Mary to fall. Was she running? Was she wearing inappropriate shoes? Is the floor unsafe when wet? How did the milk leak? I shall have to discuss the circumstances with Mary. -Mary -Store Manager	-Don't sell milk -Only sell milk in leakproof/breakproof containers -slip proof flooring -slip resistant footwear The Company	-To be determined  -Dependent on previous column (Q32)	N/A

Appendix 5 Respondents Completed Sentences

146	MAN4 Min	There was a notice in place, if only the cleaner had cleaned the mess. If only staff were aware of Health and Safety Supervisor Store Manager Safety Officer The Company The Cleaner	If the milk was cleaned up immediately it was spilt  Supervisor Store Manager Safety Officer The Cleaner	Milk spillage not being cleared up  Supervisor Safety Officer Cleaner	N/A
147	MAN3 Max	The warning signs had been put out and that the cleaner had cleared it up more promptly Supervisor	By having warning signs placed in the area Supervisor	The lack of immediate action by the store supervisor and store cleaner Supervisor	N/A
148	MAN3 Max	If supervisor and cleaner realised the urgency of cleaning up the spillage and if only warning signs had been put up as soon as the customer reported the spillage. Store Manager	If the warning signs had been put out as soon as the customer reported it and there was a sense of urgency about clearing it up. The Supervisor	That people did not understand the importance of clearing up the mess as soon as possible and at least putting warning signs out. -Supervisor -Store manager -Safety Officer	N/A
149	MAN2 Min	Mary had looked where she was treading. As a member of staff she should be on the look out for customer hazards Mary	If she had looked where she had trod Mary	Customer for spilling milk, mary for not looking where she trod. Mary	N/A
150	SP10 Min	The spillage had been cleaned up immediately or cordoned off.  None of these -The person that caused the spill	If the spillage had been reported immediately, cleaned up or cordoned off None of these -The person that caused the spill	The spilt milk and the fact that it was not reported and cleaned up – root cause insufficient safety awareness lack of supervision None of these- the person responsible for spilling the milk	N/A

Appendix 5 Respondents Completed Sentences

151	AS21 Max	I had been more observant and that the store manager and/or safety officer had noticed that several people had been injured by te same cause then this should have been dealt with before my accident  The Store Manager	If the repetition of the same accident had been noticed by management.  The Store Manager	People failing to follow through historic accidents with a common cause.  The Store Manager	That managers had listened to what I had to say and had left me to finish my work rather than giving me “help” to fulfil their criteria other than safety.
152	AS22 Min	The person or persons had have put the equipment back in their correct place Another Worker	If people would only consider others, and be properly trained. Another worker.	Laziness, incompetence, negligence, thoughtlessness, lack of training.  Another worker.	They had taken heed of previous near misses and prevented equipment being stored inappropriately.
153	AS22 Min	I had not placed the box that I tripped over where it was.  Mary	Had I not placed the box on the floor  Mary	Mary leaving the box that she tripped over on the floor.  Mary.	I had asked for help to cope with increased amount of stock delivered the morning of the accident, I would not have left the box where it was.
154	AS22 Min	I had not agreed to do the day for my friend who was on holiday.  Mary.	By not having a box on the floor which was obviously there and had been put there a) by accident b) by mistake c) for a reason. Therefore Safety officer should ensure all workers know not to put boxes on the floor.  Safety Officer	Someone had left a box on the floor – management should have informed workers not to do so – inform safety supervisor and safety officer – who should know this already and inform others.  The Store manager	The Year 2’s had been at school instead of an educational visit, I would have had gym club and my preparation for the dance performance would not have taken place. I would not have injured myself.

Appendix 5 Respondents Completed Sentences

155	AS22 Min	(Assuming the box was not usually there) a) Someone hadn't left the box lying there or (assuming box was part of usual display b) I hadn't come in today  a) Another worker b) Mary	If she had been looking where she was going  Mary	Her not seeing a box on the floor (presumably in a walkway) perhaps she was rushing to take her break as the shop is too strict on time.  Mary	I had not gone out in the snow to fetch a prescription for a neighbour I might not have slipped on a complete sheet of bus shelter plastic window left lying on the grass behind the shelter and completely invisible under a layer of snow!! If only I had kept to the pavement and not crossed the green.
156	AS22 Min	a) I had seen the box b) The box had not been left on my route c) I had not agreed to cover for my friend  Mary	If I had been more vigilant.  Mary	A box being left in the wrong place  Another worker	The pavement had been properly repaired
157	AS21 Max	That box had not been left lying about and "if only" I not "covered" that day  The cleaner	If cleaner cleared boxes more regular and ensured boxes not left lying about where people can trip over them  cleaner	Whoever left the box in the first place and the cleaner for not keeping clear  Another worker	That empty crate had been stacked away and not left in walkway but at same time if I had not been rushing I might not have fallen quite so heavily.
158	AS21 Max	I had paid more attention to where I was going I might have seen the box and.....  Mary	If the box had been removed by Bill as soon as the customer had reported it.  Bill the Supervisor	A Box being left where it shouldn't have been  Another Worker	I hadn't been rushing to get a job done I would have taken more care about where I was going and would have seen the step

Appendix 5 Respondents Completed Sentences

159	AS21 Max	I had checked the cleaner had removed the box  Bill – Supervisor	If as soon as the customer had reported the hazard it should have been removed  Bill the Supervisor	The lack of action in dealing with the hazard(s) after previous incidents  Safety Officer	Edges of ramps/steps had been highlighted
160	AS23 Max	I had looked where I was going. If only I went up straight away and not waited for my friend – Bill should have made sure the cleaner removed the hazard. Mary	If Bill had ensured the cleaner removed the hazard. Further precautions were taken knowing 4 other people had similar accidents. Listening to the customer and worse comes to the worst, Bill could have removed the hazard if the cleaner was busy.  Bill the Supervisor	The delayed response from the cleaner also Bill because he could have put hazard signs out or even cleaned it himself.  The Cleaner	I had waited 5 minutes before walking over to the counter, if only someone had realised water was spilt and cleaned it up. If only I had looked at the floor
161	AS20 Min	I had walked in a different direction, perhaps down a different aisle I would not have slipped on the milk.  Mary	If there had been an in-store cleaner who was notified immediately of the spilt milk.  The cleaner	The failure of the store safety officer to ensure that procedures are in place within the store to clear up any spillages immediately  Safety Officer	The wet floor had been clearly marked/signposted



Appendix 5 Respondents Completed Sentences

<p>162</p>	<p>AS20 Min</p>	<p>The spillage had been reported and cleared up. none</p>	<p>If the spillage had been reported and cleared up. None of these – I do not have enough information to apportion blame none</p>	<p>The failure to clear up the spillage. If the customer was aware of the spillage they had a duty to report it; if it was reported there was a duty to clear up the spillage and maintain safety.  <i>No – one named</i></p>	<p>1) We had not been so busy and there were more staff to care for the patients I might have noticed the wet floor prior to my foot slipping on it. 2) If sickness levels were not so bad at present we would not have been robbing one shift to cover another. 3) Management would improve our establishment so that sickness/pregnancy was absorbable.</p>
<p>163</p>	<p>AS20 Min</p>	<p>The milk was wiped as soon as it was spilled  Bill The Supervisor</p>	<p>If Bill the supervisor cleaned the floor then Mary would be safe  Bill The Supervisor</p>	<p>The person who spilt the milk and left it  <i>None named</i></p>	<p>If he person who put the boxes on the cage did it the way it should have been done it would not have happened.</p>

Appendix 5 Respondents Completed Sentences

164	AS20 Min	Sign to say spillage cleaned up sooner & sectioned off  Store Manager	Milk spillage reported and seen. Hazard warning. Cleared quicker. Act quickly urgently.  Another worker (first on scene)	Lack of training lack of awareness. Slow response. Lack of responsibility. Insufficient teamwork. Laziness  Safety Officer and Thhe Company	Ihad not carried out instructions to make the building safe by closing that window. I wish it had not been my job. I wish there was someone to contact surely they could employ a caretaker- we never touch those windows.
165	AS23 Max	1) Drivers had reported where vehicles had been parked in the yard and then I would not have been out doing a visual check. 2) There had been more office staff then I would not have been rushing back to th e office to answer the phone 3) There had been proper pedestrian walkways in the yard. Safety Officer The Company	By having more office staff on duty and proper walkways along with better procedures for debriefing drivers  Safety Officer The Company	The Company	See Column 1 If only .....Things could have been different.
166	AS19 Max	If the cleaner had cleaned the spillage up 5 minutes before  The Cleaner	As previous column  The Cleaner	Milk Spillage  The Cleaner	Wet – etc – If Dry .....  Things could have been different.
167	SP14 Min	Not completed – Left Blank  Bill the Supervisor	Accident Prevention Programme – Management Prevention Active System  None named	See Previous column and failure to enforce monitor and review  The Manager and the Company	

Appendix 5 Respondents Completed Sentences

168	SP16 Min	There had been better house keeping practices  The Company	By better housekeeping systems  The Company (If the Safety Officer reported a Housekeeping problem or indicated this on a risk assessment then top management should have received it and acted upon it.	Bad housekeeping – congested workspace – did safety officer recommend the problem? Did Management know? If so did they ignore the problem? Did cleaner know of the problem? Did she care? Was she drunk? Or an alien – who knows? I’m not there.	
169	SP16 Min	Box had been moved  The Store Manager	Good Housekeeping had been maintained  Safety Officer	Poor workplace housekeeping  Safety Officer	
170	SP16 Min	I had kept a check on the shop floor more regularly and issued warnings about leaving empty boxes on floor – stocking shelves to the store shelf stackers.  The Store Manager	By making the staff aware of the necessity of house cleaning in all things not only for the staff but also the public  The Store Manager The Safety Officer	Lack of attention by Mary – lack of forethought by management	
171	SP16 Min	The person using the box had removed it or at least highlighted its presence to Mary The Store Manager	By better working arrangements i.e. boxes off the floor while shop is operating – all boxes stored on trolleys Bill the Supervisor	Poor work practices Lack of supervision control  Bill the Supervisor	
172	SP14 Min	The box had not been left in a thoroughfare Bill the supervisor	Better housekeeping Bill the Supervisor	Box was kept in thoroughfare – poor housekeeping Bill the Supervisor	
173	SP14 Min	Management had controlled the work area better in relation to H & S The Store Manager	The Store Manager should have ensured staff kept walkways clear from obstruction. The Store Manager	Tripping hazard left in a walkway  The Store Manager	

Appendix 5 Respondents Completed Sentences

174	SP14 Min	The box had not been in Mary's way The Store Manager	By making sure at regular intervals that loose boxes were not in the walkways Bill the Supervisor	Someone leaving a box in a pedestrian walkway Another worker	
175	SP14 Min	A supervisor had his/her eyes open Bill the Supervisor	By a greater awareness of supervisors and staff of need to keep floor free from obstructions The Company	A collective failure to have( senior management) a system for keeping floors clean and to implement the system (supervisor and staff) – The Company	
176	SP14 Min	General housekeeping and floor supervision were maintained Bill the Supervisor	If the general safety policy of the company was upheld through maintenance and housekeeping, basis supervision and safety awareness Bill the Supervisor	Negligence on supervisor/manager/cleaners part not to keep/maintain a safe place of work. Mary should have been more aware for her own safety – all provided a good safe system of work is in place. Bill the Supervisor	
177	SP9 Max	The spillage had been cleaned up immediately The Company	By cleaning up the spillage immediately – the company	The spillage was not cleaned up immediately The company	
178	SP9 Max	The milk had been cleared up quickly The cleaner	If safe system and procedure had been implemented after review of previous accidents occurred The Store Manager	Lack of safe system and procedure to ensure a safe working environment for employees. The store manager	

Appendix 5 Respondents Completed Sentences

179	SP9 Max	<ul style="list-style-type: none"> <li>• The reasons for spills had been identified.</li> <li>• A spill procedure had ensured immediate action</li> <li>• The accident book had been reviewed earlier.</li> <li>• The importance of slips and trips had been high priority</li> </ul> <p>Bill the supervisor</p>	<p>Suitable packaging and spill procedures</p> <p>The Company</p>	<p>Slippery floor surface</p> <p>Bill the supervisor</p>	
180	SP10 Min	<p>There had been a floor supervisor on duty, he/she would have spotted the milk and had it cleared up by the cleaners</p> <p>Bill the Supervisor</p>	<p>If a store supervisor was on duty which when he/she saw the danger of the spillage would have got a cleaner to clean the spilt milk</p> <p>Bill the Supervisor</p>	<p>Carelessness on the part of the supervisor, should have spotted the spillage and have it cleaned up and also a means should have been in place to prevent the milk from spilling</p> <p>Bill the Supervisor</p>	
181	SP13 Max	<p>The box had not been left on the shop floor</p> <p>Another worker</p>	<p>By having a safety culture and management controls and staff training and supervision that ensures safe culture of stock loading/unloading, tidiness etc</p> <p>The Company</p>	<p>Lack of concern for safety by employee who left box</p> <p>Another worker.</p>	

Appendix 5 Respondents Completed Sentences

182	AS20 Min	<p>I slipped on water immediately in front of the ground floor escalator and fell backwards cracking the back of my hand which assistants heard from their counters. If only one of them had noticed and reported the water I would never have slipped.</p> <ul style="list-style-type: none"> <li>• Another Worker</li> <li>• The Store Manager</li> </ul>	<p>If any of the assistants had seen the water and reported it or if there had been a safety officer walking around the store.</p> <p>Another worker</p>	<p>Water on Floor</p> <p>None of these (I would think a child had passed water)</p>	
183	AS22 Min	<p>The box was in the right place and the Health and Safety Officer was doing his/her job properly; checking to look for hazards and carrying out the Supermarkets health &amp; Safety Policy at all times.</p> <p>Safety Officer</p>	<p>By ensuring that no obstacle (the Box) was placed where an accident could happen</p> <p>The Safety Officer</p>	<p>The box I fell over, it should,nt have been where it was, this was a hazard waiting for an accident to happen.</p> <p>The Safety Officer</p>	<p>I hadn't gone shopping that night, as normally my husband does all the shopping and I hadn't really no need to shop</p>
184	AS19 Max	<p>They had put warning signs up as soon as the spilt milk was brought to the supervisor's attention. Also, if only the cleaner had been able to clear the milk up sooner this would not have happened. This would have been one less accident.</p> <p>Bill the Supervisor The Store Manager The Cleaner</p>	<p>If the supervisor had taken action straight away, to get the warning signs by himself or another member of staff. They should then have stood by the spillage until they were sure the signs were put up and the cleaner would be cleaning up as soon as possible.</p> <p>Bill The Supervisor</p>	<p>The action to clear the spillage up was not dealt with quick enough. Had everyone had all the health and safety training needed to work to the standard need for this environment.</p> <p>Bill the Supervisor The Store Manager Safety Officer The Company</p>	

Appendix 5 Respondents Completed Sentences

185	AS17S Max	The spillage had been dealt with sooner and a warning sign had been placed at the spot.  Safety Officer	If swift action had been taken by all concerned.  Safety Officer	Lack of awareness on Mary's part and spillage not been dealt with quickly.  Bill the Supervisor	
186	SP15 Max	Other people were made aware of the dangers and likely consequences of poor housekeeping  The Company	By good safety management systems, awareness training and if necessary enforcement  The Company	Poor management of housekeeping including insufficient training and enforcement. Poor overall safety awareness attitudes and management.  The Company	
187	SP15 Max	The box had been put away  Another Worker	By good housekeeping and proper supervision Another worker	The fact that a box had been left in the aisle Another Worker	
188	SP16 Min	The box had not been there it would not have happened Safety Officer	By a safe system of work being in place. Employees and supervisors being trained. Management having a sound safety culture in place.  Safety officer	That <ul style="list-style-type: none"> <li>• She did not keep a proper lookout</li> <li>• Supervisors were inadequate in supervising</li> <li>• Unsafe system of work</li> </ul>	
189	SP16 Min	They implemented their safe system of work  The Company	By implementing a safe system of work  The Company	Failure to provide a safe system of work.  The Company	

Appendix 5 Respondents Completed Sentences

190	SP16 Max	We had a system where boxes are not left unattended by staff, all boxes are cleared away immediately and regular inspections of the workplace are carried out by the manager  The Store Manager	By training staff not to leave boxes unattended and carrying out regular inspections  The Store Manager	Poor management procedures, poor training  The Store Manager	
191	AS23 Max	The box had been placed in the correct place by the person who left it there. It should never have been left there in the first place.  Another Worker	If the box hadn't been left there in the first place.  Another Worker	Tripping over the box  Safety Officer	



Appendix 5 Respondents Completed Sentences

192	SP15 Max	<p>They had looked at the risk of tripping hazards in the risk assessment-using information from the accident book he would have realised there was a risk and should have implemented the necessary control measures to prevent such tripping incidents by staff training, audits of the workplace etc</p> <p>The Company</p>	<p>See previous answer</p> <p>The Company</p>	<ul style="list-style-type: none"> <li>• (Direct cause) The cause was due to a member of staff leaving a box out</li> </ul> <p>(Indirect causes were)–</p> <ul style="list-style-type: none"> <li>• Lack of management control</li> <li>• Lack of information instruction and training</li> <li>• Lack of monitoring</li> </ul> <p>Another worker</p>	
193	SP15 Max	<p>Procedures of housekeeping in the store had been followed and the supervision on receiving the report had taken personal prompt action.</p> <p>Bill the Supervisor The Company</p>	<p>Supervision of housekeeping all following procedures.</p> <p>The Company</p>	<p>Lack of application of procedures poor housekeeping.</p> <p>Another worker</p>	

Appendix 5 Respondents Completed Sentences

194	SP15 Max	Bill had removed the box and marked the area where milk had spilt  Bill the Supervisor	By the supervisor taking action other than informing the cleaner  Bill the Supervisor	Bad Housekeeping  Bill the Supervisor	
195	AS19 Max	If only I had not come into work today, a Thursday, or if the cleaner had cleared it up straight away or put signs out  Mary The Cleaner	The spillage being cleaned up straight away and signs put out.  The Cleaner	Wet floor from the spilt milk, whoever spilt the milk. The supervisor did't ensure the milk was cleaned up straight away.  Bill the Supervisor The Cleaner	If only the cleaner had'nt been cleaning the floor whilst people were working there, and if only she had put some signs out warning of the wet floor I would not have slipped over dislocating my knee.
196	AS19 Max	I'd not been talking to my friend may be I would have seen the milk  Bill the Supervisor	If the supervisor had made sure himself there were a sign saying wet floor or slippery surface.  Bill The Supervisor	Wrong attitude  Another worker	If only they had emptied the tank in to a dolaf and not onto the floor there may not have been Mayo or Debbie on the floor if the job had been done correctly.
197	AS20 Min	I had cleaned the milk up straight away  The cleaner	Better supervision of staff  The Store manager	Careless handling of poor quality container  A Customer	The van driver who knocked me over had not driven recklessly out of a lay-by and had looked where he was going! He was not insured and had no MOT
198	AS23 Max	The cleaner had left all other duties and removed the box when told to  The cleaner	See previous column  The cleaner	Carelessness of the person who left the box there.  Safety Officer	Left blank

Appendix 5 Respondents Completed Sentences

199	AS23 Max	I had'nt waited for my friend I would'nt have been talking and taken more notice of where I was walking  Mary	Rubbish (including boxes) should never be left around where people are moving  Safety Officer	The person who left the box there  Another worker	If only they checked at the bowling alley that three were no knots in the laces it wouldn't have come undone. I should have taken it back immediately and changed the shoe for one, which could have been securely fastened.
200	AS20 min	Not completed properly If only I had went the other way	Not completed properly	Not completed properly	If only I had went the other way
201	AS20 min	Not completed properly	Not completed properly	Not completed properly	The floor had been dry
202	AS 20 min	Who ever spilt the milk had cleaned it up or reported the spill to supervisor so it could be cleaned up Another worker	By the person cleaning up after themselves and not leaving the place in a state Another worker	The person who spilled the milk not cleaning or referring the incident to supervisor Another worker	The oil had been cleaned up /or not been allowed to build up in the first place
203	AS21 max	Not completed properly	Not completed properly	Not completed properly	I had not got on the escalator with my son in a buggy

Appendix 5 Respondents Completed Sentences

204	As21 max	Not completed	If the obstruction had been moved its not up to the individual, it should be management they should check for safety Supervisor	People placing things in the wrong place not thinking how stupid they are Supervisor	The idiot that took away extensions lead, thought a bit more, especially putting the fan in a confined space , because without lead did not stretch to a more suitable space , to make safe
205	AS23 max	The box had been cleared away immediately Cleaner	If she hadn't waited for her friend to go on her break with. She would therefore not have been chatting or distracted and would probably been more aware and more likely to notice the box Mary	The box being left on the floor None	I hadn't gone to box-a-cise today. I hadn't felt in the mood but pushed myself anyway
206	AS20 min	The customer had informed a member of staff about the spillage, it could have been wiped up Customer	If one of the people on the other side of the cash point had reported the spilt liquid customer	The unreported spillage Customer	I hadn't been in such a hurry to finish . If only I had realised that the floor was wet. If only I had left filing the work until later
207	SP15 Max	Person who spilled the milk had stayed at the area and called for another member of staff to get a cloth to clean and dry the area. So that they could have warned Mary not to walk there.  Safety Officer None of these	By implementing staff to cover areas and inform the public of boxes/spills whilst another member of staff clears the area, boxes could be taken out individually or stock could be put on shelves at night.  The store manager	Box being unpacked/left alone Spilt milk → customer/staff  Bill the Supervisor	Her accident could have been prevented if the box and milk was cleared

Appendix 5 Respondents Completed Sentences

208	SP17 Max	There had been some way of notifying people there was a problem with the floor.  Safety officer	If, when notified of the spillage, someone was allocated to the spot immediately to warn away customers to the danger. Also, the customer who caused the spillage should have notified someone who works in the store.  Bill the Supervisor	Due to not enough H & S procedures and a lack of response to the spillage & responsibility  Safety Officer	My company had provided me with the correct product when I first went to the job I would not have had to return to customer for a second visit. Therefore I would not have fell.
209	AS23 Max	They had a room for the chairs and the step was clearly marked  Bill - The Supervisor	If they had more room to store the chairs  The Company	The step was not clearly marked  None of these	Not completed
210	AS24 Min	<ul style="list-style-type: none"> <li>• I had looked where I was going</li> <li>• That box had not been left there</li> <li>• Housekeeping rules were properly followed/enforced</li> <li>• Someone else had tidied up when they saw the box</li> <li>• I'd not offered to cover for my friend</li> </ul> <p>All listed - "Sorry you will have to make sense of this".</p>	House keeping rules should be in place, communicated, followed and enforced  Staff should also be aware that they have a duty themselves to prevent accidents  All listed but if had to choose one – chose "Safety Officer".	Poor Housekeeping  Safety Officer  Bill the Supervisor	<p>I had followed my own advice about lifting techniques</p> <p>I had remembered how weak my own back is since my original lifting accident</p> <p>I had remembered how unfit I had become since being the manager</p> <p>I had been somewhere else doing something else</p>
211	AS24 Min	My friend hadn't gone on holiday  Another Worker	If the box had not been left in the wrong place  Bill the Supervisor	The box being left in the wrong place  Bill the Supervisor	Not completed

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212	AS24 Min	The person who left the box in a non-visual place had used their common sense and left some form of warning to advise of a potential hazard  Whomsoever left the box	If regular checks were made for potential hazards by staff and if regular safety meetings were held to alert all staff of potential dangers and to teach vigilance on the shop floor  Safety Officer	Complete thoughtlessness by a third party in leaving the box in a hazardous place where Mary was unlikely to see it, hence tripping over it.  Whomsoever left the box in a hazardous and potentially dangerous place	Our insurance manager who should know better had not left a first aid box behind my chair without telling me that he had put it there.....
213	AS24 Min	I had looked where I was going and the box hadn't have been in such a dangerous place  Mary	If the box had been placed where it was supposed to be  Another Worker	Absent mindedness, not looking where Mary was going  Mary	My Grandson and I hadn't been happily playing tennis together
214	SP15 Max	Blank – not completed  Not completed	By removing the problem  Mary	Blank – not completed  Bill The Supervisor	
215	AS19 Max	If I had not turned around, after leaving the swimming pool to acknowledge the cleaners remark about me in a no go area  The Cleaner	If I had on proper shoes in that area  Not completed	Water on the floor  Not completed	I should have been wearing suitable clothes in that area
216	AS19 Max	If the spill was by the checkout and they are quite frequent then maybe all the checkouts should have wet floor sign, as it only takes a minute to put one out and then the cleaner could do the cleaning and then maybe .....Things could have been different  The Company	Because it is everyone's responsibility to enforce health and safety so you should be aware of common problems in your work. I think that all the checkouts should have warning signs to make other people aware of the situation  The Company	Lack of Health and Safety awareness by all staff as they were informed by a customer  The Company	I was watching what I was doing and I should have been made aware that the floor was wet with no warning sign.

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217	SP15 Max	The supervisor had insisted the box was removed immediately or a good housekeeping regime was in place it would not be left there in the first place  Bill the Supervisor	By a proper housekeeping regime/not allowing boxes to be abandoned on the floor  The company	Inadequate safety policy or housekeeping and ignorance by management of previous accidents  The Company	
218	AS20 Min	The person who had spilt the milk had informed someone – it could have been cleaned up very easily and I would not have hurt myself  Mary	By contacting a member of staff to clean the spillage or by Mary looking where she was walking  Mary	Laziness, who ever spilt the milk did not clean it up or tell anyone and Mary was not looking where she was going.  None of these	The bar that I hit my head on had been fixed after it had been reported on several occasions before. Why did it have to wait for someone to have an accident before it got fixed?
219	SP15 Max	The member of staff who had reported the box had acted to warn persons of tripping hazard, or clear it up himself or herself.  Another Worker	Training staff to make health and safety more their business and being participative  The Company	Staff Training  The Store Manager	
220	SP16 Min	There had been a procedure for dealing with boxes, e.g. if empty the procedure would be to collapse box and place in cardboard recycling point If staff had been trained in safety ethos and safety needs met. If management had instituted a better design/layout for the area in question to allow safe storage and pedestrian areas were marked out. The Company	By implementing safe handling/storage procedure – set location for flattened boxes for recycling. By ensuring staff receive H & S awareness training. By ensuring pedestrian walkways were clearly determined with signage to indicate that walkways should be kept clear.  The Store Manager	<ul style="list-style-type: none"> <li>• A lack of a safe system of work</li> <li>• A lack of defined walkway</li> <li>• A lack of signage and training supervision</li> </ul> The Store Manager	

Appendix 5 Respondents Completed Sentences

221	SP16 Min	<ol style="list-style-type: none"> <li>1. Mary had not agreed to cover for a friend on that day</li> <li>2. The box had not been left on the floor</li> <li>3. Mary had not gone for her break when she did – the box may not have been on the floor then.</li> <li>4. Bill the Supervisor</li> </ol>	<ol style="list-style-type: none"> <li>1. The box not being left on the floor by</li> <li>2. Better staff training and awareness</li> <li>3. Better management check on housekeeping on shop floor</li> </ol> <p>The Store Manager</p>	<p>Inadequate staff training and awareness and lack of supervision on the shop floor.</p> <p>The Store Manager</p>	
222	SP16 Min	<p>They had done a more thorough risk assessment</p> <p>Safety Officer</p>	<p><i>Not completed</i></p>	<p>Likely a lapse in clearing a walkway following restocking of shelves or a delivery leaving a box in an unsuitable place.</p> <p>Could be any of these really:- Mary Bill the Supervisor The Store Manager Safety officer The Company Another Worker</p>	



Appendix 5 Respondents Completed Sentences

223	SP16 Min	The box had'nt been there and had been emptied and thrown away or stores in the appropriate place  Bill The Supervisor	<i>Not completed</i>	Poor organisational controls over leaving boxes around when they should have been emptied and thrown away or stored in warehouse until needed on shop floor.  The Store Manager	
224	SP16 Min	The Box had not been there  Mary	By the box not being there  Mary	A box in a position to cause an accident  Mary	
225	SP15 Min	The box had not been left there in the first place, or even removed straight away when noticed, or Bill insisted the cleaner remove it  The Company	By not having the box there in the first place  The Company	The box left on the floor because Procedure not followed Poor supervision Lack of communication  The Company	
226	SP16 Min	??Different size of the box was there she will be badly injured. If there was any other object such as shelf or tools or brush etc then she might be falling on them and cause major injury hurting her back or neck or any part of her body – especially she is an old female???  Bill the Supervisor	Well housekeeping and proper arrangements of all items in the supermarket was main reason. Supervisor responsible about the area didn't take risk assessment. Management as well must assume that all HSE Rules and Regs are applied  The Store Manager	Basic Cause – Inattention – carelessness by the manager, supervisor, cleaner to clear up access and egress. No audits or safety inspections were done where the box was placed and not removed.  The Company	
227	SP16 Min	The housekeeping was better  The store manager	By proper storage being a requirement  The Store Manager	The poor standard of housekeeping  The Store Manger	

Appendix 5 Respondents Completed Sentences

228	SP16 Min	The staff at all levels in the store were aware of the seriousness of slip trip and fall hazards and the importance of good housekeeping  The store manager	By the staff being trained in good housekeeping practices and in safety awareness so that they would look out for their own safety and the safety of others  Safety officer	Poor housekeeping by the staff, poor supervision and management, lack of safety culture in the organisation, failure of duty of care by everyone  The Company	
229	AS24 Min	There had been someone else there to help break down the delivery. Then the work load would have been easier or the boards weren't over strained  <i>Incomplete</i>	Because the staff should not have left stuff on the floor. When staff are trained they are advised to work off trolleys so that neither customers nor themselves are hurt.  Mary  Another Worker	Mary rushing to her break, not looking at where she was going, and the staff member was at fault for not clearing his department, leaving any stock or rubbish in customers' way.  Mary  Another worker	I had taken someone else with me to break down the delivery, which was about 8 – 9 boards. Because it was near Christmas they had stacked as high as they could. Some were collapsing because they had been stacked badly.
230	SP16 Min	The box had not been left there.  Safety Officer	Ensure that no boxes are left in the vicinity of the checkout  The Store Manager	Poor Housekeeping  Safety Officer	
231	17AS Max	I had not agreed to cover for my friend whilst she was on holiday, then I wouldn't have been here as I never work on Thursdays  Another Worker	By the supervisor cleaning up the spillage when it was first reported, or at least putting a sign around the spillage if it could not have been mopped up straight away.  Bill the Supervisor	A milk bottle leaking  The Company	I was not in such a hurry

Appendix 5 Respondents Completed Sentences

232	17 AS Max	<p><del>The wet floor sign had been put out (bill) or</del></p> <p>If only I'd been looking where I was going. Mary</p>	<p>1)Wet floor sign had been put out 2)Spillage cleared up as soon as reported 3)Floor checked regularly for spillages as it is a common occurrence.</p> <p>The Store Manager</p>	<p>The spillage not being cleared up</p> <p>The cleaner</p>	<p>We'd had a wet floor sign</p> <p>If only someone had told me the floor was wet</p>
233	17AS Max	<p>I had been looking where I was going</p> <p>Mary</p>	<p>If Bill the Supervisor had instructed a cleaner to deal with the spillage as soon as it happened.</p> <p>Bill The Supervisor</p>	<p>Lack of vigilance by store staff</p> <p>Bill the Supervisor</p>	<p>We had installed a child safety barrier and kept a closer eye on her.</p>
234	SP11 Min	<p>Preventative measures were taken 6 months ago as to why people were injured in slipping accidents. Why was there no measures taken when it was known spillages around the checkouts were common. Why there wasn't a safety sign or a staff member assigned to safeguard the area until such time it was cleaned up.</p> <p>The Company</p>	<p>Preventative measures in place six months ago. It was common for spills around the counter. Elimination or control.</p> <p>The Company</p>	<p>Carelessness – poor safety training.</p> <p>The Company</p>	

Appendix 5 Respondents Completed Sentences

235	SP9 Max	She had gone on her break and not waited for her friend she may have paid more attention to her surroundings  Mary	If this area was attended more frequently by a cleaner  The Store Manager	Area not cleaned up quick enough.  Bill the Supervisor	
236	SP9 Max	Slippy floor signs had been put in place until such time as the spill could be cleaned.  Bill The Supervisor	If proper procedures had been put in place. To ensure that as soon as a spill occurred that it was cordoned off or protected in some way so as to prevent customers or staff from walking on or over the spill  1) Safety Officer – Put in place the procedures 1) The Company – Back up the procedures 2) The Store Manager – Train and enforce, 3) Bill The Supervisor – Train and monitor	Down to lack of training and supervision – the spill should have been dealt with or made safe.  Bill the Supervisor	

Appendix 5 Respondents Completed Sentences

237	SP9 Max	<p>There had been greater emphasis put on the necessity to clean up the spillage and the cleaner had been more aware of the severity of the risk involved. If only the accident book had been heeded and its results acted upon, this type of accident occurred quite frequently therefore a rigorous control system of prevention and action should have been put in place</p> <p>The company</p>	<p>Had there been better staff awareness and attention to safety. Responsible staff either at management level or not have a duty to ensure the safety of others</p> <p>Bill – The Supervisor</p>	<p>A lack of care, obviously the spilt milk caused it, however, the way in which this very basic and controllable hazard was dealt with showed a lukewarm attitude to safety.</p> <p>Bill – The supervisor</p>	
238	SP13 Max	<p>The box had been moved (may not have tripped)</p> <p>Bill – the Supervisor</p>	<p>Ensuring employees are given responsibility for ensuring boxes and other items are removed and that area around checkouts kept tidy by giving somebody this responsibility. This would ensure it is done.</p> <p>Bill the Supervisor The Company</p>	<p>The lack of a robust system for ensuring tripping hazards are dealt with after being identified or reported.</p> <p>The Company</p>	
239	SP11 Max	<p>The supervisor insisted on the spillage being wiped up immediately. The supervisor should have placed a warning sign up around the spillage or warned his staff of the spillage</p> <p>Bill – The Supervisor</p>	<p>By the spillage being cleaned up when it happened</p> <p>The cleaner</p>	<p>The failure of the floor supervisor to get the spillage cleaned up, by not placing a warning sign around it and by failing to inform staff of the spillage</p> <p>Bill – The supervisor</p>	

Appendix 5 Respondents Completed Sentences

240	SP11 max	Bill had ensured a hazard sign had been placed over the spillage immediately it was reported  Bill – The supervisor	By immediate action by the supervisor  Bill – The supervisor	A lack of correct immediate preventative action  Bill – The Supervisor	
241	SP9 Max	We had a system for ensuring that checks are carried out to ensure walkways are cleaned and free of any hazard.  Safety Officer	By ensuring work areas are inspected at regular intervals and staff to be made aware of what needs to be done to rectify any problem areas  Safety Officer	‘Not completed’	
242	SP9 Max	Methods were in place (e.g. H & S awareness training) to ensure spillages were made safe/cleaned up immediately  Safety Officer	By processes being in place to:-  -Ensure everyone (staff) is aware of risks of spillages.  -Spillages treated with some urgency – to make safe or clear.  -Training in health & safety, supervision and monitoring  Safety Officer	Lack of importance placed on the risks of injury from spillages  The company	

Appendix 5 Respondents Completed Sentences

243	SP9 Max	The cleaner had treated it as a priority and Bill had erected warning signs.  Bill – The supervisor	By having warning signs readily available at the checkout  The store Manager	The substantial condition of the milk being on the floor, the basic contributory cause was not having adequate response to a liquid spillage. Also the design of the milk containers may have been a factor.  The Company	
244	SP10 Min	Someone within the organisation had arranged for the spillage to be cleaned up immediately.  Another worker	If staff followed safety advice and cleaned up spillages immediately  Another worker	Failure of someone within the organisation to identify and deal with the spillage.  The store manager	
245	SP10 Min	Management failing had been better then Mary wouldn't be in this situation. Shop floor workers and supervisors should have spotted the milk before she slipped on it  The store manager	Better inspections of floor area by management/supervisors Better signage Better information/instruction and training  The store manager	As before  The company	
246	SP11 Max	Bill the supervisor had actioned the report of spillage immediately and staff were more vigilant to slipping hazards, temporary warning signage could have been put in place until a cleaner could have attended the spillage site.  Bill – The Supervisor	If staff at the checkouts were more vigilant to spillages and the supervisor acted immediately the accident could have been prevented.  The Company	Due to poor information instruction and training by the employer  The Company	

Appendix 5 Respondents Completed Sentences

247	SP11 Max	We had better communications between departments and more time to train part-time employees in basic health and safety awareness  The Company	Quicker response by a cleaner. Use of portable caution sign put in place by bill as soon as he was aware of the hazard. Better staff awareness & reporting of hazards  The Company	Failure to isolate a potential hazard once highlighted  Bill – The supervisor	
248	SP9 Max	Bill had ensured that the spillage was cleaned up immediately  Bill – The Supervisor	If there was a procedure in place to make sure that spillages are dealt with immediately and the shop floor regularly inspected.  The Company	Not ensuring that the shop floor is kept clean at all times  The Store Manager	
249	Man 6 min	I had insisted that the boxes were removed from the floor as soon as they were emptied  Manager	By “good housekeeping2 on the shop floor. Training shop floor workers to tidy up as they go and supervisor to be more aware of safety issues and hazards Supervisor	Sloppy housekeeping on the shop floor  Manager	N/a
250	Man 6 min	The box had not been left there. If only I had implemented stronger safety procedures.  Manager	By ensuring boxes are not left on shop floor  Manager	The box left on the shop floor  manager	N/a



Appendix 5 Respondents Completed Sentences

251	AS 21 max	Not completed properly	Not completed properly	Not completed properly	A trained person had looked at and identified the resulting muscle tear which leaked blood into the left foot.
252	AS21 max	If it was only just one box why didn't the supervisor pick it up himself straight away  supervisor	Again supervisor should of acted as soon as customer informed him about the box  Supervisor	The person who left the box on the floor  Other worker	The person who loaded the cage should have loaded correctly by putting heavy goods on the bottom and not on the top, which caused the cage to collapse
253	AS 21 max	A trolley was used to lift the scanner Not completed properly	Not completed properly	Lifting a heavy scanner with a colleague from the ground to the back of my car Not completed properly	I used the correct lifting equipment or calling for more help
254	Man 6 min	We had someone with the sole function of keeping the place tidy  Manager	Not completed properly	A box not in its proper place  None	N/a

Appendix 5 Respondents Completed Sentences

255	SP 13 max	The supermarket had a system in place to ensure boxes are removed from the shop floor immediately after use  Employer	By ensuring staff handling boxes had sufficient training supervision to be aware of potential hazards and to operate a safe system of work  Manager	Poor awareness of risk posed by box left on shop floor. Poor training and supervision  Employer	N/a
256	SP15 max	The warning sign had been put out and the company had adhered to a cleaning schedule and supervision had been done properly Bill	Reference to a Company risk assessment should have revealed discarded boxes as a tripping hazard and highlighted controls to minimise the risk  Bill	Lack of supervision to ensure implementation of procedures , which are designed to prevent accidents  Bill	N/a
257	SP 15 max	The box had been moved or if only Mary was watching where she was walking or removed the box from the shop floor herself  Mary	If she had picked up the box or moved the box to one side away from any problem of tripping  Mary	Insufficient movement of the box both by safety officer cleaner customer and Mary  All	N/a
258	SP15 max	Walkways were kept clear of obstructions  Manager	Not answered	Box not removed  Bill	N/a

Appendix 5 Respondents Completed Sentences

259	SP15 max	The box had been cleaned away or it should have been may be she would not have had this accident If only Mary had been watching where she was going  Mary	Not answered	Awareness on both parties . Each individual worker has a duty to be aware of risk or hazards and that includes Mary  Another worker	N/a
260	SP9 Max	Action had been taken after the 4 previous incidents than the present one could have been avoided  Manager	Action had been taken after the 4 previous incidents than the present one could have been avoided  Manager	Management negligence  Manager	N/a
261	AS23 max	The cleaner had come earlier and cleaned the mess  Cleaner	If the cleaner had come quicker the accident wouldn't have happened  Cleaner	Nobody was standing next to the box, no sign, no back up from the floor supervisor, checkout manager, safety officer , cleaning company supervisor and cleaner Cleaner (you cannot say its one person	The corridor had not been blocked with cages the corridor would have been twice as wide as the cage and if the cage door had been secured properly at the store due to fault
262	Man 7 max	Signs had been put out to make Mary aware of the box or the box had been moved straight away or the box had not been left there in the first place  Bill	Same as CFT	That a box had been left in a walk way  Cleaner	na

Appendix 5 Respondents Completed Sentences

263	Man 6 min	<p>The box had not been where it was. The member of staff who placed it there had been more aware, or had at least pointed out its position to other members of staff.</p> <p>Mary had been looking where she was going and was more aware Another worker /Mary</p>	<p>Through better health and safety training. Better awareness of staff</p> <p>Mary / Manager / Employer / other worker</p>	Not enough information to answer	Na
264	Man 6 min	<p>I had checked that the checkout floors were clear</p> <p>Other worker but also fits Mary and Bill</p>	<p>Good housekeeping, clear as you go. Supervisor workplace monitoring and inspection. Mary having reported box, co-worker not having left it there. Training in good housekeeping</p> <p>manager</p>	<p>Poor housekeeping was the cause, with contributory factors such as inadequate monitoring of housekeeping in the workplace.</p> <p>Bill</p>	na
265	As21 max	<p>Bill the supervisor had moved the box himself or ensured it was moved immediately</p> <p>Bill</p>	<p>By Bill insisting immediate action by cleaner or safety officer</p> <p>Bill/ Safety Officer/ Cleaner</p>	<p>Neglect</p> <p>Bill</p>	More anti-slip material positioned in entrance together with notice warning wet surface

Appendix 5 Respondents Completed Sentences

266	SP 9 max	The cleaner had attended as soon as he /she was asked and if not then Bill should have put a warning sign up immediately  Bill	As spilt milk is common in this area Bill should be aware of the need to ensure that the milk is cleared up as soon as possible and in the meantime the area cones off . there should also have been some follow up on the other slips that were shown in the book  Safety Officer	Staff not being vigilant in checking that milk had been spilt and then acting on this immediately and warning people in the area to take care.  Bill	N/a
267	Sp 16 MIN	The box hadn't been left on the floor Mary wouldn't have tripped over it Company	By better supervision and training of all supermarket staff to ensure better housekeeping and tidiness within the store  Company	Poor housekeeping due to managements failure to ensure such tripping hazards are avoided  Company	N/a
268	AS 24 min	I had noticed that box earlier I had not covered for my friend  Mary and Safety Officer	Not answered	ABC Supermarkets  The Company	Not answered

Appendix 5 Respondents Completed Sentences

269	SP 12 min	Someone had realised some milk had been spilt and done something to clear it up.  Another worker	If the spillage had been cleared up / highlighted straightaway  Another worker	Not clearing up / highlighting the spillage  Another worker	N/a
270	Man 6 min	I had ensured that the departmental manager had enforced store procedures and identified and arranged the obstruction to be removed before the event occurred  Bill	By ensuring that all staff at every level in the store are aware of such issues and even if it is not their responsibility to ensure the removal of boxes and cardboard from the shop floor  Another worker	A lack of general awareness across the store about such issues and the exercising of authority at every level (particularly at lower level) to remove the box  Another worker	
271	SP 11 max	There were lessons learnt from previous accidents and a system put in place for the clean up of spillages around the checkouts / around the supermarket  Safety Officer	By cleaning up immediately , warning of the danger. Preventing the slipping hazard in the first place regular reminders of hazards to staff  Safety Officer	There was no safety system in operation in the supermarket . lessons were not learnt from previous incidents  Safety Officer	N/a
272	SP 13 max	There had been in place a positive view to all matters relating to safety from senior management to shop floor men  Employer	Proactive hazard spotting Risk assessment regime Training in to practice programme Visible management commitment  Employer	Lack of safety management system  Employer	N/a

Appendix 5 Respondents Completed Sentences

273	SP 16 min	The box hadn't been seen  Employer	By better organisation and housekeeping. Space to put things , instructions procedures. A safety culture  Manager	The box being on the floor and unexpected  Bill	N/a
274	Man 7 max	The cleaner had removed the box when told , the accident may not have happened  Cleaner	By Bill the Supervisor ensuring that the till points are tidy and clear of boxes  Bill	Not answered	N/a
275	SP 13 max	The customer had reported the box to a checkout operator , it could have been moved immediately  Bill	By one of several people taking responsibility for moving the box including customers and staff  Another worker	Lack of appreciation of the significance of an apparently innocent hazard compounded by "its not my problem"  None	N/a
276	SP 10 min	Safety signs were used to highlight the spilt milk and precautions were taken by Mary's fellow staff to maintain safe access and egress  Mary/ Bill/Manager/Safety Officer/ Employer	By safety signs and staff informing cleaner of incidents  Manager / Safety Officer	Non-compliance by Staff with in-store safety procedures , and with management in not enforcing such  Safety officer	N/a

Appendix 5 Respondents Completed Sentences

277	AS 21 min	Not answered	Not answered	Not answered	Not answered I had realised the path way was icy as well as the road.
278	AS24 min	Not completed properly	Not completed properly	Not completed properly	If the lifting hoist was put away in its rightful place and not tucked behind a wall in the hall I would not have tripped over the legs which stick out further than the rest of the hoist.
279	AS 23 max	<p>I did not have to cover for my friend this Thursday . That box was not there on Wed and I dint know where it came from all of a sudden today. I could have picked it up and placed it elsewhere but it did not seem to pose a great danger as it was only a foot high , but if I or the staff involved with it moved it before...</p> <p>Mary report to Bill report to Safety Officer</p>	<p>If she reported the box to her supervisor to report to the Safety officer to remove it or going directly to see the Safety Officer. Even if she picked it up herself to put on a table in the staff room out of the way.</p> <p>Mary/ Bill/ Safety Officer</p>	<p>Herself and other colleagues at work . Other workers who may have a relaxed attitude to taking the box to its destination and may think why should I move it as it is not my job and I did not put it there</p> <p>Mary / Other worker</p>	<p>The young lady pushing the high stack of trays reduced the height of the stack before moving it across the floor into me. Plus it would have helped if she was looking to both sides when pushing.</p>



Appendix 5 Respondents Completed Sentences

280	AS 21 max	I had not been chatting to my friend I would have been more aware of the box on the floor although it should have been moved earlier  Bill	If the box had not been left on the floor , or at least moved sooner  Cleaner	The store did not carry out safety procedures quickly enough Manager	The supermarket had checked the floor before I walked on it and slipped
281	AS 21 max	All staff were made aware of possible dangers and were required to avoid / correct them as soon as they were noticed  Employer	If all staff were trained to be vigilant of possible causes of accidents and were instructed to draw attention to them as soon as observed  Bill	Sloppy working practices  Manager	I had looked where I was putting my feet
282	AS 18 min	I was more aware and had noticed the spillage stay next to it and called for Bill (supervisor) to get cleaner to mop up Bill	I was more aware and had noticed the spillage stay next to it ad called for Bill (supervisor) to get cleaner to mop up Bill	Customer and staff awareness . One seen it should have been reported and not ignored  Another worker	I look more time and used more appropriate equipment
283	AS18 min	I had looked where I was going or whoever spilt the milk had ensured it was cleaned up  Mary	By Mary being more careful and the person who spilt the milk taking responsibility for cleaning it up  Mary	Whoever spilt the milk and didn't get it cleaned up but also Mary for not seeing the milk  Mary	I had moved a little slower and more carefully

Appendix 5 Respondents Completed Sentences

284	As 19 max	Bill the supervisor had warned staff or waited until the cleaner had arrived  Bill	if warnings were given or if the clean up had been quicker  Bill	The spilt milk not being cleaned up as soon as it was noticed or reported or warning signs told people  #bill	The cleaners had not soaked the floor with so much water. They had not put up warning signs in the aisle I was walking down and they should not do this type of cleaning when customers are in the store
285	AS21 max	The cleaner did his/.her job properly  Cleaner	If the cleaner had gone and moved the box when asked Mary would not have tripped as there have been 6 accidents maybe they need a new cleaner  Cleaner	Tripping over a box that the cleaner should have moved  Cleaner	I had walked on the pavement and not on the grass
286	AS21 max	Someone had moved the box  Bill / Manager / Employer Cleaner	Due to past accidents management should have doubled checked if the box was moved or warning signs put up.  Bill / employer / cleaner	Neglect on stores health and safety rules. Shop is very hazardous.  Manager / Employer	Whoever dropped box was too lazy to pick it up and could have been a worse injury than it was  Not completed properly
287	AS 19 max	I had not come in to cover my friends shift  Mary	If the cleaner had cleared the milk up sooner or even if someone had just put up a warning sign or if I had paid more attention , or not gone on my break then.  Cleaner	The fact that nobody had actively done anything to warn people about the spilt milk  Bill	I had not gone home by that bus or if I had not used that bus stop ... or if the driver had been going a bit faster /slower or if I had been hit at a slightly different angle , or if I had not crossed the road then or if nobody had been around , or if it had not been raining

Appendix 5 Respondents Completed Sentences

288	AS19 max	I didn't cover for my friend on Thursday  Mary	The cleaner had acted immediately / signs  Cleaner	Lack of cleaning and action of manager  <del>Bill Manager</del> Cleaner	Not completed
289	As 19 max	The milk had been mopped up as soon as it was spilt  Cleaner	If the cleaner had mopped it up when asked by the supervisor and if Bill had made sure it had been done  Cleaner	The fact that the floor was slippery due to the milk that had been spilt on it.  Customer	Not completed
290	AS 23 max	There was more than one cleaner; we had gone on our break earlier therefore missing the box due to it not being there. I hadn't covered for my friends shift on the Thursday Cleaner	Better organisation generally within the store, people checking the accident book and highlighting any problem areas Employer	Carelessness on the shops behalf (including managers , supervisors etc) , My (Mary's) fault for not paying enough attention  Employer	Certain things out of my control hadn't happened
291	AS22 min	I had seen the box on the floor, someone had not left the box there. If only someone had picked it up before I arrived at work. If only I had not been able to work this extra shift Mary	Staff training about the dangers of leaving things on the floor  Employer	Staff assuming it was other peoples responsibility to pick up the box . lack on companies behalf , not communicating danger /risk assessment  Employer	The company had replaced the torn floor covering when first reported 5 months earlier, the EHO had forced the company to take action, the company thought more about the safety and welfare of its staff and less about cutting costs

Appendix 5 Respondents Completed Sentences

292	AS 24 Min	I would have watched where I was going and the person who left the box lying around put it away  Mary	Paying more attention  Mary	Not paying attention to health and safety at work  Mary	blank
293	As24 min	Not answered	Not answered	Not answered	A small piece of wood dislodges itself from my load which was visible in the mirror. I parked the lorry where convenient to do so , then climbed up to reposition it when I tripped on one of the straps securing my load. If the small piece of wood had not come adrift
294	AS23 max	Bill had moved the box as soon as reported to him  Bill	By the area around the checkouts being clear  Manager	Another member of staff leaving a box where it shouldn't have been left  Another worker	The pallet of items had not been left in the wrong place
295	AS23 Max	Not completed	Not completed	Not completed	There was not so much rubbish about , this is the third time I have had a fall , because of all the mess and both times I have broken or cracked bones, and I do take care since the first time

Appendix 5 Respondents Completed Sentences

296	AS23 max	Some idiot had not put the box there in the first place.  Another worker	If the box had been put in the correct place , or dealt with immediately,  Another worker	The box left in the wrong place and not being dealt with  Another worker	Someone had not removed the lower section of the vegetable rack , the base arm would not have been exposed for me to trip over, having still had access to the upper level to select veg.
297	AS 23 max	In order of importance 1. The store manager had instituted a policy of keeping the whole store constantly tidy and checked that his various junior managers applied the policy. 2. the supervisor had learned from past accidents and been more vigorous in getting obstructions removed - even to the extent of doing it himself if other priorities precluded the cleaner doing it immediately.	In order of importance 1. The store manager had instituted a policy of keeping the whole store constantly tidy and checked that his various junior managers applied the policy. 2. The supervisor had learned from past accidents and been more vigorous in getting obstructions removed - even to the extent of doing it himself if other priorities precluded the cleaner doing it immediately.	Poor management	Not completed
298	As 23 max	The manager of the store listened to customers and had the cleaner do his/her job and clear rubbish which should not have been there and looked in the accident book to see how many previous accidents there were  Manager	If there were more awareness on the shop floor. and a better housekeeping standard  Safety officer	Failure to put into practice housekeeping :- the manager of the store who had several complaints from customers plus previous accidents of same nature  Store manager	The rubber mat were laid together with another mat correctly

Appendix 5 Respondents Completed Sentences

299	AS23 max	Not answered correctly	Not answered correctly	Not answered correctly	They had washed the floor earlier or they had put up notices stating the floor was wet
300	As 20 min	The milk had been cleaned up at once  Cleaner	If the milk had been reported and cleaned up  Bill	The cleaner  Cleaner	The spill had been cleaned up at once and a sign put there
301	AS20 min	The person who spilt the milk had put a danger sign on the floor  Employer	If all the staff were trained to look for hazards at all times  Employer	Nobody took responsibility for alerting the hazard of spilt milk  All	The person who left a wet floor unattended had thought about other people's safety
302	AS 20 min	Someone had cleaned it up and put a sign there or , if only I had cleared it up or stepped over it  Cleaner . other worker	By whoever spilt the milk should have cleaned it up straight away  Another worker / cleaner	Not looking where I was going and if I had seen it I should have clean it up  Mary / other	By moving / lifting equipment carefully

Appendix 5 Respondents Completed Sentences

303	AS20 min	The milk was cleared up straight away and a hazard sign put in place I would not have slipped  Bill/manager/cleaner	If it had been cleaned up straightaway and signs put in place  Cleaner	Down to training of staff and putting health and safety first  Manager	The person who spilt the cream cleaned it up straight away and put a hazard sign in place I would not have fallen
304	AS19 max	Not completed properly	Not completed properly	Not completed properly	There had been a security guard around , perhaps my colleagues and myself would not be in the situation we were in
305	AS 21 max	The box had not been left at scene in the first place and removed when first noticed  Bill	By staff being trained in safety issues and enforced by store  Safety officer	The box being left where it was  Bill	Not completed
306	AS23 max	I was concentrating instead of waiting for other check out operator then I wouldn't have been distracted  Mary	The box should have been cleared away immediately  Cleaner	The person who left the box there  Another worker	I had looked more closely the vehicle would not have hit me . it was entirely my fault

Appendix 5 Respondents Completed Sentences

307	As 22 min	I hadn't decided to go for a fag  Mary	If she had been a non-smoker  Mary	In a hurry to light up  Mary	I had not come to work today
308	As19 max	The supervisor had arranged for warning signs to have been put around the spilt milk immediately he heard from the customer  Bill	If she had noticed the spilt milk if there were warning signs  Mary	The fact that spilt milk had been left on the floor without any signs  Bill	I had not attempted to carry too many objects when going out of the door which had a hinge which caused it to close on me
309	AS17 max	I had seen the milk before slipping . if only it had been cleaned up earlier by someone  Bill	By the spillage being cleaned up immediately –not waiting for a “cleaner”. Anyone can pick up and clean a spillage  Bill	Failure of the person who spilt the milk to clean it up straight away – if it was a customer and they reported it then it was the failure of the manager who it was reported to clear it up  Bill	I had seen the spillage ( it was a clear liquid from the trifle) I would have cleaned it up and I would not have slipped
310	AS 18 min	Bill the supervisor had made sure the spillage was cleaned up as soon as it happened the accident would not have happened  Bill	Bill the supervisor had made sure the spillage was cleaned up as soon as it happened the accident would not have happened  Bill	The milk not being spotted earlier  Bill	Not completed



Appendix 5 Respondents Completed Sentences

311	As 20 min	I'd had time to watch where is was going I may have seen the milk  Mary	If she'd noticed the milk , if any other staff member / customer had noticed it and reported it  Mary	Whoever spilt the milk and did not report it / mark it for others to see  Another worker	It wasn't a back strain and someone had found me earlier. The 1 <sup>st</sup> aiders had not moved me and mainly that I hadn't fallen at all
312	Man 1 max	A warning sign was put out by bill until the cleaner got to the spillage to clean it  Bill	A warning sign was put up. This area is checked regularly as it has a history of spillages This area becomes a priority area for the cleaner Manager	This situation was not dealt with quickly enough  Bill	N/a
313	Man 1 max	A warning sign had been placed by the spill if it could not be cleared up straight away  Bill	If the person responsible for the spill had reported it to a member of staff and that member of staff had placed a warning at the scene and then cleared it up  Bill	Staff should have been made aware of dealing with (placing warning) incident immediately  Safety officer	N/a
314	Man 1 max	The warning signs were put out  Bill	Warning signs Bill	Not putting the signs out  Bill	N/a

Appendix 5 Respondents Completed Sentences

315	Man 1 max	<ul style="list-style-type: none"> <li>This area had carpet laid</li> <li>It had supervised the cleaner correctly and got this problem resolved immediately</li> <li>This problem was managed properly</li> <li>Bill/manager/safety officer/employer/another/cleaner</li> </ul>	<p>Because the person spilling the milk should have responded immediately and used signs provided by the company that should have been there - the person who dropped the milk could have used them</p> <p>Bill/manager/safety officer/ employer/ another/ cleaner</p>	<p>Incompetence</p> <p>Bill/ manager/ safety officer</p>	N/a
316	Man 1 max	<p>They had cleaned the spilt milk immediately</p> <p>Manager</p>	<p>If the spillage had been cleaned immediately</p> <p>Manager</p>	<p>Not responding quick enough to spillage</p> <p>Manager</p>	N/a
317	Man 1 max	<p>Bill had put warning signs out immediately and stood b y the spillage until dealt with. The milk had not been spilt in the first place</p> <p>bill</p>	<p>If she had been more aware. We have developed a nanny state with monetary compensation for carelessness</p> <p>Mary</p>	<p>Milk spillage</p>	N/a
318	Man 1 max	<p>Bill had ensured the cleaner had gone to mop it up or taken responsibility himself and had at least put some paper towels down</p> <p>Bill</p>	<p>Not completed</p>	<p>The cleaner not responding quick enough and bill not ensuring that it had been followed up</p> <p>Bill</p>	N/a

Appendix 5 Respondents Completed Sentences

319	Man 1 max	The cleaner had cleaned the milk up straight away  Cleaner	1. warning signs could have been put out 2. the milk could have been cleaned up earlier bill	Slow reaction of staff on duty to deal with the incident  Bill	N/a
320	Man 1 max	Bill had put warning signs up at the time the customer had reported it  Bill	Warning signs should have been put up immediately and a member of staff should have overseen the clean up  cleaner	Insufficient communication between staff  Bill	N/a
321	Man 1 max	The cleaner had removed the spillage or if bill had put up warning signs this may not have happened  Bill	If bill had acted with more authority  Bill	Due to the spill not being cleared, no warning signs being put up and Mary not looking where she was going  Mary	N/a
322	Man 1 max	Warning signs had been put out  Bill	Not completed	Milk not being cleaned up right away  Cleaner	N/a

Appendix 5 Respondents Completed Sentences

323	Man 1 max	Bill has put clear warning signs around the spillage when it was first reported to him.  Bill	If clear warning signs informing people had been put around the spillage therefore making people aware until the cleaner could clean up the mess  Bill	Procedures in place for this situation were inadequate. Risk assessments must be completed and monitored regularly, training needs to be looked at  Manager / safety officer	N/a
324	Man 1 max	The cleaner had acted more promptly Bill had put up warning signs Standard procedures had been applied or existed  Bill/ manager/ safety / employer /cleaner	The cleaner had acted more promptly Bill had put up warning signs Standard procedures had been applied or existed  Bill/ manager/ safety / employer /cleaner	Negligence and lack of procedures	N/a
325	Man 1 max	Bill had immediately placed warning signs and remained at the site until the cleaner had arrived  bill	By better reaction and protocols to guide the floor supervisor  Bill	Inappropriate action by bill  Bill	N/a
326	Man 1 max	I hadn't come in on Thursday to cover  Mary	If the cleaner had responded straight away or bill had put a sign up  Cleaner	Safety procedures not applied immediately  Manager	N/a

Appendix 5 Respondents Completed Sentences

327	Man 2 min	<p>The person spilling the milk had mopped up the spillage or arranged for it to be cleaned and the yellow spillage /wet floor signs displayed.</p> <p>If only the floor supervisor had procedures in place for dealing with spillages that his staff were aware of!</p> <p>Bill / cleaner</p>	<p>By an appointed /designated cleaner or floor staff to clear up all spillages and display the appropriate hazard signs</p> <p>Bill/manager/safety/another/cleaner</p>	<p>The wet slippery floor caused by spilt milk</p> <p>Bill/ manger/safety/another/cleaner</p>	N/a
328	Man 6 min	<p>The boxes had been cleared out of the way .</p> <p>Safety officer</p>	<p>If the person who had left the boxes on the floor had moved them out of the way</p> <p>Bill</p>	<p>Not clearing away empty boxes</p> <p>Bill</p>	N/a
329	Man 6 min	<p>All the shelves / freezers could be refilled overnight or early morning it would drastically reduce the possibility of such accidents</p> <p>Employer</p>	<p>If the store was refilled with goods when the store was closed staff would then be more aware of boxes around the store and take more care whilst walking around</p> <p>Employer</p>	<p>Another staff member leaving the box instead of flattening and disposing of it</p> <p>Another worker</p>	N/a
330	Man 6 Min	<p>That box\ hadn't been there Mary wouldn't have had an accident</p> <p>None</p>	<p>By box storage /placement being better managed</p> <p>Manager</p>	<p>Due to a box being left in a walkway by an unknown person and not being spotted as a hazard to be removed by staff</p> <p>Employer</p>	N/a

Appendix 5 Respondents Completed Sentences

331	AS24 min	Not completed properly	Not completed properly	Not completed properly	If knew I was falling I would have tried to save myself.
332	As24 min	I had done my normal day at work and hadn't covered for my friend  Mary	If whoever left the box in an apparently dangerous position had been more thoughtful as to what they were doing  Another worker	The member of staff who placed the box in a dangerous position and caused by the lack of advice on doing this being given by a supervisor  manager	The person causing the accident had been more careful, which would have come from being suitably advised as to the need for care.
333	AS19 max	I had been looking where I was going and not talking to my friend I would have seen the spillage on the floor  Bill	If the milk had been cleared up immediately or a warning notice had been put in place  Bill	The spillage on the floor  bill	The fitments had been further apart in the store I would not have tripped up .  If I had stayed at home
334	As17 max	Warning signs had been put up immediately. cleaner had been more available , or supervisor covered overspill until cleaner arrived  bill	Bill the supervisor taking immediate action – could have cleaned the spill or put up signs in the time taken to call for the cleaner  Bill	The milk  None	Not completed

Appendix 5 Respondents Completed Sentences

335	AS23 max	Bill had put out a warning sign I would have seen the box , but if the cleaner hadn't left something so dangerous unattended  Bill / cleaner	If the cleaner had at least looked at the box to see the danger. If bill had put up a warning notice. If the area around the checkouts is always messy then the health and safety officer has a lot to answer for  Safety officer	Negligence  Safety officer	The rubbish bags I fell over should not have been left blocking the path and as I am forbidden to move rubbish bags due to health and safety regulations I should not have attempted to deliver the mail
336	AS 19 max	Not completed	Not completed	Not completed	Not completed
337	As 17 max	I had not worked on that day  Mary	If the cleaner had cleaned up the spill, if bill had made sure she had and if Mary had been more careful  Cleaner	She slipped on milk which should have been cleaned up  Bill	It had not been raining outside the floor had not been smooth wood laminate and I had not been wearing leather soles
338	AS18 min	I hadn't offered to cover my friend who was on holiday, this would not have happened  Mary	Had the spillage been clearly marked or cleaned up  Bill	Someone spilling the milk and not reporting it to a member of staff  Bill	The other member of staff been more careful whilst sorting out the lengths of wood.

Appendix 5 Respondents Completed Sentences

339	Man 6 min	The box had not been left in an area where it caused a possible hazard  Bill	By all of the shop staff and their supervisors being more vigilant and ensuring there was clear access ways to all areas and rubbish was disposed of quikley and properly  Bill	Negligence on behalf of whoever left the box where it would cause a risk to someone  Bill	N/a
340	Man 5 max	There was a policy for all empty boxes to be flat packed and put in appropriate storage area as soon as that are emptied.  All walk ways should be clear of debris  If Mary had not been talking to her friend she may have noticed the box  manager	By having adequate health and safety policies and ensuring staff adhere to them  Safety officer	An object sitting /cluttering a walkway  Another worker	N/a
341	Man 5 max	I had paid more attention to past accidents I could have implemented new guidelines  Manager	If I had implemented new guidelines and procedures after the first accident  Manager	Not having the right guidelines and procedures in place  Manager	N/a



Appendix 5 Respondents Completed Sentences

342	Man 5 max	<p>The area round the checkout had been kept tidy .</p> <p>If only bill had ensured that the cleaner had either cleared</p> <p>Bill up or marked the area as dangerous bill</p>	<p>The checkout area and other areas are constantly kept tidy and clear of any obstruction . also the cleaner must be aware of this</p> <p>Safety officer</p>	<p>Lack of diligence by staff with regard to keeping aisles clean and tidy</p> <p>Manager</p>	N/a
343	Man5 max	<p>The staff had been doing their jobs correctly</p> <p>Bill</p>	<p>The box should not have been there. It could not put itself there, so somebody did wrong putting and leaving it there. It should have been removed as soon as it was spotted.</p> <p>None</p>	<p>Carelessness</p> <p>None</p>	N/a
344	Man 5 max	<p>I had been more insistent on the area being kept tidy and bill had stayed by the box until the cleaner removed it</p> <p>Manager</p>	<p>Better housekeeping</p> <p>Manager</p>	<p>Slack management ignoring the risk</p> <p>Manager</p>	N/a

Appendix 5 Respondents Completed Sentences

345	Man 5 max	<p>The cleaner would have done as he was told and cleaned up the box this could have been prevented</p> <p>Also If only we would have acted in a proactive way instead of reactive this accident could have been prevented Bill</p>	<p>If the cleaner would have cleared up the box and if we would have investigated the previous near misses</p> <p>Bill</p>	<p>Not following up to ensure the cleaner removed the box and for the manager on duty not clearing up the box when he was notified.</p> <p>Bill</p>	N/a
346	Man 5 max	<p>I had acted more positively to the earlier accidents</p> <p>Manager</p>	<p>By accident investigation and proper investigation and remedial action.</p> <p>Manager</p>	<p>Failure to learn from experience</p> <p>Manager</p>	N/a
347	Man 5 max	<p>We had kept the area round the checkouts tidy</p> <p>Manager</p>	<p>If the area round the checkouts was kept tidy</p> <p>Bill</p>	<p>The fact that the area round the checkouts was not kept tidy</p> <p>Manager</p>	N/a
348	Man 5 max	<p>Staff were trained correctly and fully understand that everyone is responsible for health and safety</p> <p>manager</p>	<p>Box should never of been left on the floor and if so billy had it reported to him but ignored follow up , billy should of picked it up himself instead of given it to the cleaner, and all staff being trained on health and safety</p> <p>Manager</p>	<p>Lack of training on health and safety.</p> <p>Manager</p>	N/a

Appendix 5 Respondents Completed Sentences

349	Man 5 max	<p>Bill had taken immediate action himself if he knew the cleaner was elsewhere or even when if went to assess the situation before finding the cleaner</p> <p>bill</p>	Not completed	<p>That knowing boxes were a problem on one had either the responsibility or initiative to tidy them up. As store manger I should have a) given someone responsibility b) ensure that other staff also take the initiative</p> <p>Manager</p>	N/a
350	Man 5 max	<p>Bill had responded to the customers report by dealing with the “hazard” himself or ensured that “warning signs” had been displayed as appropriate</p> <p>If only there was a store policy about clearing untidy areas on a regular basis</p> <p>Bill</p>	<p>If there had been regular checks of untidy areas and raising staff awareness of potential hazards</p> <p>Manager</p>	<p>Poor or no safety procedures to deal with known hazardous areas</p> <p>Safety officer</p>	N/a
351	Man 5 max	<p>She had looked where she was going</p> <p>Mary</p>	<p>If the b ox had been picked up</p> <p>Bill</p>	<p>Untidy work place</p> <p>Manager</p>	N/a

Appendix 5 Respondents Completed Sentences

352	Man 5 max	I had put a warning sign in position as soon as the box was reported or I had moved the box myself  Bill	By an immediate reaction to the customer reporting the box  Bill	Lack of a good safety regime and slow response to a reported hazard  Manager	N/a
353	Man 5 max	We had established safety policy regarding leaving of boxes unattended in walkways  manager	By having the aforementioned safety policy in place together with a proper mechanism for ensuring its compliance  Manager	In failing to have monitored safety policy in place  Manager	N/a
354	Man 7 max	The box had been removed sooner  Cleaner	By checking the floor for hazards  Employer	The floor was not kept clear of hazards  Safety officer	N/a
355	Man 1max	Someone was specifically in charge for dealing with all potential accidents ie spillages then perhaps an accident could be prevented before it has the chance to occur  None	As soon as the spillage has been noticed ( in this instance the customer) a member of staff could be stood there to warn customers until the spillage is cleaned up  none	She could have been looking where she was going. All individuals are responsible for themselves (its common sense) but at the same time as a retail outlet you must always do your best to minimise potential hazards  Mary	N/a

Appendix 5 Respondents Completed Sentences

356	Man 1 max	A cleaner was positioned nearer to the incident and more importantly , bearing in mind the previous frequency of incidents of spillage in the check out area that cones had not been more readily available in order to divert potential hazards away  employer	By proper attention to the hazard and prevention measures taken to isolate the affected area  Bill	Initially a spillage but due to the lack of forward thinking, negligence was the cause  Employer	N/a
357	Man5 max	The previously reported incidents had been acted on and preventative action taken  Manager	If I had ensured that after the previously reported incident the area was checked regularly and responsibility given to bill to ensure it was kept clear at all times  bill	The irresponsible person who placed the box in such a way as to cause an accident  another	N/a
358	AS 20 min	The person who spilt the milk had cleared up or reported it so others could clean it up  Mary had kept her eyes open for dangerous situations she could have avoided the accident  Another / mary	1. by cleaning up the spilt milk immediately the milk would not have been there to slip up on. 2. other worker could have taken the responsibility to clean up 3. Mary should have been aware of a potentially dangerous situation  Another / mary	Failure of somebody to accept responsibility to clean up the spilt milk when it happened  another	I had checked the area for potential danger before the accident

Appendix 5 Respondents Completed Sentences

359	man 5max	The box had been tidied away immediately  Bill	1.tidying the box away immediately better tidiness in the check out area training awareness to deal with above bill/manager	Poor tidiness due to poor procedures and training  Manager	N/a
360	As 19 max	The person who had spilt the milk had reported it and it had been cleaned sooner the accident could have been prevented  Not completed	If a member of staff had stayed at the site of the spilt milk to warn people until it was cleaned up  bill	Failure among all parties (except Mary) to recognise with speed the importance of the results that an accident of this nature could have caused  Bill/manager/safety officer/ cleaner	I too slipped on an unknown substance in a supermarket. In the 15 minutes that elapsed between my witnessing the event and slipping on the floor, nothing had been done. The shop staff had put a large piece of cardboard over the spill, although nobody actually realised that putting cardboard on a patch of oil is not really effective . no warning signs were placed.
361	As 20 min	The person who spilt the custard on the floor had cleaned it up properly  Manager	If the person who spilt the custard had cleaned the floor and taken appropriate action to warn colleagues the floor was wet manager	The spilt custard  Another worker	The person responsible for spilling the custard had cleaned it up properly

Appendix 5 Respondents Completed Sentences

362	As24 min	Not completed properly	Not completed properly	Not completed properly	I had avoided the pallets and unattended pump truck which should not have been left there and I had gone round the pallets the other way
363	SP 15 max	The shop floor supervisor had picked up the box when the customer had reported it , he could have (a shown a positive attitude to the customer and b) the accident would not have happened c) he could have asked the cleaner to be vigilant at the same time leading by example Bill	If a culture involving all staff operating a clean as you go system was incorporated into the daily safety routine  Employer	The failure on the part of the organisation to establish a holistic safety culture  Employer	N/a
364	SP15 max	The cleaner had moved the box to a safe place immediately  Cleaner	If the box had been moved to make safe  Cleaner	Failure of the cleaner to act immediately to advice  Cleaner	N/a
365	SP 15 max	I had looked where I was going  Mary	Better communication  Bill	Lack of communication , nobody taking responsibility for removing the box  Bill	N/a

Appendix 5 Respondents Completed Sentences

366	SP14 min	Someone had thought to move the box out of the traffic route and mary was watching where she was walking  Employer	By staff thinking about safety hazards and doing something about it when they see it and removing box from traffic route  employer	That there is not a safety culture in the businesses  Employer	N/a
367	SP 14 min	The box hadn't been placed there and if only Mary had paid more attention  bill	If the box hadn't been placed there and if mary had been concentrating better  Bill	A lack of safety awareness  Employer	N/a
368	SP 14 Min	Housekeeping standards had been better  Employer	By ensuring empty boxes are promptly removed to an appropriate place  Employer	Poor housekeeping  Employer	N/a
369	SP 14 min	The person using the box previously had emptied it or not left it in such a hazardous position then the accident would not have occurred  Another worker	Better housekeeping  Another worker	Inadequate awareness and poor housekeeping and lack of supervision and reinforcement of supervision  Safety officer	N/a



Appendix 5 Respondents Completed Sentences

370	SP 14 min	General housekeeping round the store had been better  Manager	If general housekeeping about the store had been better – boxes would have been moved out of pedestrian areas  Manager	Poor housekeeping about the store – constant supervision required to keep pedestrian areas clear  Manager	N/a
371	SP 14 min	Someone had picked up the box  Employer	Better housekeeping  employer	A possible breakdown in housekeeping procedures leading to severe consequences for Mary  Employer	N/a
372	SP14 min	Someone had not left the box there  Mary	If the box had been moved/positioned correctly. if staff had been correctly trained ( if it had been left in an incorrect place / manner) . if a supervisor had identified the problem and done something about it. Safety officer	A lack of training, supervision and or instruction of staff in the correct storage /removal of boxes  Safety officer	N/a
373	SP 14 min	We had better housekeeping  Manager	1. better housekeeping procedures 2. better enforcement of procedures 3. training, awareness and competence Manager	Poor housekeeping Carelessness of Mary  manager	N/a

Appendix 5 Respondents Completed Sentences

374	SP14 min	People would put things away properly in the right place  Safety officer	If section 7 HSW act had been observed  Manager	The box was in a position that was not normally in that location. Had the box been stored correctly this would not have caused the accident  Safety officer	N/a
375	SP 13 max	I had supervised the cleaner and ensured that the box was cleared straight away  Bill	Not sure	Poor housekeeping within the store.  manager	N/a
376	Man 4 min	The cashier by the spillage had reported it  Another worker	Staff training on how to react to spills  Manager	Staff ignoring the spill  None	N/a
377	Man 4 min	The milk spillage had been immediately cleaned up and/or area cordoned off to prevent an accident until it was cleaned up  Another worker / cleaner	By urgent cleaning up milk spillage after it had occurred or cordoning off area until action had been taken  Another worker/ cleaner	Either the customer or shop employee who witnessed the spillage not undertaking urgent action  Another worker /cleaner	N/a

Appendix 5 Respondents Completed Sentences

378	Man 4 min	The person who spilt the milk had notified someone so that the milk could have been cleaned up or a danger sign put out  None	By a danger sign being placed over the milk  Another worker/ cleaner/customer	The milk being left on the floor after it was spilt  Bill	N/a
379	Man 4 min	General hygiene had been better  Manager	By following good hygiene / cleaning practice  Manager	As before poor hygiene /cleanliness  Manager	N/a
380	Man 4 min	The milk had been cleared up as soon as it was spilt or marked as spilt  Bill	Mary being more aware of the spillage or prompt cleaning of the milk  Bill	The milk being spilt and not being cleaned up or marked quickly  bill	N/a
381	Man 3 max	I had cleaned up the spilt milk asap  Manager	Put sign up to warn people  Cleaner	Negligence from the shop floor supervisor for not supervising the clean up of the spilt milk  bill	N/a

Appendix 5 Respondents Completed Sentences

382	Man 4 min	Marys friend had not gone on holiday. Mary was to busy to work an extra day The milk had been cleared away quickly  Manager	With the spilt milk clearly notified with the relevant slip sign or cleared away by the domestic staff.  Safety officer	The spilt milk which had not been cleared away  Safety officer	N/a
383	Man 3 max	The cleaner had responded immediately instead of 5 minutes Cleaner	By immediate response from cleaner or cordoning off the area.  Cleaner	Spilt milk not being cleaned in time or area cordoned off  Cleaner	N/a
384	Man 3 max	The milk had been cleaned up earlier  Cleaner	If the milk had been cleaned up earlier  Bill	Lack of response to customer complaint  Bill	N/a
385	Man 3 max	A warning sign had been put out as soon as the spillage had been discovered  Bill	By a slip sign being put out quickly  Bill	Not having a proper policy for dealing with accidents  Safety officer	N/a

Appendix 5 Respondents Completed Sentences

386	Man 3 max	We could have put warning signs out immediately We had better system for keeping people away from spillages Clear instructions had been given to cleaners to prioritise spillages Manager	Better systems for dealing with spillages  Manager	Failure to have effective systems in place to deal with spillages Failure to communicate with staff  Manager	N/a
387	SP 11 max	Warning signs had been erected more quickly Bill / cleaner	Quicker response to spill  Bill/cleaner	Failure to clear up the spillage quickly enough / placement of signs  Bill/cleaner	N/a
388	SP 11 max	Warning signs had been put out immediately instead of passing the responsibility to someone else If only staff actually took seriously the possibility of slips and made more of an effort to clean spills up quickly Bill	Warning signs had been put out immediately instead of passing the responsibility to someone else If only staff actually took seriously the possibility of slips and made more of an effort to clean spills up quickly Bill	General disregard to health and safety in the work place , the “I am not paid to...” attitude (quite reasonable when your on a minimum wage though)  Bill	N/a
389	SP 11 max	Bill had put a warning sign out immediately to spillage had been reported, this accident probably would not have happened.  Bill	In short the companies system did not ensure that spillages were cleared up immediately or if that was not possible adequately signed  Employer	Either the shop did not have an adequate policy re spillages or bill was not following it.  employer	N/a

Appendix 5 Respondents Completed Sentences

390	SP 11 max	<p>The spillage had been cleaned up as soon as staff were aware of it.</p> <p>.. they had a system in place at the checkouts to either clean up or prevent access to the immediate area until milk cleared up</p> <p>bill/ employer</p>	<p>By having means to deal with spillages ie paper towels, signs etc at the checkout to address the matter as soon as become aware of the problem</p> <p>Manager / employer</p>	<p>Failure of safety management</p> <ul style="list-style-type: none"> <li>- system of controlling hazard inadequate , reliant on cleaner being available</li> <li>- lack of concern on the part of the manager- failure to appreciate potentially serious consequences</li> <li>- possible lack of proactive routine checks</li> </ul> <p>employer</p>	N/a
391	SP 11 max	<p>Bill , on hearing of the spilled milk from a customer had put out a warning sign stating there was a spillage until the cleaner had dealt with it.</p> <p>Bill</p>	<p>If a safety sign stating there was a spillage was erected as soon as the spillage was brought to the attention of the supervisor.</p> <p>Bill</p>	<p>Past slipping accidents should have indicated a high risk area. Training on safety should have been provided such as the risks involved with spillages, importance of cleaning up same ASAP , the erecting of signs to warn people of the danger</p> <p>Bill / manager/ safety officer/ employer</p>	N/a
392	SP 11 max	<p>Bill had put out a warning sign immediately and got a cleaner to clear up the milk straight away</p> <p>Bill</p>	<p>If a member of staff could have stood by the spillage warning people until further action could be taken</p> <p>Another worker</p>	<p>Inappropriate action by the staff asked to clear the milk, by bill. And the company for not having covered this in their risk assessment</p> <p>employer</p>	N/a

Appendix 5 Respondents Completed Sentences

393	SP11 max	Someone had waited by the spillage of milk whilst someone else obtained a warning sign and cleaning kit  Bill	Someone had waited by the spillage of milk whilst someone else obtained a warning sign and cleaning kit  Bill	The milk not being cleaned up properly  Bill	N/a
394	SP11 max	The supervisor had put up a warning sign when the spillage was reported and ensured the cleaner carried out their duties in cleaning the spillage then mary might not have slipped. The supervisor should also have checked up that the spillage had been removed bearing in mind that 4 other similar accidents had occurred Bill	By bill putting out warning signs and telling the cleaner to clean it immediately  Bill	Poor management system to ensure that the spillage was cleaned up adequately after it was reported. There should be regular shop floor inspections to detect such hazards. This again is the fault of management  manager	N/a
395	SP11 max	Adequate procedures had been put in place to ensure that swift reporting and prompt action is taken as the result of spillages  Manager	Adequate procedures implemented at store level to ensure that any spillage is reported as soon as it is noted and immediate action taken to make the area safe  Manager	Inadequate safety procedures implemented at store level to ensure swift and decisive action is taken to clear spillages ASAP Manager	N/a

Appendix 5 Respondents Completed Sentences

396	SP 11 max	Warning signs were easily accessible close to the checkouts and staff instructed to put them out immediately if a spillage .. a risk assessment had been carried out to show this as required and possibly mops available to checkout staff to clean up easy spillages an accident investigation procedure was in place that could have highlighted the pattern before the accident  Employer	Warning signs were easily accessible close to the checkouts and staff instructed to put them out immediately if a spillage .. a risk assessment had been carried out to show this as required and possibly mops available to checkout staff to clean up easy spillages an accident investigation procedure was in place that could have highlighted the pattern before the accident  Employer	Lack of system , training and supervision to put out warning signs /clear up spillage promptly  Employer	N/a
397	SP 11max	Regular checks were made for slips Warning signs had been put out The cleaner had reacted immediately  Safety officer	Better safety procedures in place and trained staff  Safety officer	Poor safety procedures and poor implementation  Safety officer	N/a
398	SP 11 max	The proper procedures were in place to handle spillage and also if the supervisor had either cleaned up the spill himself or at least put a warning sign by the milk  Bill	Implement procedures to have the spill roped off and the spill cleaned up immediately  Employer	Managements failure to recognise this accident as a recurring incident and should have been addressed earlier  Employer	N/a



Appendix 5 Respondents Completed Sentences

399	SP11 Max	It was policy to put up warning signs as soon as a spillage was noticed then it would not be such a likely occurrence to step in the spillage even if the cleaner was delayed  None	Supervisor putting out warning as soon as spillage was reported , but this would require it to be policy  Bill	A customer dropping milk on the floor  Customer	N/a
400	SP 11 max	We had acted more promptly to the to the customers report  Bill	By a faster response to the reported spill  Bill	Poor response to the reported spill of bill	N/a
401	SP 10 min	The spill had been brought to everyone’s attention eg “danger slippery floor” sign , the spill had been cleared up as soon as practicable , the floor was laid with a non slip surface, she had been warned of the potential dangers of spillages and protective non slip footwear had been provided manager	By adopting safe systems of work , providing adequate supervision, instruction and training and reviewing procedures in store  Employer	Spilt milk. No procedures seem to in place for prompt clearing and warning regarding spillages  Employer	N/a
402	SP 10 min	I had reported the spillage by a customer to bill the supervisor  Another worker	If the staff had been clearly instructed in and followed the laid down procedures which requires spillages to be mopped up quickly  Safety officer	Failure by the supermarket as represented by the management chain ( manager, supervisor) to instruct and train staff in the importance of reporting spillages quickly to the cleaner  manager	N/a

Appendix 5 Respondents Completed Sentences

403	SP 12 min	The person spilling the milk had cleaned it up or informed the cleaner  Bill / manager / safety officer	With more vigilance on her part Bill	No one cleaned up this spillage  Bill	N/a
404	SP 10 min	Someone had cleaned it up  Manager	If the store had a robust programme of inspection and maintenance of floors with a defect reporting system supported by vigilant staff  Manager	Lack of or failure of floor cleaning / monitoring system which would detect and rectify spillages  Manager	N/A
405	SP 10 min	The spill had been cleaned up immediately or cordoned off  Employer	By the company having a strictly enforced policy of dealing with spills immediately .. this means cloths /sponges are available at checkouts and all staff have a duty to soak up and dry spills, if extent of spill makes this impracticable then to call for cleaner and protect area until cleaner arrives  Employer	Lack of a strict policy and enforcement by the company that everyone in the store has a duty to clear spills immediately.  Employer	N/a

Appendix 5 Respondents Completed Sentences

406	SP 10 min	Someone had cleared up the spillage  Mary	By ABC having a policy that deals with spillages and details how they should be dealt with and for staff to be trained and instructed on the policy.  Employer	Immediate cause the milk  Secondary cause “presumable” not enough info to determine – failure to identify and remedy( but depends on whether management system in place or not)  Employer	N/a
407	Man 1 max	An immediate warning should have been placed , possibly area cordoned off. Liquid spillages should have immediate clearing  Bill / cleaner	Greater awareness of spillages by checkout staff . prompt warnings / cleaning  Cleaner	Negligence  Cleaner	N/a
408	Man 8 min	Those boxes had not been left where they were  Bill	By the prompt removal of boxes from their potentially hazardous position  Bill	Negligence in not removing the boxes promptly  Bill	N/a

Appendix 5 Respondents Completed Sentences

409	Man 3 max	<p>Bill the supervisor had put the slippy signs by the milk immediately and ensured that the cleaner was aware that the spillage was a priority</p> <p>Bill</p>	<p>By the slippery sign being put out immediately and the spillage being cleared up as soon as possible.</p> <p>Cleaner</p>	<p>An inappropriate response time to a priority, with no precautions taken to advise of danger</p> <p>Bill</p>	N/a
410	SP 10 min	<p>The spilt milk would have been cordoned off using hazard signage immediately on being noticed and then cleared up as a matter of priority</p> <p>Bill /manager</p>	Not completed	<p>Poor supervision because the milk was not noticed and cleaned up</p> <p>Bill</p>	N/a
411	Man 10 min	<p>I had put more emphasis on safety at ground level and created an ongoing awareness of the potential for minor hazards occur</p> <p>Bill</p>	<p>By a quick in-house response to the spillage and the awareness of the person who caused the spillage to notify a responsible person</p> <p>It could have been prevented if the procedures /safe system of work were in place 1 mop up 2 place signage</p> <p>Safety officer</p>	<p>The lack of reporting the spillage and the inadequacy in having the area cleaned as soon as possible</p> <p>Bill</p>	N/a

Appendix 5 Respondents Completed Sentences

412	SP 13 max	There was a system in place for dealing with obstructions immediately. Had the supervisor dealt with the complaint....  bill	Had there been in place a system for dealing immediately with trip hazards on the floor. Typically “clean as you go” adopted by all members of staff  Employer	Failure of staff to deal with obstructions on the shop floor immediately  Bill	N/A
413	sp 13 MAX	Bill had removed the box when reported to him...  Bill	If general housekeeping provisions were better ( ie the areas round the checkout kept tidy and free from obstacles / tripping hazards) if the cleaner or supervisor had tidied the box up when first reported  If Mary had been more observant as to where she was walking manager	Bad management housekeeping practices with staff being unaware of dangers from tripping hazards ( ie it should not have been there in the first place)  manager	N/a
414	SP 13 max	A near miss reporting system had been in use  Employer	By regular active monitoring of the housekeeping  Manager	A failure in the safety management system  Employer	N/a

Appendix 5 Respondents Completed Sentences

415	SP 12 min	<p>Whoever spilt the milk had cleaned away the mess or gave notice of spillage</p> <p>Whoever spilt the milk had effected a wet area notice</p> <p>Mary had been more alert to the spillage..</p> <p>customer</p>	<p>By whoever caused the spillage reporting it immediately ,</p> <p>Proper signage indicating the spillage should be erected immediately</p> <p>The spillage had been cleaned up properly</p> <p>Another worker</p>	<p>Unsafe practices</p> <p>Employer / another worker</p>	N/a
416	SP 12 min	<p>The supermarket had employed someone to clean up spillages as soon as they occurred</p> <p>Employer</p>	<p>By clearing up the spillage as soon as it occurred</p> <p>Not stated</p>	<p>Inadequate procedures for reporting and cleaning up spillages</p> <p>Employer</p>	N/a
417	SP 12 min	<p>I had assessed the risk of this happening and eliminated or controlled the foreseeable hazard</p> <p>Safety officer</p>	<ol style="list-style-type: none"> <li>1. I look at how the milk is handled- can it be safer</li> <li>2. where is it stored- can it be better placed</li> <li>3. if there is a spillage risk – non slip flooring / mats better facilities to respond to cleaning up etc</li> </ol> <p>safety officer</p>	<p>Not assessing what was a reasonably foreseeable situation</p> <p>Safety officer</p>	N/a

Appendix 5 Respondents Completed Sentences

418	SP 11 max	There had been a docket system in place to ensure that the cleaner had been instructed and that bill , having been informed, had put some barriers up to divert people  Manager	There had been a docket system in place to ensure that the cleaner had been instructed and that bill , having been informed, had put some barriers up to divert people  Manager	Lack of immediate action  Bill	N/a
419	SP 11 max	The spillage had been cleared up immediately . procedure need to be put in place to ensure the area is made safe immediately when this type of incident occurs and this need to be supervised effectively to ensue it is adhered to. Manager	If the previous similar accident had been investigated properly and control measures put in place  Manager	The lack of controlled procedure being in place and adhered to  Manager	N/a
420	SP 11 max	The spill had been detected and cleaned up at the time it was done  Another worker	Instructions to personnel to deal with spillages (in person) immediately they occur  Employer	Management failure  employer	N/a
421	SP 12 min	Someone had noticed the spill and reported it  Mary	If routine floor checks made or cashiers report spillages for clearance  Manager	Failure of systems to identify spillage incidents  Safety officer	N/a

Appendix 5 Respondents Completed Sentences

422	SP 12 min	Warning cones had been placed out until the spillage had been mopped up and the floor was dry  Another worker	By any member of staff who saw the spillage either warning staff or by cleaning up the spillage  Another worker	Lack of staff awareness – poor staff communication  Employer	N/a
423	SP 12 min	Reminded staff to take immediate action regarding spillages eg sign – clear up spillage  Safety officer	Ensuring spillage procedure is followed in all cases  Manager	Not following procedures  Manager	N/a
424	SP 12 min	The spillage had been properly cleaned and people made aware of the wet floor via a sign then mary would still be at work  Bill	The spillage should have been reported , cleaned and properly signed as a wet floor or slippery floor  Bill	Lack of attention given to the place of work by both management and employees. Nobody identified or acted on a hazard  Employer	N/a
425	SP 12 min	Someone had cleaned up the milk Manager	By not leaving spillages  Manager	The spilt milk  Manager / employer	N/a



Appendix 5 Respondents Completed Sentences

426	SP 12 min	Not completed properly	Not answered properly	Slipping on milk	N/a
427	SP12 min	The person who caused the milk spillage had cleared it up or highlighted the area as being slippery (customer or worker)  Another worker	If the person who had caused the spillage had cleaned it up . if a customer had caused the spillage then the floor manager should regularly instruct his staff to look out for spillages and arrange for them to be cleaned up or identified by a sign  Bill	The stores policy on the cleaning up and inspection for spilt milk. The supervisor should regularly be reminding his staff of this likelihood .  Bill	N/a
428	SP 13 max	I had looked where I was going  Mary	She should have paid more attention to her walkway  The walkway should have had a warning sign or someone advising to be careful  Cleaner should have picked the box up sooner  Safety officer	The box should have been removed one the reason for it being there initially had vanished  Bill	N/a

Appendix 5 Respondents Completed Sentences

429	SP 13 max	The box had been disposed of correctly  Another worker	If the cardboard had been removed from the shop floor during replenishment  Cleaner had responded when directed  Bill had taken direct immediate action. Mary/bill/manager/safety officer	The physical hazard was the box  Causal factors are unknown but one assumes : the action of the staff member who discarded the box on the floor  Another worker	N/a
430	Sp13 max	I had removed the box and had identified a trend from previous accidents and had instigated a procedure training to keep checkout areas clear of obstruction  Bill	Conditions round the checkouts were well known and there had been other accidents . Also the hazard on this occasion was reported and insufficient action taken.  Bill	The immediate cause was the box left lying around , the underlying cause is a lack of management systems for dealing with hazard identification and rectification coupled with lack of training.  Employer	N/a
431	SP 12 min	The spillage had been made aware to any person who could have slipped on it. Another worker	If the spillage had have been made aware to any person , whilst another member of staff went to make arrangements to get the spillage cleaned up  Manager	Not in place a suitable procedure for such an incident occurring , spillages of any kind should not be left unattended or unbarriered  manager	N/a
432	SP 13 max	The cleaner had sorted it out straight away  Cleaner	By immediate removal of the box  Better still by not outing the box there in the first place.  Another worker	Dumping of box in an area with high human traffic  Another worker	N/A

Appendix 5 Respondents Completed Sentences

433	SP 13 max	Not completed	Had the company and all concerned asked itself  What can cause harm What is in place to control /prevent the harm occurring Is it enough  Employer	Failure on the part of the company to put in place /enforce a system for defining and ensuring a positive outcome to all their work operations  Employer	N/a
434	SP 13 max	The box had been tidied away and moved out of the isle  Mary	By removing the box from the floor  Manager	The box being left in the gangway and Mary wasn't aware of the obstruction  Safety officer	N/a
435	SP 10 min	Not completed	By better company practice on the floor , if something is wrong mark it with a cone or rail round.  Bill	Not completed	N/A
436	SP 10 min	Cleaned up the milk  Bill	By whoever spilled the milk should have got it cleaned up right away  Bill	The staff were not trained right to clean up  Employer	N/a

Appendix 5 Respondents Completed Sentences

437	SP 12 min	Someone had cleaned the spillage  Cleaner	Staff should be informed to clean up or arrange for cleaner to clean up spillage immediately  Manager	Management failure in not dealing with the spillage . staff should be informed to clean up spillages immediately  Employer	N/a
438	SP 12 min	The spillage had been noticed and cleared up immediately Employer	Not sure – not completed	Failure to have a system for detecting and removing spillages  Employer	N/a
439	SP 12 min	The milk had been cleared up as soon as it was spilt  Safety officer	If whoever spilt the milk or anyone else who had seen the milk should have cleared / had it cleared up  None	Someone not taking responsibility for ensuring the milk was not cleared up and a system was not in place to check it had been done  Employer	N/a
440	SP 12 min	Someone had reported the spillage immediately and cleaned up the spillage or marked the affected area clearly until cleaned with a “caution” sign  Employer	If the spillage was cleaned or marked immediately. a customer could have informed staff or staff responsible could have cleaned or marked with “caution” until cleared  Another worker / cleaner / customer	Slipping on the milk because no one had reported the spillage or clear the spillage / mark it to inform people  Employer	N/a

Appendix 5 Respondents Completed Sentences

441	SP 11 max	The slippery floor sign had been put out next to the milk spillage when the spillage had been reported Mary would have seen the sign and walked around the spillage and not slipped  Bill	If the spillage had been cleared up straight away or if Mary had been warned of the spillage ie sign in place or of the spillage had been cleared up as soon as someone was aware of it  Safety officer	The spillage wasn't cleared up as soon as it was reported. No warning sign was put in place whilst arrangements were made to clear up the spillage  Safety officer	N/a
442	SP 11 max	A warning sign had been put out  Employer	By putting signage at the spillage  Employer	Spilt milk left and not reported by customer causing it  Employer	N/a
443	Man 8 min	We had a better system of storing boxes in place and had been monitoring compliance and checking housekeeping standards  Manager	If we had a better system of work in place and were tighter in controlling it and enforcing it  Manager	Bad housekeeping, lack of safety awareness by staff and lack of enforcement  Mary	N/a
444	Man 8 min	I had walked the shop floor with bill before the shop opened . we would have spotted the hazard and removed it  Manager	Management and staff awareness of constantly walking the shop floor and checking for hazards – if all the team did this and not just management it would have been prevented  None	Poor management control , lack of staff training and awareness  Manager	N/a

Appendix 5 Respondents Completed Sentences

445	Man 8 min	<p>The box hadn't been on the floor</p> <p>The delivery staff put the boxes in the right place and not across the gangway</p> <p>Mary was more aware of deliveries on Thursdays</p> <p>Another worker</p>	<p>Boxes not left in gang ways, staff to be trained not to leave boxes in such places</p> <p>Another worker</p>	<p>Lack of staff training / awareness to the potential hazards of boxes left in gangways</p> <p>Safety officer</p>	N/a
446	SP 15 max	<p>The box had been moved when it was first reported</p> <p>Cleaner</p>	<p>By looking at why the box was left there in the first place and why it wasn't moved after it was noticed</p> <p>Employer</p>	<p>A lack of awareness amongst all staff that a box has the potential to be a tripping hazard</p> <p>Employer</p>	N/a
447	SP 16 min	<p>Advised on day to day operation.</p> <p>Bill</p>	<p>Not completed</p> <p>N/a</p>	<p>Either Company Policy or Mary not being aware of the box, no signs, another worker leaving the box in the gangway</p> <p>Bill</p>	N/a

Appendix 5 Respondents Completed Sentences

448	Man 8 min	I had ensured that Mary was aware that the rules and regulations affecting applying on Monday Tuesday and wed were just as relevant on other days  Mary	By ensuring that the floor supervisor and safety officers between them had checked the area where Mary tripped . the checkout is a high risk area for customers and staff  Bill	Carelessness on the part of the person leaving the box in an obstructing position  Cleaner	N/A
449	Man 8 min	The box had not been left there or someone else moved it when they saw it was in the way  Bill	By due diligence Safety officer	Staff not being aware of health and safety regulations  Manager	N/a
450	Man 8 min	There had been a company policy in place to ensure that no boxes or parcels or packages or any obstacles in any area where public or staff walk  Employer	If better staff training had been provided and implemented where by no trip hazards were left unattended  Manager	Improper staff training and bad company policy  Employer	N/a
451	SP 15 max	ABC supermarkets had a proactive approach to housekeeping instead of a reactive  Employer	Supervisors having responsibilities to undertake physical inspections / audits of the store  Employer	Poor housekeeping , possibly inadequate space poor organisation of work station  Employer	N/a

Appendix 5 Respondents Completed Sentences

452	SP 13 max	Bill had ensured that the box had been lifted or a hazard warning sign placed at it  Bill	By bill ensuring the that the box had been lifted  Bill	There was reports of checkouts being generally untidy. This would be due to management not ensuring that the cleaners job is done properly  manager	N/a
453	SP 11 max	A warning sign had been put up.  Milk not spilt Cleaner responded earlier Spillage reported earlier  Bill	By giving bill tools to take immediate preventative action and responsibility e.g. hazard signs located near checkouts  Employer	Spillage not dealt with quickly enough  employer	N/a
454	SP11 max	A warning sign was put out as soon as the spillage was noted and cleaned up immediately  Bill	By putting in place a procedure to deal with spillages which details the use of warning signs and immediate cleaning of the spillage  Employer	Spilt milk at the checkout area which had no warning and had not been cleared  Employer	N/a
455	SP 11 max	Bill had waited by the spillage until the cleaner came or else got one of the floor staff to wait there  Bill	If bill had cordoned off the area or had someone stand to direct people from it  Bill	The lack of a procedure to deal with spillages at checkouts  Bill	N/a



Appendix 5 Respondents Completed Sentences

456	SP 11 max	<p>Management had implemented a safe system of work for the work place especially after so many accidents this would never had happened. Also “caution” signs should have been put in place to remind workers of spillage</p> <p>Manger</p>	<p>By using better safety practices with all workers including temporary staff and by making sure all workers were aware of the danger</p> <p>Safety officer</p>	<p>Management for not hiring a safety officer what was competent enough to do his job</p> <p>employer</p>	N/a
457	SP 11 max	<p>There had been a proper policy in place and it had been implemented Mary would not have slipped because as soon as the hazard appeared the hazard ous area would have been isolated , hence no fall</p> <p>Manager</p>	<p>By procedures being in place to isolate such an area in the event of a spillage . should have been done because of previous accident history – risk assessments</p> <p>Employer</p>	<p>The immediate cause was the spilt milk but the underlying cause was a lack of a safe system of work or general measures for dealing with identified hazard</p> <p>employer</p>	N/a
458	SP 16 min	<p>The box had not been there and Mary had checked her route carefully</p> <p>Safety Officer</p>	<p>By removing the box or not putting it there in the first place or by making Mary more aware of her surroundings</p> <p>Safety Officer</p>	<p>Lack of control over storage Lack of supervision, staff awareness training and lack of management control</p> <p>Safety officer</p>	N/a

Appendix 5 Respondents Completed Sentences

459	SP 10 min	<p>We had a safety policy and procedures in to deal with such eventualities</p> <p>Employer</p>	<p>By ensuring all duty staff take responsibility for actioning cleaning up processes</p> <p>Employer</p>	<p>A failure to ensure the safety of people using the premises</p> <p>Employer</p>	N/a
460	SP 15 max	<p>The box issue was addressed by the cleaner once the customer had reported it and reported it to the supervisor .</p> <p>The last 4 accidents were addressed at the time</p> <p>Public walkways were cleared of obstructions</p> <p>Manager</p>	<p>By monitoring the last 4 accidents Tidying up around the checkouts – ensuring this was done by bill Clearing the walk ways</p> <p>Manager</p>	<p>Poor housekeeping in the area</p> <p>Manager</p>	N/a
461	SP 16 min	<p>The box was not there. If there was a procedure to ensure trip hazards were eliminated</p> <p>Staff training and awareness</p> <p>Safety officer</p>	<p>Staff awareness through training, control systems and procedures for packing shelves and ensuring aisles are left free from such hazards Checklists by staff and manager</p> <p>Safety officer</p>	<p>Improper procedures before shelf packing, supervision was also lacking. Marys awareness may have played a part but most importantly the lack of or breakdown in the supermarkets safety management system</p> <p>Safety officer</p>	N/a

Appendix 5 Respondents Completed Sentences

462	Sp 16 Min	The trainee or supervisor moved the box  Manager	The store manager had moved the box this would not have happened  Manager	Someone leaving the box unattended  Another worker	N/a
463	SP 16 min	Someone had removed the box and put it in a safe environment where it was out of Mary's way and everyone else's as well.  Bill	If people are made more aware of "accidents" and a little more common sense. People will think next time they leave something lying around.  Safety officer	someone leaving a box unattended on the floor  another worker	N/a
464	SP 16 min	I was watching where I was going  bill	Moved it . they knew it was a hazard  Bill	Box not being moved by anyone knowing it was a hazard  Manager	N/a
465	SP 16 min	Boxes were stored properly when not in use  Employer	If management put proper controls monitoring and supervision in place  Employer	Lack of proper instruction, supervision and monitoring of use of boxes and other tripping hazards  employer	N/a

Appendix 5 Respondents Completed Sentences

466	SP 16 min	Staff had been better trained in good housekeeping procedures  Manager	If staff were trained in good housekeeping procedures  Manager	Inadequate housekeeping  Manager	N/a
467	SP 16 min	Housekeeping in the store was more efficient  An established storage location and procedure for empty boxes had been set in place  Staff / management had been more vigilant  Mary	High levels of housekeeping  All staff aware where empty boxes to be deposited immediately after becoming empty  Vigilance of all staff  Manager	A foreseeable tripping hazard being left in a walkway compounded by inadequate housekeeping procedures to prevent such an occurrence  Mary	N/a
468	SP 16 min	Someone had been more careful and safety conscious of their colleagues and not left that box in a passageway, mary would not have tripped over and hurt her arm  Another worker	By her fellow workers and management being more safety aware and preventing tripping and falling hazards in their place if work  Employer	The organisation not being aware of the hazards of tripping Lack of safety training and awareness Employer	N/a

Appendix 5 Respondents Completed Sentences

469	SP 14 min	I had inspected that walk way  Safety officer	A safety culture involving the whole company by training . continual monitoring of staff and stats , regular safety awareness talks  Employer	Failure of a safety culture.  Employer	N/a
470	SP 10 min	Someone had taken action at the time of the spill ie cordon off area , clean up spill  Another worker	If action had been taken at the time of the spill. Cordon area , display wet floor signs and clean up the spill  Bill / another worker	Due to the spill not being controlled by ABC personnel  Employer	N/A
471	SP 14 min	The box had been put away  Bill	By good housekeeping, supervision  Bill	Lack of training and supervision  Bill	N/a
472	SP9 max	We could reduce the number of spillages we would have less accidents  Employer	Not answered	Mary not seeing the spillage, the lack of speed in which the spillage was dealt with  Safety officer	N/a

Appendix 5 Respondents Completed Sentences

473	SP 14 min	<p>Mary had not been in that day</p> <p>If only the person had left the box in an appropriate place</p> <p>Mary had been looking where she was going</p> <p>Safety Officer</p>	<p>By training on manual handling and teaching the person on lifting and the seriousness of leaving the box on the floor</p> <p>Safety officer</p>	<p>Incorrect placement of the box on the floor. No due care and attention by either the safety officer or another member of staff for not seeing and moving the box before the accident</p> <p>Safety officer</p>	N/A
474	Sp 16 min	<p>Her friend had not been on holiday , so she wouldn't have been at work.</p> <p>She had seen the box and stepped over it</p> <p>Mary</p>	<p>Better storage of box</p> <p>Employer</p>	<p>Not looking where she was going</p> <p>Mary</p>	N/a
475	SP 14 min	<p>We had good housekeeping and the box was removed from the floor</p> <p>Manager</p>	<p>By ensuring all aisle ways were clear</p> <p>Not specified</p>	<p>Aisle ways not clear. Housekeeping poor Mary did not see the box</p> <p>All specified</p>	N/a
476	SP 14 min	<p>We had good housekeeping practices and all employees took accountability and we had set scheme to help promote good housekeeping practices</p> <p>Manager</p>	<p>If we had adopted a systematic system of maintaining housekeeping in which every employee was accountable for the overall shops performance</p> <p>Employer</p>	<p>Poor housekeeping</p> <p>Bill</p>	N/a

Appendix 5 Respondents Completed Sentences

477	SP11 max	A warning sign had been put out by the person (bill) the spillage had been reported to  Bill	By putting systems in place and supervising / monitoring compliance  Employer	Safe system of work not being in place  Employer	N/a
478	SP11 max	Signs had been put out warning of the danger Mary would have concentrated more on where she was stepping  Employer	By ensuring systems were in place to ensure that spillages of all kinds were dealt with immediately  Employer	Slipping on a product which like fruit and dairy products cause this sort of accident frequently therefore it was foreseeable and systems should have been in place to deal with the spillage more effectively and more quickly  Employer	N/a
479	SP 12 min	Somebody cleaned up the spillage  Cleaner	By the milk being cleaned up  Cleaner	Spilt milk which wasn't cleaned up  Bill  Example of causal presence =milk or absence of behaviour by not cleaning	N/a

Appendix 5 Respondents Completed Sentences

480	SP 15 max	<p>Bill had removed the box as soon as he was informed</p> <p>The checkout staff had removed the box</p> <p>The supermarket had a policy on all tripping hazards and removed them as a priority</p> <p>Bill</p>	<p>If the supermarket had a policy for the removal of hazards as soon as notified</p> <p>Employer</p>	<p>Spilt milk Employer</p>	N/a
481	SP 15 max	<p>Bill had isolated or removed the box when he was told</p> <p>Bill</p>	<p>By undertaking a comprehensive risk assessment, identifying that boxes are in abundance in the supermarket and must be controlled, also by ensuring that the hazard was highlighted immediately whilst remedial action was instigated</p> <p>Employer</p>	<p>Failure for number of people to take effective remedial action</p> <p>The company for failing to identify the risk</p> <p>Bill for not highlighting the box</p> <p>Mary for not paying attention</p> <p>Bill</p>	N/a



Appendix 5 Respondents Completed Sentences

482	SP 15 max	<p>We had a procedure in place (following previous accident investigation) whereby all areas of the store including areas not accessible by the public are checked on a regular basis by the person responsible for removing obstructions so that obstructions wont be allowed to build up in the first place. Signs should be posted to relay to all staff the importance of the removal of obstacles.</p> <p>Employer</p>	<p>By having a policy in place where all obstructions are removed as soon as possible and a policy whereby all access ways are kept clear</p> <p>Supervision is required to ensure that this policy is upheld on a day to day basis</p> <p>Employer</p>	<p>Complacency and lack of leadership. If there were policies in place they were not followed or staff were not made aware of the procedure to follow or were not made to follow them</p> <p>Not specified</p>	N/a
483	Sp 15 max	<p>Someone had moved the box as soon as they noticed it or was told about it</p> <p>Another worker</p>	<p>By all employers being aware of their surroundings and taking responsibility to remove all hazards</p> <p>Another worker</p>	<p>The person who left the box there and anyone who did not move it</p> <p>Another worker</p>	N/a
484	Sp 15 max	<p>Something had been done following the previous events</p> <p>Manager</p>	<p>Provision of better instruction / training</p> <p>More effective supervision</p> <p>Prohibit poor and promote better housekeeping</p> <p>Employer</p>	<p>Poor housekeeping standards or lack of storage</p> <p>Employer</p>	N/a

Appendix 5 Respondents Completed Sentences

485	Sp 15 max	The cleaner had responded to the request to clear the box earlier  Employer	If the poor housekeeping round the checkout area had been identified and precautionary measures put in place to keep the area clear of miscellaneous items  Employer	Failure of safety management system for the company  Employer	N/a
486	SP 15 max	Staff were more vigilant and management enforced company rules  Bill	Clear floor policy Training of all staff on the policy Regular and frequent workplace inspections  manager	Lack of clear management focus on causes of common accidents  Failure of management to implement company safety rules  Employer	N/a
487	SP15 max	We had a system in place checking on housekeeping thought the store at regular intervals and staff had been trained to respond to problems arising immediately  Employer	A good system of monitoring standards of housekeeping, properly supervised would reduce the risk of such accidents significantly  Employer	The lack of a system that ensures regular checks on housekeeping are made including proper supervision  Employer	N/a
488	SP 15 max	The box had been returned to the storeroom where it belonged the accident would not have happened  Manager	Adherence to management procedures on housekeeping  manager	Poor housekeeping and a failure of management systems  Employer	N/a

Appendix 5 Respondents Completed Sentences

489	MAN 7 max	The problem had been dealt with immediately  Bill	By the removal of the box immediately if it was reported or not left there in the first place  Safety officer	Lack of supervision  Bill	N/a
490	MAN 7 max	The staff of ABC Supermarket had not left the box on the floor (reckless staff) and if only Mary was looking where she was going. (not very observant)  Another worker / mary	By ensuring that the box was not left on the floor by the person who left it there and teaching (training) staff to observe and remove boxes from the floor.  Another worker	The irresponsibility of the person who originally left the box on the floor not exercising due care and attention in performing his work properly and satisfactorily  Another worker	N/a
491	Man 4 min	A team member had been aware of the spill and put out a wet floor sign  Another worker	By team members being more aware or trained if they hadn't been by the store manager on shop floor hazards  Manager	Carelessness  mary	N/a
492	Man 6 min	She hadn't come in on Thursday  None	More attention to keeping walkways free from obstacles  Safety officer	Inappropriate storage of boxes  Safety officer	N/a

Appendix 5 Respondents Completed Sentences

493	Man 7 max	The floor had been cleaned  Bill	Following set procedures  Bill	Negligence  cleaner	N/a
494	Man 7 max	The checkout areas were tidied regularly after the 1 <sup>st</sup> person tripped over a box “x” months ago  Manager	By keeping boxes off the floor , regularly inspecting areas – having more hazard signs available  Bill	Not keeping floor area clear of obstructions  Bill	N/a
495	Man 7 max	They had done their job properly like we had trained them  Cleaner	If the cleaner had cleared up or if the person who put the box there disposed of it properly  None	Due to a lack of responsibility and staff not doing their job properly  None	N/a
496	Man 7 max	Bill had himself moved the box to a less hazardous position and /or put up warning signs before asking the cleaner to remove it  Bill	If the stores policy was to ensure boxes or other hazards are not left around and that supervisory staff implement this vigorously  Employers	Insufficiently vigorous procedures to ensure the floor of the supermarket is kept free of hazards  Manager	N/a

Appendix 5 Respondents Completed Sentences

497	Man 3 max	A warning sign had been displayed and prompt action was taken to clean up  Manager	Warning signs or a quicker response  Bill	Failure to remove a potential hazard  bill	N/a
498	Man 3 max	She watched where she was going  Mary	If she had watched where she was going  Mary	Inattention  Mary	N/a
499	Man 2 min	The mess had been cleared up  Manager	If the mess had been cleared up Manager	Inefficiency  Manager	N/a
500	Man 7 max	1. bill had moved the box himself instead of waiting for the cleaner to do it. 2. Mary's colleague had seen her about to trip and called out  Bill	Bill removing the box as soon as he was aware of it or mary and her colleague taking more care  Bill	A tripping hazard not being removed after it was identified by supervisor Bill	N/a

Appendix 5 Respondents Completed Sentences

501	Man 7 max	Not completed	Staff training and ensuring potential risks dealt with immediately, better management and supervision  Manager	Poor management and supervision and lack of attention to health and safety issues  Employer	N/a
502	Man 7 max	People would take note of what they are told and understand its importance.  In the light of previous happenings people would prioritise tasks better  cleaner	By making changes in tidiness following previous accidents  Bill	Untidiness of boxes  Cleaner	N/a
503	Man 8min	Staff member had followed health and safety procedures / protocol on tripping etc perhaps accidents wouldn't happen  Mary	If staff members followed protocol  Mary / other workers	Failure of following strict protocols  Mary	N/a
504	Man 8 min	Someone had removed the box or reported it as a hazard  Another worker /customer	Id safety regulations were followed . the box should have been removed or at least reported as a hazard  All	Breach of health and safety rules  Another worker	N/a

Appendix 5 Respondents Completed Sentences

505	Man 8 min	The box hadn't been left there by someone whose thoughtless action has made Mary have an accident  Another worker	By the box not being left there  Another worker	The box  Not completed	N/a
506	Man 8 min	Staff would follow the simple health and safety guidelines and keep all gangways clear. Need more training  Manager	Keep gangways clear  Manager	Staff not following h&S policies and procedures  Another worker	N/a
507	Man 5 max	The previous accidents had been reported to me  The supervisor had ensured the checkout area was always kept tidy  Supervisor should have put a warning sign up  Bill	The supervisor and cleaner were aware of their responsibilities  Safety officer	Mary not watching where she was going  The cleaner not doing what he was asked  Bill	N/a

Appendix 5 Respondents Completed Sentences

508	Man 8 min	The box hadn't been in the way  Another worker	Proper storage of the box  Another worker	Box left unexpectedly in pathway to canteen  Another worker	N/a
509	Man 8 min	I had checked the area  Manager	By making sure those responsible for box safety had checked the area and removed any offending or hazardous boxes  Safety officer	Carelessness and box  Safety officer	N/a
510	Man 8 min	Bill made sure the staff were placing the boxes in the right spot.. then mary would not have slipped  Mary.	Placing boxes in safe / .correct position  Another worker	Incorrect /unsafe placement of box and marys inattention  Another worker	N/a
511	Man 2 min	Someone had been told or taken the initiative to mop the floor and dry it then....  cleaner	By prompt action – possibly mary herself should have spotted the hazard - unless she was sleepwalking and called the cleaner  Mary	Negligence, stupidity, carelessness apathy irresponsibility  Mary	N/a



Appendix 5 Respondents Completed Sentences

512	Man 2 min	The proper procedures were in place to prevent this. Had someone earlier noticed the spilt milk – is anyone delegated responsibility of keeping an eye out for this . how often is there spilt fluids on the floor.  Bill	If the milk was cleaned up immediately by whoever spilt it.  Bill	Milk on the floor  Who ever spilt the milk	N/a
513	Man 2 min	People knew how to deal with a potential hazard earlier  Bill	By ensuring that a risk assessment was undertaken and reviewed and a procedure implemented to reduce the risk . preventing the spillage , dealing with the spillage and good reporting systems could have helped  Employer	Either not following procedures for the safe handing of milk, not developing a safe environment , not dealing with the spillage appropriately or sooner , not alerting people to the hazard  Employer	N/a
514	Man 2 min	A member of staff either mopped the spillage of milk up or at lease put some hazard signs mary might not have had the accident  Another worker	If the spillage of milk had been reported and action taken to prevent anybody slipping  None	Due to the incident of spillage not being reported  none	N/a

Appendix 5 Respondents Completed Sentences

515	Man 3 max	The spillage had been identified earlier and immediate action taken  Bill	Not answered	Failure to deal quickly with the spillage  Bill	N/a
516	Man 7 max	We had kept the area tidy we may have avoided this accident  Employer	By improving tidiness around the checkouts  Manger	General untidiness around the checkout  Manager	N/a
517	Man 7 max	We placed more importance on cleaning and tidiness  Safety officer	Not sure	Mary not looking where she was going – there will always be hazards to be avoided  Mary	N/a
518	Man 8 min	I had enforced the clear walkways policy more forcefully and the shelf packers had been more careful where they out poxes  Manager	Clear enforcement of “clear walkways” policy. More care taken by shelf stackers and training and supervision  Manager	Poor management /supervision of shelf stacker  Bill	N/a

Appendix 5 Respondents Completed Sentences

519	Man 2 min	<p>The person who spilt the milk had the confidence and awareness to report the spillage to a member of staff immediately</p> <p>A member of staff had been more vigilant when walking about the store and followed appropriate procedures in relation to spillages.</p> <p>Customer</p>	<p>By re-emphasising h&amp;s awareness amongst staff and customers ie spillages to be reported immediately ; all staff to be more vigilant.</p> <p>Not completed</p>	<p>A customer spilling milk on the floor and failing to bring it to the attention of staff, also failing on the side of the store manager and supervisor to notice the spillage as they carry on with their responsibilities</p> <p>Customer</p>	N/a
520	Man 2 min	<p>We had worked to safety procedures re cleaning up / hazard signs</p> <p>manager</p>	<p>Surrounding spillages with hazard markers immediately before cleaning</p> <p>Bill</p>	<p>The manager failing to ensure the supervisor implemented safety procedures immediately via safety officer</p> <p>Manager</p>	N/a
521	Man 8 min	<p>Someone had moved the box</p> <p>Bill</p>	<p>If all passages corridors etc are kept clear</p> <p>Safety officer</p>	<p>Due to non compliance with company safety procedures</p> <p>Safety officer</p>	N/a

Appendix 5 Respondents Completed Sentences

522	Man 8 min	I have looked where I am walking and not gazing beyond  Mary	By the supervisor checking the area frequently  Bill	Mary did not look where she was going and the supervisor has not been making regular checks  Bill	N/a
523	Man 2 min	The person who spilt the milk left a sign to say wet floor , the milk was washed away . the person had brought it to his/her colleagues  Bill	By her watching where she was walking and appropriate floor signs  Cleaner	Spilt milk being unintended (unattended?)  Bill	N/a
524	Sp 14 min	The box had not been left in the way and the supervisor had noticed the problem and arranged for its removal  Bill	By good housekeeping procedures that are understood and implemented by staff and if the supervisor had noticed the hazards and arranged for the boxes removal  Employer	Poor housekeeping and supervision  Employer	N/a
525	Sp 12 min	The customer who dropped the milk had reported it.  Customer	If someone had noted and cleaned up the milk  Another worker	Failure to note and clear up spillage properly  Bill	N/a

Appendix 5 Respondents Completed Sentences

526	SP 9 max	A member of staff had reported the spillage to the supervisor immediately and the supervisor had ensured that the cleaner cleaned the spillage straight after it was reported, so there was not a delay in response time  Bill	By placing hazard warning signs near the spillage and ensuring the milk was promptly cleaned / floor dried  Bill	The lack of management / responsibility in place to identify and remove the hazard ie lack of signage and slow response time by cleaner  manager	NA
527	SP 11 max	I had seen the spillage earlier and cordoned off the area prior to the cleaner removing the spill  Bill	By a) checkout supervisor should carry out regular checks b) any spillage should be cordoned off straightaway and cleaned up as soon as possible c) all checkout staff should be made aware of previous incidents and told to be more aware in their area  Bill	The spilt milk was not spotted or cleaned up quick enough  Bill	N/a
528	Sp 9 max	The supermarket had had a spills team with a response target of a few minutes who had been trained and provided with the correct equipment close to spills areas  Manager	By having a rapid response spills team available at short notice with the correct spills clean up kit and signs at hand  Manager	A known hazard was not dealt with properly in time to prevent the accident when slips around checkouts were common – procedures were inadequate  manager	N/a

Appendix 5 Respondents Completed Sentences

529	Sp 10 min	The spillage had been cleaned  Another worker	Training –staff aware of need to report spillages sp that they can be cleaned immediately  Employer	Poor training and information to employees or negligence of another worker / customer employer	N/a
530	Sp 14 min	We had trained the person who left the box in the position for mary to trip over... none of this would have happened. You see she should have seen a sign / barrier or warning triangle  Manager	By training the person who left the box .. hazards / risk assessment barriers etc.  Manager	Persons unknown left a box without a sign/ barrier – lack of training  Manager	N/a
531	Sp 14 min	The box wasn't there and housekeeping arrangements had been catered for  Manager	If housekeeping arrangements were catered for and the awareness of such trip hazards were made clear to the workforce  Employer	Evidence of poor housekeeping culture and lack of management commitment  employer	N/a
532	Sp 14 min	A) was it necessary for the box to be where it was B) more thought had to be given to the placing of items which may cause this type of accident employer	Procedures in palce for checking systems if work, risk assessment, staff training, instruction and monitoring  Mary, bill manager, safety officer, employer, another.	Not answered	N/a

Appendix 5 Respondents Completed Sentences

533	Sp 14 min	The box had not been there ... is was not have been a hazard... mary would not have been injured.  Manager	If the box was stored on shelving off the floor or a hazard sign warning of the box was in place  Safety officer	Breach of duty of care to provide a safe place of work and inadequate storage  Employer	N/a
534	Sp 14 min	I had not offered to cover for a friend  Another worker	Control measures should have been in place to remove all hazards , good housekeeping policy.  Manager	Unsafe act, unsafe condition, lack of management control, no safety management condition.  Employer	N/a
535	Sp 10 min	I'd stayed in bed  Mary	Not answered	Spillage not marked or cleared up immediately  Manager	N/a
536	Sp 10 min	There had been a safe system of work in place for dealing with spillages as they occur and hazards such as this which are common in these establishments could have been dealt with sooner.  employer	Effective health and safety policy – implementing the policy – making persons aware of the hazards – actions to take on spillages  Employer	Failure to identify the hazard – failure to remove the hazard, lack of training awareness. Failure of management to implement effective procedures  Employer	N/a

Appendix 5 Respondents Completed Sentences

537	Sp 14 min	Someone had not left the box in a position where someone could trip over it  Another worker	With the implementation of a good safe system of work which would have prevented the box from being left in a position to trip someone. Ie not left unattended or in footway  Another worker	(most likely) the box was left in the footpath  another worker	N/a
538	Sp 10 minimum	The milk had been cleaned up straight away or wet floor signs had been put around the spillage  Bill supervisor	The person who spilt the milk could have put warning signs regarding a wet floor , before actioning the cleaner to clean it up  Another worker	Negligence on behalf of the person who spilt the milk to report the accident, also lack of observation on Mary's behalf in not seeing the milk on the floor.  none	N/a
539	SP 13 max	The box had been removed , or a warning sign or barrier placed over it when it was first spotted and reported  Bill supervisors	Staff training /awareness 1. boxes should be stored correctly 2. boxes should be cleared away from work areas asap 3. staff / supervisors should act promptly 4. cleaning staff should be aware of the potential for harm in slow response  Safety officer	Poor staff training and awareness Lack of procedures in the workplace (correct use, storage and disposal of boxes, appropriate response to potential risk  Safety officer	N/a
540	Sp 10 min	Mary had seen the milk  Mary	By awareness of dangers presented by spilt substances /materials  Mary	Lack of awareness /attention by mary  Mary	N/a



Appendix 5 Respondents Completed Sentences

541	Sp 10 min	<p>Somebody had alerted staff to the fact that there was spilt milk and the area “cordoned off” until mopped.</p> <p>( but I bet Mary wished she hadn’t come in on Thursday to cover for her friend!!!)</p> <p>safety officer</p>	Not answered	<p>Either a failure to have a safe system of work / control measures to effectively deal with spilt milk</p> <p>Or failure to implement the safe system of work</p> <p>Or staff had not been aware that milk had been spilt and therefore not been able to act on it.</p> <p>Employer</p>	N/a
542	Sp 9 max	<p>Bill the supervisor had cordoned off or put out a warning sign before or whilst waiting for the cleaner to clean it up</p> <p>Bill – supervisor</p>	<p>If the company enforced a policy whereby reported spillages are dealt with immediately</p> <p>Employer</p>	<p>The absence of an appropriate spillage policy adequately communicated to staff</p> <p>Employer</p>	N/a
543	Sp 9 max	Not answered	<p>By the use of anti slip mat in front of liquid storage area</p> <p>Store manager</p>	<p>Not enough cleaners, poor time management by cleaners, lack of supervision of cleaners</p> <p>Cleaner</p>	N/a

Appendix 5 Respondents Completed Sentences

544	Sp 9 max	Management had used the accident book data to inform decision making the spillage might have been given greater priority for its removal ( bearing in mind that spillages are said to be common)  Manager	Not answered	Lack of priority by staff in highlighting the incident site and failure to act an accident history during the previous six months.  Manager	N/a
545	Sp 9 max	The spillage had been noticed and attended to as soon as it had happened  Not known	There are many unknowns in this scenario but it might have been prevented by a whole lot of measures from the packaging of the milk , its location in the store and the procedures for dealing with a spillage and the design of the flooring  Employer	Literally speaking slipping on the milk and landing awkwardly  Mary	N/A
546	Sp 9 max	The warning signs had been put in place as soon as the spillage had been reported  Bill supervisor	If a system of work had been in place once the spillage had been reported  Safety officer	A failure to provide a safe system / action to prevent an accident when the milk had been spilt. Provision of barriers and signs immediately the matter had been reported to staff  Employer	N/a

Appendix 5 Respondents Completed Sentences

547	Sp 9 max	A warning sign had been put in place as soon as the spillage had been noticed  Bill – supervisors	By an individual taking ownership of the spillage as soon as it was noticed e.g. bill the supervisor putting a sign up  Bill supervisor	The failure to take ownership of the spillage when it was reported ie to sign it or clean it up immediately  Bill supervisor	N/a
548	Sp 14 min	Someone had not left that box there  Mary had see the box  Someone else had noticed it and removed it to the correct place  Mary, bill, manager, safety officer, another worker	By ensuring that staff are aware of what risks they pose if procedures are not carefully followed , like tidying up after them.  By setting a good example by management to encourage a safe culture – checks carried out etc.  Mary, bill, manager, safety officer, another worker, cleaner	The fact that Mary didn't see the box and tripped over it. There may have been many contributory factors that caused Mary to trip and why the box was there.  Mary	N/a
549	Sp 9 max	Someone had acted promptly and put up warning signs  Another worker	Regular checking procedures in the areas where staff work so that spills are dealt with promptly  Another worker	A failure in the procedure for dealing with spills  Manager	N/a
550	Sp 14 min	The box was removed  Employer	The box removed  Employer	Somebody not checking that the floor was clear of boxes. Not in someone job description not carrying out their duties  Employer	N/a

Appendix 5 Respondents Completed Sentences

551	Sp 14 min	<p>The box had not been there</p> <p>Another worker</p>	<p>By the box not being left on the floor</p> <p>Another worker</p>	<p>Failing to see an obstruction ( a box ) on the floor left by another person (or even Mary)</p> <p>Another worker</p>	N/a
552	Sp 11 max	<p>The friend was not away on holiday Mary would not be there.</p> <p>Mary did not wait for her friend</p> <p>The cleaner had got round to clearing it up</p> <p>Mary</p>	<p>If procedures had been followed</p> <p>Warnings had been put out</p> <p>The cleaner had cleaned up</p> <p>Bill the supervisor acted quicker</p> <p>Bill</p>	Not answered	N/a
553	Sp 11 max	<p>The company spillage procedure had been followed, staff alert to spillages on the floor and the area monitored for spillages and the spillages dealt with as soon as it was reported. Bill should have put out a safety sign as soon as he was aware if the spillage</p> <p>Bill</p>	<p>By a monitoring system around the tills , checking for spillages and spillages treated as priority.. a warning sign should have been put out as soon as the spillage was spotted</p> <p>Employer</p>	<p>Failure to have a safe system of work for monitoring and dealing with spillages</p> <p>Employer</p>	N/a

Appendix 5 Respondents Completed Sentences

554	sp 11 max	The spillage had been cleaned up immediately  Manager	By management having a robust policy of isolating spillages and immediate action on clearing up  Manager	Failure of another worker to report spillages to supervisor immediately and alert others to the hazard  Another worker	N/a
555	Sp 11 max	Bill had done xxxx to make the area safe or highlight the hazard  Bill	By ensuring that spillages were highlighted with warning signs or kept attended by staff and the cleaner cleans up immediately  Bill	Inadequate safety management system  Safety Officer	N/a
556	Sp 11 max	A member of staff was asked to wait where the milk had been spilt and warn people pending arrival of the cleaner or warning signs  bill	By Bill waiting by the milk or asking another member of staff to do so until the cleaner arrived  Bill	Slipping on spilt milk  Mary	N/a
557	Sp 11 max	The spillage had been reported earlier the checkout operator nearest should have known about it  Another worker	Staff could have reported spillage quicker and put a sign out (or ensured one was put out) almost immediately until a cleaner was available  Bill	Carelessness, too few cleaners, lack of reporting  Employer	N/a

Appendix 5 Respondents Completed Sentences

558	Sp 14 min	The box had been moved  Manager	By ensuring that boxes were not left in walkways  Safety officer	Failure to ensure that walkways are clear of tripping hazards Safety officer	N/a
559	Sp 14 min	There had been an appropriate system in place for the correct storage of empty boxes which was applied and monitored. Employer	Not answered	Breakdown or lack of a system for dealing with empty boxes  Employer	N/a
560	14 sp min	The box was stored correctly away from pedestrian areas  Not answered	Communication within the store should have been effective. This would ensure that the person that left the box in a pedestrian area would have understood it presented a hazard  Not answered	Probably communications. In my experience all supermarket managers are under pressure to do anything other than ensure H&S . they are usually busy trying to make money.  manager	N/a
561	Sp 14 min	The box had been picked up in the first place  Bill	By better housekeeping  Bill	It would appear that the accident was caused by a box being left on the floor through poor housekeeping  Bill	N/a

Appendix 5 Respondents Completed Sentences

562	Sp 9 min	The spillage had been cleaned up as soon as reported or signs available to alert people to hazard. Area was cordoned off until spillage cleaned up  Bill	The spillage was cleaned up as soon as reported or the area cordoned off until area made safe  Bill	The spillage was not cleaned up or cordoned off immediately it was reported  Bill	N/a
563	Sp13 max	There was a proper system in place for ensuring that work areas were kept clear of clutter  Manager	By systems and procedures to ensure that clutter was checked and removed and by a culture of keeping the workplace tidy  Manager	Lack of system and procedures to check and remove clutter and a culture within that part of the store which accepted the building up of such clutter  Manager	N/a
564	sp 14 min	I had carried out a site inspection today or had instructed that a site inspection of all checkout areas was carried out prior to the checkout being open  Safety officer	By better housekeeping , inspection of work areas regularly throughout the day given the nature of this industry. Making someone responsible for the checkouts and ensuring all areas are clear at all times employer	Poor housekeeping  manager	N/a

Appendix 5 Respondents Completed Sentences

565	Sp 14 min	The night staff had finished stocking the shelves to ensure the floors were clear before shop opened  Manager	By ensuring that staff completed the tasks that they are assigned before moving on to the next area of work, and to ensure that single boxes are not left in aisles  Safety officer	Poor organisation within the premises with regard to shelf stocking and distribution of goods on the shop floor, which has not been packed onto shelves  Manager	N/a
566	Sp 11 max	The milk had been cleared up at the time of it being reported.  None	By the supervisor ensuring that spillages are cleared up quickly and hazard signs be put out until waiting for cleaner to arrive.  Bill	Poor management and communication.  Employer	N/a
567	Sp 10 min	A member of staff had dealt with spillage when it happened  Another worker	If identified procedures had been followed to deal with spillages promptly  Another worker	Failure to deal with spillage promptly Failure by Mary to take due care and attention  Another worker	N/a
568	Sp 10 min	Staff within the store had followed procedures for dealing with spillages as soon as they are noticed  Another worker	By ensuring all staff are adequately trained to clean up spillages of this type as soon as they are noticed.  Safety officer	Poor staff training re cleaning of spillages  Safety officer	N/a



Appendix 5 Respondents Completed Sentences

569	Sp 15 max	Staff kept checkouts more tidy , if only the box had been moved to a safe place by bill  None (all staff)	Ensuring staff keep their workstations tidy. Acting promptly to remove hazards  All staff	Poor housekeeping and staff training  Manager	N/a
570	Sp 16 min	We had moved the box  Manager	Management controls / systems established  Employer	Management and systems failures  Employer	N/a
571	Sp 16 min	The box was left there  Safety officer	Ensuring proper housekeeping was managed by the store management team  Safety officer	Bad housekeeping  manager	N/a
572	Sp 14 min	They had stored the box in the correct place  Bill	By correct procedures for storage. By proper awareness / in house inspections. By Mary being aware of the risks of poor storage.  manager	A box being left on a walkway  bill	N/a

Appendix 5 Respondents Completed Sentences

573	Sp 16 min	We didn't have boxes  Employer	By better staff training  Manager	Lack of thought  Another worker	N/a
574	Sp 16 min	Staff had been given sufficient health and safety training on hazards and risks  Another worker	1. Better health and safety training 2. alternative place for leaving box 3. Supervisor picking up hazard 4. Mary taking on board health and safety risk safety officer	The box left lying in such a position for an employee to fall over it.  Another worker	N/a
575	Sp 16 min	We had implemented the housekeeping procedures and had communicated with all staff more effectively  Safety officer	Not answered	A combination of poor housekeeping in store and carelessness of Mary.  Another worker	N/a
576	Sp 16 min	The box had not been left there.  Manager	Staff training on safety issues such as correct storage of boxes to avoid tripping hazards. Regular h&s audits by supervisors to identify problems and remove these /train where necessary  Employer	The immediate physical cause – box left by another person where it caused a tripping hazard  Another worker	N/a

Appendix 5 Respondents Completed Sentences

577	Sp 16 min	Management had arranged for Mary to have her eyesight tested in line with procedures for full time staff  Manger	If she had been given an eyesight test and safety awareness training in line with arrangements for full time staff  Manager	Due to a lack of safety awareness training and possibly eye strain associated with checkout work  Manager	N/a
578	Sp 16 min	I had looked where I was going ...I might not have tripped over the box  Mary	Carry out risk assessment for trips on floor, putting work procedures in place , training, supervision of staff by management.  Safety officer	Somebody placed the box in the wrong place at the wrong time. Mary did not pay adequate attention to what she was doing. Insufficient action taken by company re trip hazards  Safety officer	N/a
579	Sp 16 min	The system was set up better to avoid boxes being left on the floor  Employer	By a better system of housekeeping / h&s management  Manager	Poor housekeeping practices and lack of management control  Manager	N/a
580	Sp 16 min	Staff tidied as they went the box would not have been left on the floor  Another worker	By improved training to all staff to highlight why it is important not to leave tripping hazards on the floor . also more vigilance by supervisors they need to ensure staff are working correctly and tidying  employer	Failure to identify hazard and clear policy and procedure as to immediate disposal of boxes once unpacked . a failure to train and supervise staff to follow correct procedures.  Employer	N/a

Appendix 5 Respondents Completed Sentences

581	Sp 16 min	Mary would have watched where she was going  Mary	1. Mary watching where she was going 2. people not leaving boxes in dangerous places 3. supervisor making regular checks  Mary / another worker / supervisor	Mary not paying attention  Mary	N/a
582	Sp 16 min	The box had not been there.  Bill	With safety training for Mary and other staff , supervisors and managers  Safety officer	Walkway not being cleared of hazards  Safety officer	N/a
583	Sp 16 min	There were regular checks to keep the walk ways and “pinch points” (tight corners) clear of tripping hazards  Manager	By keeping walkways clear and instructing everyone on the shop floor to move tripping hazards even if they haven’t put them there.  Manager	Because the other workers didn’t see the importance of a tidy site being a safe site.  Employer	N/a
584	Sp 15 max	Signs had been posted and watch posted at location –cleaner had cleaned up and was supervised by bill.  Bill	Observation of good housekeeping practices.  Bill	Lack of appropriate response to clean up – housekeeping procedures  Bill/manager/safety officer	N/a

Appendix 5 Respondents Completed Sentences

<p>585</p>	<p>Sp 15 max</p>	<p>Bill had gone and seen the location of the box. He may have acted on his own experience and put the box in a safe place and the accident would not have happended</p> <p>Bill</p>	<p>By proactive intervention</p> <p>Bill</p>	<p>Poor communication and lack of immediate action on cleaners behalf and lack of attention on managements behalf.</p> <p>Safety officer</p>	<p>N/a</p>
<p>586</p>	<p>Sp 15 max</p>	<p>Someone took responsibility</p> <p>Procedures were in place</p> <p>Requests were acted on immediatly</p> <p>All hazards were assessed</p> <p>Safety checks were made</p> <p>People were more aware</p> <p>Mary/bill/manager/safety officer/another worker/ cleaner/ customer.</p>	<p>By having safety checks, inspections and procedures in place</p> <p>Mary/bill/manager/safety officer/another worker/ cleaner/ customer</p>	<p>Lack of management control, no procedures in place and possibly Mary was not paying attention</p> <p>Mary/bill/manager/employer</p>	<p>N/a</p>

Appendix 5 Respondents Completed Sentences

587	Sp 15 max	<p>a. bill ensured the box was cleared properly</p> <p>b. warning signs were erected around the obstacle</p> <p>c. good housekeeping was implemented</p> <p>d. management had enforced this obvious hazard and identified the potential problem from the accident reports</p> <p>employer</p>	<p>By good housekeeping or by good safety management. By good safety enforcement</p> <p>Mary</p>	<p>Poor housekeeping</p> <p>Mary</p>	N/a
588	Sp 13 max	<p>Bill had cleared the box to the store room or the cleaner attended to it straight away. Checkouts kept tidy</p> <p>Bill</p>	<p>By maintaining a safe place of work – good housekeeping – tidy up all boxes – keep aisle clear at all times</p> <p>Manager</p>	<p>Unsafe place of work</p> <p>Bill</p>	N/a
589	Sp 13 max	<p>The box had been removed</p> <p>Bill</p>	<p>If the box had been removed, the area round the checkouts was tidier</p> <p>Bill</p>	<p>No system for housekeeping around the checkout area</p> <p>Bill</p>	N/a

Appendix 5 Respondents Completed Sentences

590	Sp 13 max	The box was removed immediately after it was reported. The area round the checkout where kept tidy  Bill	Firstly taking note of previous accidents, staff training ie housekeeping etc  Employer	Lack of training, supervision and housekeeping  Employer	N/a
591	Sp 13 max	A sign had been put out alerting to a potential tripping hazard and if the box had been moved before Mary tripped over it. Finally ensuring that boxes are not left in this area for people to fall over  bill	Ensuring that the boxes are not left in a public / staff route . used boxes placed in a cage then appropriately disposed of or boxes stored in appropriate area.  Employer	Poor cleanliness  Another worker	N/a
592	Sp 13 ,ax	They had checked it had been moved or moved it himself  Bill	By checking the workers report and following up on instructions to staff to clear  Bill	Lack of accountability, supervisor not checking on instruction given  bill	N/a
593	Sp 10 min	Someone had identified spillage and taken action to clear , cordon off area until dry and safe  Bill	Proper awareness and action to clear spillages as soon as they are discovered involved management awareness, policy on spills , training and supervision of staff  Employer	Failure to control and remove slip hazard  manager	N/a

Appendix 5 Respondents Completed Sentences

594	Sp 12 min	Procedures to alert staff and cleaners to spilt products , means of cordoning off to prevent customers / staff access  Safety officer	By better systems for information, control of the area and cleaning of the spilt product.  Safety officer	Lack of procedures for control and exclusion of staff from the hazard – management response to problems  Safety officer	N/a
595	Sp 10 min	Other shop workers would instinctively clean up the spill at once. General public would report it at once  Another worker	If staff attempted to avoid the spillage in the first instance and clean it up immediately in the second  Another worker	Lack of training and understanding of the hazards and risks of spillages  Employer	N/a
596	Sp 10 min	The spillage had been reported to a cleaner and the area guarded by the person causing it to occur at the time. The accident to Mary would not have happened  Safety officer	By the person causing the spillage staying in place and guarding it until the spillage was cleared up  Safety officer	Due to the people involved in the spillage not reporting / guarding until a cleaner could arrive and clean up the spillage  Another worker / customer	N/a
597	Sp 10 min	The spilt milk had been cleaned up  Employer	Communication between whoever spilt it and a member of staff would have enabled it to be cleaned up  Customer	Lack of communication and training  Employer	N/a



Appendix 5 Respondents Completed Sentences

598	Sp 9 max	A warning sign had been put up as soon as the spilt milk had been reported.  Bill	If a warning sign had been put up as soon as the spillage had been reported  Bill	Staff not taking adequate precautions quickly enough following the report of spilt milk  Bill	N/a
599	Sp 11 max	Cloths had been available to dry up the spillage , as well as safety sign around every few checkouts  employer	Spillage kit and safety signs at each or every few checkouts. Good arrangements and culture and all staff members responsible for dealing with spillage.  Employer	Inadequate arrangements to promptly deal with spillages  employer	N/a
600	Sp 10 min	We had educated our staff to recognise and respond to hazards , we need to create a proactive staff who will react. Why did milk spil, what was the cause, we need to investigate fully.  Employer	By encouraging staff (all levels) to recognise hazards and not expect someone else to deal with them.  Employer	Lack of proactive health and safety culture – poor staff education of the consequences of not dealing with incidents  Employer	N/a
601	Sp 12 min	Someone had cleaned up the spillage immediately  Another worker	By having a procedure for cleaning spillages, training staff in the procedure and auditing to ensure it is being implemented  Employer	The failure to mop up the spillage before the accident occurred  Another worker	N/a

Appendix 5 Respondents Completed Sentences

602	Sp 15 max	<p>The cleaner had done his job like he had supposed to and cleaned up the aisles and kept them clear</p> <p>Cleaner</p>	<p>If the cleaner had done his or her job properly and cleaned up the boxes</p> <p>Not answered but must be cleaner</p>	<p>Was bad supervision by the shop floor supervisor and a very bad job by the cleaner</p> <p>Bill / Cleaner</p>	N/a
603	SP 15 MAX	<p>We kept the area tidy and no boxes lying around as a rule and treated the complaint of the customer sooner</p> <p>Bill</p>	<p>If housekeeping was at a higher standard</p> <p>Manager</p>	<p>If there had been a history of untidiness at the checkout area , the manager will have to encourage the staff to be tidy , obviously there is a casual attitude to housekeeping but direction for the staff must come from the management.</p> <p>manager</p>	N/a
604	Sp 15 max	<p>Mary's friend noticed the box first and removed it.</p> <p>Bill had not passed on responsibility to a cleaner, he should have notified or asked people closer to the area of work.</p> <p>If only warning signs had been put out</p> <p>Employer</p>	<p>By training staff to be aware of anything hazardous in the workplace, any employee should be responsible for themselves and others around them</p> <p>Mary</p>	<p>Carelessness, lack of training in safety</p> <p>Another worker</p>	N/a

Appendix 5 Respondents Completed Sentences

<p>605</p>	<p>Sp 15 max</p>	<ol style="list-style-type: none"> <li>1. the box had been moved earlier</li> <li>2. we had a process by which the box had been reported it would have been attended to earlier</li> <li>3. housekeeping was better</li> <li>4. we had looked at the other "trip2 incidents that had happened we may have been able to prevent this one</li> </ol> <p>Manager</p>	<p>By analysing previous accidents and putting in procedures and putting in procedures to prevent it happening again.</p> <p>Manager</p>	<p>Tripping over a box, which had been left in a pedestrian thoroughfare. It was not removed as soon as it had been reported. The supervisor did not check that it had been removed</p> <p>None</p>	<p>N/a</p>
<p>606</p>	<p>Sp 12 min</p>	<p>A system was in place to clean up spills immediately.</p> <p>The person spilling the milk reported it</p> <p>Mary was aware of her surroundings and saw the spillage</p> <p>The floors were soft</p> <p>Mary was wearing non slip soles shoes</p> <p>I was in Barbados after winning the lottery</p> <p>Manager</p>	<p>A safety culture whereby hazards are reported and dealt with immediately backed up by procedures and training</p> <p>Mary/ supervisor / manager/ safety officer/ employer/ other worker / cleaner/ customer</p>	<p>Root cause – failure to ensure adequate systems to clean up spillages</p> <p>Initial cause – spilt milk and lack of awareness</p> <p>Employer</p>	<p>N/a</p>

Appendix 5 Respondents Completed Sentences

607	Sp 14 min	There was better housekeeping and hazard identification  Supervisor	Keeping the shop floor free from loose materials eg boxes . good house keeping practices  Supervisor	Bad housekeeping practices and lack of / poor supervision on shop floor  Supervisor	N/a
608	Sp 15 max	There was a near miss reporting system . if only accident trends are recorded and investigated and corrective action carried out  If only a sign was put up straightaway  If only it was removed straightaway  If only health and safety audits were carried out it would have been picked up before  Employer	Company H&S training, near miss reporting H&s audits Staff awareness Supervisors controlling accident trends  Employer	Lack of supervision Lack of environmental awareness Lack of training, information and instruction  Supervisor	N/a
609	Sp 16 min	Mary had seen the box  Mary	By Mary being aware of her surroundings  Mary	Mary not looking where she was going  Mary	N/a

Appendix 5 Respondents Completed Sentences

610	Sp 12 min	<p>Staff had checks for spillages</p> <p>Staff report spillage</p> <p>Signs erected</p> <p>Staff have appropriate footwear</p> <p>Staff training – awareness to potential hazard</p> <p>Employer</p>	<p>It is reasonably foreseeable milk leaks from cartons in transit. Staff awareness training and procedure drawn up to deal with this. Regular safety checks in case public spill milk and a reporting mechanism , signs and someone to clean immediately a spill is discovered</p> <p>Employer</p>	<p>Lack of awareness.</p> <p>Employer</p>	N/a
611	Sp 12 min	<p>The spill had been immediately barricaded and cleaned</p> <p>Manager</p>	<p>By an established and enforced procedure of barricading and cleaning spills immediately</p> <p>Manager</p>	<p>Store managers failure to have or enforce policies on priority and of barricading / cleaning spills . probably relates also to corporate failure to establish and audit conformance with appropriate accountability.</p> <p>Manager</p>	N/a
612	Sp 12 min	<p>A member of staff had dealt with this problem</p> <p>Another worker</p>	<p>If the spillage had been dealt with immediately.</p> <p>Another worker</p>	<p>Slipping on spilt milk</p> <p>Mary</p>	N/a

Appendix 5 Respondents Completed Sentences

613	Sp 12 min	The person who spilt the milk had informed a member of staff immediately  Another worker	If appropriate and immediate action had been taken as soon as the milk had been spilt  Another worker	unclear reporting lines in order to reduce slipping hazards  manager	N/a
614	Sp12 min	A proper management policy was in place to manage spillages in the workplace, the spillage would either have been prevented or effectively identified , highlighted and removed  Employer	Proper spillage management. Spillage identified by staff and quickly cordoned off or signed and effectively cleared up  Employer	Lack of management and training for effective spillage management therefore spillage was not quickly identified and removed  Employer	N/a
615	Sp 12 min	The cleaner had been called immediately the milk was spilt  Supervisor	If the milk had been cleared up immediately  Cleaner	Spilt milk that no one had cleared up.  Cleaner	N/a
616	Sp 10 min	There had been a system for reporting spillages and cleaning up immediately.  Employer	By having a system in place for reporting spillages immediately, cordoning off the area and clearing up asap.  Employer	Ineffective systems within the organisation.  Employer	N/a

Appendix 5 Respondents Completed Sentences

617	Sp 10 min	I had not been in such a rush  Mary	By better housekeeping – cleaning up spillages as they occur and putting out a wet floor sign  Manager	Lack of housekeeping and training  Manager	N/a
618	Sp 10 min	The spillage had been identified and either cordoned off or cleaned up  Supervisor	Procedure for identifying and cleaning up spillages  Employer	Lack of adequate procedure for identification of potential slip hazards , monitoring and supervision of the workplace and appropriate systems for cleaning up the spillage  Employer	N/a
619	Sp 10 min	They had procedures in place for spillages, cordon off and clean asap  mary	If there were procedures in place to clean up spillages immediately  Mary	Slipping on spilt milk  Mary	N/a
620	Sp 9 max	Abc supermarkets had a system in place for cleaning up spillages at certain periods throughout the day, this policy should have included information on what staff should do immediately after a spillage had been notified...  Employer	If a sign had been put up immediately after the spillage was notified and the spillage was cleaned up as soon as possible after notification  Supervisor	ABC supermarkets did not adequately assess risks from spillages in their stores – they did not have a policy in place to ensure that spillages are dealt with quickly  Employer	N/a

Appendix 5 Respondents Completed Sentences

621	Sp 10 min	<p>I would have acknowledged that Mary was 55 yrs old , do may be at greater risk of greater injury from a tripping accident given her age and gender. She is also a p/t member of staff consequently the workplace environment changes to a greater extent, and her familiarisation of the changing environment is less due to the p/t nature of he role. Working a Thursday would have been a strange experience, so I could have briefed Mary about the changes to the work environment on a Thursday</p> <p>Supervisor</p>	<p>By briefing / training staff about the importance of keeping the work area clear of boxes. The training could also highlight the potential risk and likelihood of such an incident. Accident statistics could be produced to demonstrate the level of tripping accidents relative to other types of accident</p> <p>Mary/supervisor/ manager</p>	<p>Caused by insufficient level of housekeeping . a lack of appreciation about the potential risks of placing a box on the floor by another worker. Lack of briefing about changes in the work routine on a Thursday</p> <p>Supervisor / manager / safety officer</p>	N/a
622	Sp 16 min	<p>She had not come in to cover for a friend.</p> <p>Box was not in the way</p> <p>She had not gone to her break</p> <p>Mary / other worker</p>	Not answered	<p>The box being left in the way</p> <p>Another worker</p>	N/a



Appendix 5 Respondents Completed Sentences

623	Sp 11 max	If it had been cleared up immediately  Employer	By a better system of reporting / cleaning  Employer	Slippy floor  Employer	N/a
624	Sp 10 min	1. the milk was stored in a safer location 2. someone had noticed and used a slippy surface sign 3. Someone had cleaned the spilt milk 4. Mary was wearing appropriate footwear  1 Bill 2/3 another worker / cleaner 4 mary	prevention of spillage of milk  signage and cleaning up of spillage  good h&s management culture  employer	Lack of or breakdown in the companies health & safety culture  Employer	N/a
625	Sp 13 max	Housekeeping around the checkout area had been identified as priority and then managed  The accident trend in the accident book had been noticed and acted upon as an idea for improvement  Manager	Risk assessment , better communication of it, staff training , regular checks of workplace, monitoring of checks, quick response for matters that can be resolved easily  Employer	Immediate cause – box being left on the floor  Underlying cause – inadequate housekeeping and monitoring arrangements  Employer	N/a

Appendix 5 Respondents Completed Sentences

626	Sp 11 max	Staff members were asked to check their work areas regularly and report any spillages, it might have been cleared more quickly. If only a sign had been placed over it or the shop supervisor Bill had waited in situ until cleaner arrived  Employer	If safer systems were in place and managed.  Bill – supervisor	Not having a safe system for spillages ie placing a sign over the spillage or waiting in situ for cleaner  Employer	N/a
627	Sp 11 max	The spillage protocol required a member of staff to guard the hazardous floor area until the mop, bucket and signage arrived  Bill – supervisor	The spillage protocol required a member of staff to guard the hazardous floor area until the mop, bucket and signage arrived  Employer	Multi factorial Failure to implement a safe system of work for spillages. Lack of friction between shoe and floor surface Employer	N/a
628	Sp 11 max	There was , and staff adhered to, a strict and prompt procedure for dealing with such incidents , for example initially by signage then removing the hazard  Employer	A quick response by bill providing signage in the area of the spillage before cleaning could take place  Bill – supervisor	The time it took to respond to the notification contributed but the cause was the spilt milk  None	N/a

Appendix 5 Respondents Completed Sentences

629	Sp 11 max	<p>There was s system in place where spillage notified to a member of staff - immediate response to stand at the spillage to warn staff /customers of danger, until such time hazard signs put in place and spillage cleaned up</p> <p>Employer</p>	<p>By having in place a system of dealing with spillages immediately notified to staff Manager staff members takes responsibility to prevent slips by standing guard / placing hazard sign</p> <p>Manager</p>	<p>Inadequate response to notification of hazard which presents risk of serious injury</p> <p>Supervisor</p>	N/a
630	Sp 11 max	<p>Procedures for mopping up spillages immediately and if all staff had been trained / instructed to place a warning cone in the location where the milk had spilled</p> <p>Employer</p>	<p>Good communication between staff , clear responsibilities for clearing up spillages , staff taking a pro-active approach to preventing hazards</p> <p>None</p>	<p>Poor communication between staff and lack of awareness about health and safety issues</p> <p>Employer</p>	N/a

Appendix 5 Respondents Completed Sentences

631	Ps 9 max	<p>There had been a more rigid structure in place to ensure that because of prior knowledge and precedents it was reasonable to foresee that the accident would happen therefore as soon as the supervisor had been instructed about the spillage he should have remained there to verbally instruct people about the danger until it was adequately guarded / signed and cleaned up[</p> <p>Supervisor</p>	<p>There had been a more rigid structure in place to ensure that because of prior knowledge and precedents it was reasonable to foresee that the accident would happen therefore as soon as the supervisor had been instructed about the spillage he should have remained there to verbally instruct people about the danger until it was adequately guarded / signed and cleaned up[</p> <p>Supervisor</p>	<p>Poor management arrangements i.e. not learning from previous incidents , not training staff adequately</p> <p>Employer</p>	N/a
632	Sp 9 max	<p>Someone had stood guard over the spillage until it had been cleaned up or closed off</p> <p>Supervisor</p>	<p>As slipping accidents are common to supermarkets it should have been identified as fairly high risk to staff and customers. Therefore a policy of reporting or direct action (who when what) should be in place. Risk assessment and preventative action would have prevented this accident. I also think that this is a training issue.</p> <p>Safety officer</p>	<p>There must have been risk assessments and past history to recall on. I feel with this to mind that poor training , lack of information and clear instruction is the underlying cause. There has to be positive plan of action to prevent further incidents. They must not wait for spillages to be reported by customers but must be vigilant and look for the hazard</p> <p>Safety officer</p>	N/a

Appendix 5 Respondents Completed Sentences

633	Sp 9 max	A member of staff had been called and left at the location to warn people about the spillage before it was cleaned up ... Mary would not have slipped  Supervisor	By having the staff who either work at the cash points or who walk up and down the aisles to arrange for the spillages to be mopped up immediately or at least signs displayed  Employer	The slippery surface caused by spilt milk , the spilt milk made the floor wet thereby reducing the grip between the show surface and floor surface ( friction coefficient)  supervisor	N/a
634	Sp 9 max	Bill had acted immediately and had a warning sign put up  Supervisor	Bill had acted immediately and had a warning sign put up  Supervisor	Slow response to initial report of spillage  Supervisor	N/a
635	Sp 9 max	We could react faster to notified events  Manager	By increasing staffs awareness of hazards  By changing the procedure for dealing with spilt liquids  Supervisor	A breakdown in safety procedures  Employer	N/a

Appendix 5 Respondents Completed Sentences

636	Sp 12 min	The milk had not been spilt , or had been cleared up  Employer	Ensuring containers designed to resist damage etc  Ensuring that milk stacked in such a way to minimise risk of spills  Ensure systems in place to ensure rapid clean up  Staff only wear appropriate footwear  Employer	Poor design of milk containers  employer	N/a
637	Sp 16 min	There had been a system to keep floors clear that was used  Supervisor	By supervision ensuring a clean and tidy policy was observed  Supervisor	Failure to implement ( or create or implement) a clear floor policy  Manager	N/a
638	Sp 11	The supervisor had seen this as an urgent issue and the cleaner had cleared it up immediately  Supervisor	By prompt clean up of the spillage  Supervisor	Lack of management action to clean up spillage  Employer	N/a

Appendix 5 Respondents Completed Sentences

639	Sp 13 max	I had looked where I was going  Mary	Better housekeeping  Employer	Poor control by the employer  Employer	N/a
640	Sp 13 max	Supervisor had ensured the box was removed immediately it was reported  Supervisor	By improving housekeeping and implementing a daily audit  Manager	A failure on the companies part to ensure its staff had adequate procedures and training to comply with current legislation  Employer	N/a
641	Sp 12 min	She had received adequate information instruction and training, had access to the company safety policy and related procedures, finding of risk assessments.. her colleagues or cleaners followed effective cleaning practices and managers provide hazard spotting  The EHO	Could of reduced the likelihood of occurrence and risk of injury / seriousness by implementing so far as reasonable practicable the matters in box to the left  None	Unknown without full background information  None	N/a

Appendix 5 Respondents Completed Sentences

642	Sp 13 max	Bill had ensured that the box had been removed immediately or removed by him .also if Mary had looked out for her own personal safety  Supervisor	If either box removed or she'd paid more attention to her surroundings  Mary	She should have seen the box and avoided it. Lack of attention on her part.  Mary	N/a
643	Sp 13 max	The box had been removed before the accident  Supervisor	The box being removed more quickly  Supervisor	The box left out on the shop floor  Supervisor	N/a
644	Sp 13 max	Bill Had acted immediately and removed the box  Supervisor	If boxes were never left in supermarket aisles  Employer	The box being left in the aisle  Employer	N/a
645	SP 13 MAX	We had acted to prevent accidents and trained all staff to deal with unsafe conditions immediately and correctly. Perhaps review accident book monthly  employer	Information instruction and training on health and safety for all staff, better communications and reaction to hazards  employer	Poor management  employer	N/a



Appendix 5 Respondents Completed Sentences

646	Sp 16 min	<p>She had not come in on Thursday</p> <p>The box was not there</p> <p>Our procedures covered this</p> <p>Our housekeeping was better</p> <p>Employer</p>	<p>She had not come in on Thursday</p> <p>The box was not there</p> <p>Our procedures covered this</p> <p>Our housekeeping was better</p> <p>Employer</p>	<p>1. hazard spotting for Mary</p> <p>2. Positioning of box</p> <p>mary</p>	N/a
647	Sp 13 max	<p>The box had not been left on the floor by the person who put it there ...the box had been removed by any member of staff to remove the hazard...the cleaner had immediately dealt with the box when asked...bill had ensured this had been done....warning signs were put up.</p> <p>Employer</p>	<p>Safe system of work which is implemented monitored and staff are trained to carry out</p> <p>employer</p>	<p>Failure to operate a safe system of work</p> <p>Employer</p>	N/a
648	Sp13 max	<p>Bill the supervisor dealt with the situation himself , as there was a history of untidy checkouts areas someone should be in charge for housekeeping in the area</p> <p>Manager</p>	<p>By having a person in charge of housekeeping for that area</p> <p>Manager</p>	<p>Poor housekeeping storage</p> <p>Manager</p>	N/a

Appendix 5 Respondents Completed Sentences

649	Sp 15 max	Put a system in place that boxes were not allowed to build up around the checkout . better housekeeping  Supervisor / safety officer	Better housekeeping and safe system of work. By being proactive and taking account of the other accidents  Supervisor / employer	Poor system of work , management not ensuring that action was taken after the 1 <sup>st</sup> / 2 <sup>nd</sup> accident highlighted the danger.  Employer	N/a
650	Sp 11 max	Bill the supervisor had immediately gone to collect and display the appropriate safety notice adjacent to the spillage. He should then have contacted the cleaner  Bill supervisor	Not answered	Lack of adequate store monitoring and remedial procedures to be followed in the case of spillage  Employer	N/a
651	Sp 13 max	ABC supermarkets had ensured a safe system of work to ensure that tripping hazards were not left unattended by staff and that this was cascaded down through the management to staff via periodic instruction, training and supervision and disciplinary procedures.  Employer	A good safety culture developed by policies , procedures and safe systems of work implemented by the branch manager  Manager	The absence of a fully implemented safe system of work controlled / regulated by appropriate monitoring and review  Employer	N/a

Appendix 5 Respondents Completed Sentences

652	Sp 10 min	Someone had reported the milk spillage in order for appropriate cleaning and use of cone for hazard awareness  Another worker	Reporting of spillage to aid cleaner (or appropriate person) to clear up. Better awareness of safety issues  Another worker	Incident not being reported and therefore not resolved by cleaning spillage. Possible lack of training.  Another worker	N/a
653	Sp 12 min	There had been procedures for dealing with spillages or warning signs placed around affected area  Manager	If there was a system of work for employees in relation to spillages on the floor  Manager	Unsafe system of work. No prescribed action for dealing with spillages  Manager	N/a
654	Sp 14 min	The box had been stored appropriately.  Other worker	By adequate supervision of the area or storage of the box in the allocated area.  Employer	Failure to implement a safe system of work.  Employer	N/a
655	Sp 16 min	The box had been stored correctly out of the walkway  None	By correct storage of boxes on racking and pallets away from walkways  None	Unsafe storage of box in staff walkway  None	N/a

Appendix 5 Respondents Completed Sentences

656	Sp 9 max	A warning sign had been put out immediately to highlight the area, while a member of staff keeps watch until this has been done. The spillage should have been cleared up sooner rather than later and the supervisor should have checked this was done  Supervisor	Immediate warning sign Staff guarding before spill is cleared Supervisor making sure cleaner does it as soon as possible  Supervisor	Not a proper risk assessment taken place. Management procedures not adequate to minimise risk of someone slipping  Manager	N/a
657	Sp 9 max	There was a procedure to ensure spillages were marked properly , Mary would have been prevented from entering the spill area and she would not have fallen over  manager	If the company had procedures to deal with spillages or the store manager had ensured they were implemented  Manager	Lack of procedures or procedure not being implemented adequately  manager	N/a
658	Sp 9 max	There had been an effective system in place for dealing promptly with spillages  Safety officer	By having a more tightly enforced cleaning / inspection/ maintenance procedure  Employer	Slipped on the milk – however no / ineffectual system in place to help her avoid the misfortune  employer	N/a

Appendix 5 Respondents Completed Sentences

659	Sp 10 min	The spilt milk had been cleaned up (absorbed) and area screened off ie procedures in place / systems in place to immediately identify responsibility for and to effect removal of hazard  Manager	Proper systems and procedures in place of prevention /corrective action.  Manager	Lack of proper hazard analysis and corrective / preventative action.  Employer	N/a
660	Sp 10 min	A spillage alert system had been in place to spot clean all spillages as they occurred , or at least mark the spot where it had happened  Manager	Staff to be aware of the causes of slipping incidents and accordingly either mark the spot to warn others or clear the spot as a matter of urgency. Preferably doing both to prevent an incident whilst it was waiting to be cleaned  Employer	Due to inadequate management systems being adopted and carried out at store level.  Employer	N/a
661	Sp 16 min	The person had not put the box there ( & had training to know not to do that)  Another worker	If the box had not been put there eg if there was more storage space in the store or if employee who put box there had been trained  Another worker	A box being put on the floor , ie incorrect storage  Another worker	N/a

Appendix 5 Respondents Completed Sentences

662	Sp 12 min	I had not been at work  Answered incorrectly	Putting procedures in place to ensure surveillance and response to spillage's that could create slips and trips  Employer	Due to the floor surface being slippery  Employer	N/a
663	Sp 16 min	I had taken the time to check the route and clear any obstructions  Mary ( incorrectly answered	By a personal risk assessment  Mary	Poor house keeping and failure to do a risk assessment  Mary	N/a
664	Sp 13 max	The area round the checkout was tidy  Supervisor	By a clear floor policy  supervisor	The practice of allowing floor areas to become blocked  Supervisor	N/a
665	Sp 9 max	Bill the supervisor had taken more appropriate action before Mary's fall , knowing there was a previous history about people slipping over spilt milk . there should have been warning signs nearer to the checkout area and therefore Mary's accident might never have happened, and maybe if the cleaner was there faster  supervisor	By better awareness by Bill and everyone else  Employer	Bad judgement by anyone employed by ABC Supermarkets  Employer	N/a

Appendix 5 Respondents Completed Sentences

<p>666</p>	<p>Sp 13 max</p>	<p>We could find an effective way to drive home to all staff the need to ensure no hazards are created through poor housekeeping</p> <p>Safety officer</p>	<p>By ensuring areas such as till approaches and all other walkways are not used as depositories for goods packaging and /or other potential trip hazards – if necessary backed by disciplinary sanctions</p> <p>Employer</p>	<p>Failure to clear trip hazards immediately or to ensure it is clearly marked in an appropriate way</p> <p>supervisor</p>	<p>N/a</p>
<p>667</p>	<p>Sp 9 max</p>	<p>The cleaner had cleaned it up when asked to.</p> <p>Mary had been looking where she was going</p> <p>Supervisor had checked upon the cleaner</p> <p>The company had an effective spillage policy</p> <p>Mary had non slip shoes</p> <p>None ( a combination of all people)</p>	<p>Prompt action to deal with the spillage</p> <p>None ( a combination of all people)</p>	<p>It was a chain of events</p> <p>None ( a combination of all people)</p>	<p>N/a</p>

Appendix 5 Respondents Completed Sentences

668	Sp 9 max	<p>Bill had gone straight to the scene and placed a warning sign and or remained at the scene until the spillage was cleared up – after all data was at hand to indicate that the likelihood of injury being realised from this hazard – as a result of proactive action being taken ..</p> <p>Supervisor</p>	Not answered	<p>Vision without action</p> <p>employer</p>	N/a
669	Sp 9 max	<ol style="list-style-type: none"> <li>1. A safety culture existed in the supermarket that enabled the person who spilt the milk / first person to notice the spill , to take appropriate action</li> <li>2. the supervisor had taken action - cleaned the area /put out warning triangle</li> <li>3. ensured prompt action taken by cleaner</li> </ol> <ol style="list-style-type: none"> <li>1. manager /employer</li> <li>2. supervisor</li> <li>3. supervisor</li> </ol>	<p>By the implementation of a safety culture that would have encouraged participation by the workforce in the identification of hazards and ownership in their area of work</p> <p>employer</p>	<p>Primary cause – 1. spillage – slippery area, 2 Mary’s inattention</p> <p>Secondary / indirect cause –lack of safety culture</p> <p>Mary.</p>	N/a



Appendix 5 Respondents Completed Sentences

670	Sp 9 max	The area had been isolated immediately or cleaned earlier. If only regular checks had been introduced following previous accidents  Manager	If the store manager had acted following previous incidents of spillage in the checkout area  Manager	Lack of procedures to check and supervise an area which has a proven accident record  Manager	N/a
671	Sp 9 max	Bill the supervisor took more care and insisted on staff cleaning up all spillages at once  Supervisor	If a proactive approach was taken by management including bill  Supervisor	Falling on a hard surface  employer	N/a
672	Sp 9 max	The supermarket had a strict procedure for dealing with spillages that all staff were aware of and adhered to  Employer	Written procedures for spillages .. when spill reported, staff member stands by it until sign put out. Cleaned up asap  Supervisor	Inadequate procedures / staff training  Employer	N/a
673	Sp 16 min	The boxes had been put away somewhere out of the way  Manager	Boxes were stored in the correct area away from the checkouts  Manager	Poor supervision and leadership enforcing a clean and tidy area  Supervisor	N/a

Appendix 5 Respondents Completed Sentences

674	Sp 9 max	Bill had arranged to remain at the scene of the spilt milk or for another member of staff to remain at the scene to warn customers /staff of the spillage and cordon off the area with appropriate signage  Supervisor	Bill / staff remaining at the scene to warn customers / staff and cordon off the area with signage.  supervisor	The spilt milk!  Not being highlighted to customers /staff and the area not being cordoned off.  supervisor	N/a
675	Sp 12 min	The milk had been cleared up immediately or a warning notice had been put in place until the spillage had been cleaned up.  manager	If the policy in place was to clear up spillages immediately or erect warning signs at the spillage until it was cleared up  manager	Not having a procedure for reporting and clearing up spillages immediately  Manager	N/a
676	Sp 12 min	I put up a warning of slippery surface  Supervisor	Not answered	Spillage was not reported or cleaned up properly  Another worker	N/a
677	So 12 min	Somebody cleaned up the spill when it happened or if only somebody had put up a wet floor sign  Another worker / cleaner	If everybody took adequate care and cleaned up the spill when it occurred in the first place  none	Lack of understanding of the seriousness of not cleaning up a spill  Cleaner	N/a

Appendix 5 Respondents Completed Sentences

678	Sp 10 min	<p>The spill had been cleaned up we might never have had an accident</p> <p>Employer</p>	<p>If the correct procedure was in place ensuring that any spillage is cleaned as soon as it happens</p> <p>Employer</p>	<p>A failure of the system / procedure in place that are there to ensure a safe working environment</p> <p>Employer</p>	N/a
679	Sp 10 min	<p>It had been cleaned up earlier , if signs had been placed around the spill</p> <p>Supervisor</p>	<p>If when a spill is reported barriers are put up with signs and a member of staff to keep an eye on it till the spill is cleared</p> <p>Supervisor</p>	<p>The supervisor did not ensure the area was blocked off and that the cleaning was not done quicker</p> <p>Supervisor</p>	N/a
680	Sp 10 min	<p>I had more information to work on</p> <ul style="list-style-type: none"> <li>-Mary had been more aware of her surroundings</li> <li>- the other staff had spotted the problem , the customer had reported the spillage and so on</li> </ul> <p>not answered</p>	<p>By not having spilt milk on the floor</p> <p>Not answered</p>	<p>Slipping on milk</p>	N/a

Appendix 5 Respondents Completed Sentences

681	Sp 10 min	The milk had been cleared away promptly  Manager	Not answered	I would consider why Mary didn't stop to clear up the milk herself , why no other member of staff had noticed the spillage , why did the milk spill , was the bottle leaking, where exactly was the spillage shop floor or staff area  manager	N/a
682	Sp 10	They had cleared up the spillage  Employer	If the spillage was reported to member of staff or manager and it was either cleaned up or a warning sign was put up it could be cleared up  Employer	Lack of procedure to deal with hazards ie spillages  employer	N/a
683	Sp 10 min	The milk had been cleared up  Employer	Procedures to ensure the milk was cleared up  Employer	Lack of action to clean up the milk , inadequate equipment and procedures  Employer	N/A

Appendix 5 Respondents Completed Sentences

684	Sp 9 max	<p>Bill had ensured appropriate action was taken and verbally warned Mary.</p> <p>The store had a policy for finding out why milk spilt and approached the manufacturer</p> <p>Bill supervisor</p>	<p>By implementing standard clean floor checks and briefing staff on the importance</p> <p>Safety officer</p>	<p>Poor safety culture</p> <p>Not specified</p>	N/a
685	Sp 9 max	<p>The previous 4 accident have been properly and fully investigated and the results acted on</p> <p>Employer</p>	<ol style="list-style-type: none"> <li>1. Implementing the results of previous accident investigations</li> <li>2. mopping up the spill immediately it was notified</li> <li>3. warning signs</li> </ol> <p>manager</p>	<p>Lack of p &amp; p re dealing with incidents of spillage , lack of previous accident investigation and acting on their results</p> <p>Employer</p>	N/a
686	SP 9 max	<p>The cleaner had attended to milk immediately</p> <p>cleaner</p>	<p>Better system was in place for immediate removal of spillage – does it necessarily have to be done by a cleaner</p> <p>manager</p>	<p>Her slipping on spilt milk which had not been cleaned up promptly ( she did not look where she was going)</p> <p>Mary</p>	N/a
687	SP 9 max	<p>I had seen and acted on the spilt milk</p> <p>Safety officer</p>	<p>Better floor inspection</p> <p>Safety officer</p>	<p>Spilt milk and failing to clean up the milk</p> <p>Another worker</p>	N/a

Appendix 5 Respondents Completed Sentences

688	SP 10 min	<p>There had been regular checks for spillages on the shop floor every 15 –20 minutes , the accident may have been prevented</p> <p>Employer</p>	<p>By ensuring that at least one member of staff would carry out a regular check on all the floors in danger areas ie liquids such as cooking oils bottled drinks and fridges</p> <p>Employer</p>	<p>Due to the lack of sufficient training of the workforce on specific danger areas and ensuring that everyone had been appointed to carry out an inspection</p> <p>Employer</p>	N/a
689	Sp 9 max	<p>They had cleaned up the spillage immediatly on reporting of same</p> <p>Supervisor / cleaner</p>	<p>By ensuring a safe place of work. Ensuring that bill had made someone stand at the spillage until the cleaner had arrived and also left spillage signage for use</p> <p>Supervisor / manager</p>	<p>Unsafe workplace and unsafe system of work including the lack of training in how to deal with spillage</p> <p>Employer</p>	N/a
690	Sp 10 min	<p>-The milk was cleared up / not spilt</p> <p>-A regular check and cleaning routine was in place</p> <ul style="list-style-type: none"> <li>- staff were fully trained in identifying hazards such as spills</li> </ul> <p>employer</p>	<p>Regular checks and clear ups combined with hazard identification training. - not 100% effective but a good improvement</p> <p>Employer</p>	<p>Spilled milk on ground - result of poor housekeeping</p> <p>Employer</p>	N/a

Appendix 5 Respondents Completed Sentences

691	Sp 15 max	Preventative action had been taken after the previous accidents  Safety officer	Action by management - communication with employees  Manager	Complacency  Manager	N/a
692	Sp 10 min	-Packaging was more robust -handling was better -leak /spill was detected -procedure in place to deal with spillage  employer	-Packaging was more robust -handling was better -leak /spill was detected -procedure in place to deal with spillage  employer	-Packaging was more robust -handling was better -leak /spill was detected -procedure in place to deal with spillage  employer	N/a
693	SP14	The box hadn't been left there  Manager	If all parties were fully aware of their h+S responsibilities and acted upon them vigorously  Manager	Apathy  Employer	N/a
694	SP16	The store manager and supervisors were more informed on h+s matters, particular trips and had ensured employees were trained to be aware of the risks of tripping the box may not have been left or the incident avoided  Safety officer	By ensuring staff were aware of the risks and hazards of leaving boxes where they could cause an accident. The store checks by the supervisor / store manager.  Safety officer	The poor control/ housekeeping of the store due to a lack of training on h&s and supervision  Safety officer	N/a

Appendix 5 Respondents Completed Sentences

695	SP 12	<p>The milk had been cleaned up immediately . hazard signs had been put in place to indicate the spillage</p> <p>Employer</p>	<p>If the spillage had been immediately cleaned up , safety hazard signs displayed “wet surface”</p> <p>Employer</p>	<p>Lack of appropriate action to ensure spillages are dealt with immediately they occur / lack of suitable instructions for such events</p> <p>Employer</p>	N/a
696	SP 15	<p>The box had been removed the moment it was reported by the customer. Bill should not have instructed the cleaner but moved the box immediately with the cleaner.</p> <p>Bill</p>	<p>The box should have been removed by the supervisor or warning signs put on it. The area should be kept clear at all times especially as accident book shows history of trips etc.</p> <p>Bill / manager / safety officer/ cleaner</p>	<p>H&amp;s policy &amp; commitment is not providing a culture where employees thinks about preventing accidents. If the culture was focused on h&amp;s individuals from top down would take responsibility around their own area to prevent accidents</p> <p>Employer</p>	N/a
697	SP15	<p>Bill had ensured that the box was cleared straight away. There was some system for removing /dumping empty boxes from the checkout area after they were used.</p> <p>Customer</p>	<p>By implementing a system for removing empty boxes immediately after their use round the checkout area</p> <p>Safety officer</p>	<p>Poor system of work</p> <p>Employer</p>	N/a



Appendix 5 Respondents Completed Sentences

698	SP 14	The box had not been placed in an obvious traffic route at such a busy time – or it had been spotted and rectified prior to Mary’s accident.  Another worker	Improved working practices and training may have lead to greater awareness from colleagues  manager	Tripping over a box placed on a pedestrian route. This should not have been placed there.  Another worker	N/a
699	SP 14	She had been looking where she was walking  Mary	Improved housekeeping  Another worker	A chain of events from company level to store level , which resulted in the box not being removed from the floor  Employer	N/a
700	SP 14	The supermarket could have followed housekeeping procedures more closely  employer	Would need to investigate before a definite answer can be given, although it appears that improved housekeeping, staff awareness may have prevented the accident  Employer	Without further investigation the actual cause of the accident cannot be definitely identified  Employer	N/a
701	SP 16	Mary had watched where she was walking and the box had not been left sitting on the floor.  Mary	By good housekeeping , awareness of employees , better training relating to housekeeping.  Manager	Poor housekeeping leading to walkways being untidy  Manager	N/a

Appendix 5 Respondents Completed Sentences

702	SP 15	<p>People would take action themselves when notified about a potential hazard</p> <p>bill</p>	<p>Because action could have been taken to immediately remove the box or secure the area from access. Training and awareness appear to be required</p> <p>Employer</p>	<p>Placing of the box on the floor in an accessible walkway / location by persons unknown - failure to maintain systems</p> <p>Manager</p>	N/a
703	SP 15	<p>Bill had moved the box himself or if only there was someone to regularly check the area to ensure boxes did not accumulate in hazardous places</p> <p>employer</p>	<p>By preventing the accumulation of boxes in a traffic route through regular inspections and clean ups</p> <p>employer</p>	<p>Poor management of trip hazards</p> <p>Employer</p>	N/a
704	SP 15	<p>The supervisor had done his job properly and the cleaner had acted on this , Mary would not of tripped</p> <p>Supervisor</p>	<p>If the supervisor / cleaner had done their jobs properly</p> <p>Supervisor</p>	<p>There was a lack of leadership. The supervisor should have brought the cleaner to where the box was and the job should have been done there and then</p> <p>Supervisor</p>	N/a