Examining the Relationship between Health Behaviours and Mental Health in a Luxembourg Sheltered Work Environment: A Quantitative Study

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Abstract

Background: People suffering from severe mental illness (SMI) engage in fewer health behaviours and, in return, suffer a reduced lifespan by up to 25 years. Past literature on health behaviours and SMI is complex, fragmented and inconclusive, and has chiefly focused on single health behaviours in relation to specific mental illnesses. For example, nicotine and caffeine consumption have been found to interfere with anti-psychotics by reducing their effectiveness. Exercise, however, has been found to lessen the negative symptoms of schizophrenia and lower scores in depression. This research project seeks to explore the potential link between multiple health behaviours (being active daily, eating healthy, not smoking, drinking alcohol in moderation, and being in a healthy weight range) and different mental health diagnoses. **Method:** A clinical sample of 84 (56 males; 28 females) was drawn from a Luxembourg sheltered work environment. Participants completed a questionnaire developed from the eating habits measure, the health behaviours measure, the Eppendorf schizophrenia inventory, the psychological symptoms index and the mental health inventory. In order to triangulate the participants' symptoms, with their consent, a third-party also assessed their symptoms. **Results:** Regression analyses indicated that only exercise predicted self-reported symptoms. In addition, there was also an interaction between exercising and healthy eating: exercising was associated with a decrease in symptoms, whereas exercising while eating healthy was associated with an increase in symptoms. Health behaviours did not affect diverse diagnoses differently. Moderation analyses showed that symptom awareness did not moderate the relationship between exercising and symptoms. However, healthy eating moderated the relationship between exercise and symptoms; at a high level of healthy eating, participants reported worse symptoms. **Conclusions:** Results point towards a possible impact of self-criticism upon the relationship between health behaviours and SMI. Implications for theory and practice are discussed, and recommendations for future research will be proposed.

Table of Contents

List of Tables

List of Figures

1 Reflexive Statement

Reflexivity refers to looking inwards upon the assumptions a researcher brings to a project (Fischer, 2009). It is not about achieving absolute objectivity. Rather, reflexivity concerns an awareness of how the researcher has influenced their research, from the conception of a project to the write-up of the findings (Finlay & Gough, 2003). The relationship between a researcher and the research topic is dialectic, in that an investigation can also influence the investigator (Alvesson & Skoldberg, 2009; Willig, 2001). Thus, both the researcher and the research process co-creates the resulting knowledge (Frosh, 2010). Reflexivity is necessary to ensure that the researcher does not impose meaning upon the data (Fischer, 2009). Willig (2001) identifies two reflexive activities: personal reflexivity and epistemological reflexivity. The former refers to how a researcher's assumptions influences their research project while the latter refers to how the researcher's chosen methodology influences what data can be found and how it is interpreted. The following reflexive statement will consider both personal and epistemological reflexivity in turn.

Fischer (2009) notes that providing a researcher's background allows a reader to better understand how conclusions were reached. I have previously worked as an Assistant Psychologist in the sheltered work environment in Luxembourg, from which this sample was drawn, and have witnessed first-hand how clients are affected by weight gain, diabetes and cardiovascular disease. Clients often expressed that these issues have added to both their perceived defectiveness and general stress levels. I was struck by how much importance the sheltered work environment put upon providing healthy meals for the clients. More recently, I have worked as an Assistant Psychologist for an eating disorder service in the UK. Again, I was faced with clients that suffered from physical and mental ill health. Furthermore, I noticed in myself that my mood can be affected by health behaviours, particularly during times of stress. It is the combination of these experiences that has sparked my interested in the topic of health behaviours.

Due to past experiences, I will inevitably bring some assumptions to this research project. For instance, I expect to find a negative correlation between health behaviours and mental illness. I am also expecting my sample to be rather unhealthy, in line with previous research. Lastly, as the research design indicates, I assume that the fact that my sample

receives a free balanced main meal each day and has access to free fresh fruit will impact upon their food consumption. I ensured that I bracketed these assumptions from the start and gave equal attention to the existing literature, sourcing results for and against my preconceptions. I have also attempted to reduce the introduction of biases by using a quantitative approach, relying on validated questionnaires and asking colleagues to translate the measures for me. However, I will have to ensure that I bracket these assumptions throughout this project to avoid biasing the findings or my interpretation of the results. I am planning to use both my supervision and mandatory personal therapy to discuss any possible biases that could occur in this research project.

A qualitative study would have been equally valid and could have provided an interesting insight as to whether participants felt that health behaviours influenced their mental health. However, within the context of this research project, I shall adopt a naïve realism approach for the following reasons: First, the research questions I have identified called for a positivist and quantitative approach. It is important to choose a methodology that matches the research questions, rather than complementing the objectives to the approach (Cooper & McLeod, 2011). Second, much research into the topic of health behaviours has been rooted within positivism and the medical model; therefore, the focus is on quantitative methods and diagnoses. While counselling psychology is wary of diagnoses, as it values people's subjective experiences (Lane & Corrie, 2006), the reality is that services often do work with diagnoses (Larsson, Brooks & Loewenthal, 2012). Larsson and colleagues (2012) posit that counselling psychology should be willing to engage with the medical model for practical reasons, while maintaining a critical stance towards it. A diagnosis can allow people access to services and benefits, thus providing legitimacy and meaning (Huibers & Wessely, 2006). I too take the stance that no one perspective within psychology is superior and that each has its use in specific contexts (Cooper & McLeod, 2011). One of the advantages of being a reflexive Counselling Psychologist is the ability to hold different epistemological positions, then using the one that is most appropriate for the task at hand (Larsson et al., 2012). Since being diagnosed and being treated within the medical model is often still a reality for people with mental health issues, I will stay within the same approach for this study. Thus, for an ease of understanding when synthesising the relevant literature, I will also use the vocabulary of the medical model, such as 'severe mental illness' and diagnoses.

A possible way to integrate this epistemology with counselling psychology is the scientist-practitioner model. This model posits that research should be influenced by issues identified during psychological practice, while practice should be informed by research findings (McLeod, 2001; Rupp & Beal, 2007). It starts with the client and asks what scientific research can contribute to an understanding of what brings people to therapy, as well as how it can help a therapist achieve the best possible outcome for a given client (Shapiro, 2002). Thus, a positivist approach can be integrated within the counselling psychology framework should the research question stem from observations made during practice, and if the findings have the potential to inform practice. The idea for this research project stems from my holistic view of people and my practice as an Assistant Psychologist. The purpose here is to identify a method of better supporting clients, by considering not just their symptoms but also their holistic subjective experiences, including physical symptoms and psychosocial factors. During my previous work, I would hear first-hand how my clients' world consisted of more than merely psychological symptoms - their lives were influenced by their financial situation, aesthetics, physical health concerns and social interactions. Clients reported feeling isolated as their weight or physical health issues made them self-conscious in relation to their significant others. If there really were a link between health behaviours and mental illness, then encouraging and supporting them in taking up more health behaviours would empower clients to take better care of themselves and, thereby, help themselves. This increased sense of self-efficacy could spread and positively influence other areas of people's lives. Schwarzer and Fuchs (1995) note that increased self-efficacy facilitates goal achievement and the handling of setbacks. Indeed, previous research shows that holistic mind-body practices are becoming more prominent in counselling practices (Nichols, 2015). Viewing the mind and body as a single, holistic system can improve psychological practice and lead to de-stigmatisation of mental illness, by re-conceptualising mental causes as inseparable from organic causes (Leitan & Murray, 2014).

Counselling psychology is concerned with individual experiences rather than aggregates of people (Krause, 2011). In line with this, the aim of the present research project is not to summarise the experiences of a population using a few numbers. The potential link between health behaviours and mental health is only one of the many puzzle pieces concerning

the aetiology and maintenance of psychological difficulties. As Khantzian and Mack (1983) stated:

> The capacity for self-care is complex and involves multiple affective and cognitive processes, component functions, mechanisms of defense, ego functions such as signal anxiety, reality testing, judgment, control, delay, and synthesis, as well as relatively stable superego functions. Cognitively, self-care involves a capacity to perceive, realistically assess, integrate, and attend to relevant cues in the environment. (p. 228)

However, previous research into health behaviours has been complex, fragmented and inconclusive, leading me to believe that clarifications are needed. A simplification of the process - assuming health behaviours as direct influencers of SMI symptoms and omitting other potentially confounding variables - might provide a necessary starting point to clarifying the relationship between health behaviours and mental health. I hope to achieve this through the design of this research project in the following ways: Participant-related confounding variables should be minimised as all sheltered employees can be assumed to be stable in their presentation and used to completing research measures. All participants are within the legal working age and receive a free main meal, mitigating different financial resources. Researcher-related confounding variables should be minimised as I remove myself from data collection, in as far as a third party from the sheltered work environment will administer the questionnaire to the participants. Furthermore, the research measures were translated into the languages used in the project by native speakers not affiliated with this research project rather than myself. Finally, situational confounding variables should be minimised as the procedure of data collection will be the same across the different sheltered work environment sites, in terms of time and location of data collection. Nonetheless, each of these strategies to manage confounding variables has its own advantages and disadvantages, which will be considered throughout this research project. Therefore, I consider this to be an exploratory study that aims to avoid the commonly identified limitations of health behaviour research, in the hopes of finding results that can act as a basis for further research and possibly inform counselling psychology practice.

2 Introduction

People with a diagnosis of severe mental illness (SMI) often engage in fewer health behaviours than the general population. For instance, more people with SMI tend to be obese and smoke (Bowden, Miller & Hiller, 2011; Compton, Daumit & Druss, 2006; McClave, McKnight-Eily, Davis & Dube, 2010). People with SMI are also twice as likely to suffer from diabetes, cardiovascular disease and respiratory disease (Scott & Happell, 2011). Consequently, people with SMI have a reduced lifespan of around 25 years (Colton & Manderscheid, 2006). Conversely, health behaviours also seem to be associated with SMI. For instance, people with few health behaviours, such as a balanced diet and regular exercise, tend to have more SMI diagnoses and more severe psychopathologies (Prochaska et al., 2014). Evers, Castle, Prochaska and Prochaska (2014) found that participants reported lower subjective physical and emotional well-being if they reported a greater number of negative health behaviours, such as smoking, eating an unbalanced diet and not exercising. Thus, existing research seems to indicate a link between health behaviours and SMI, and vice versa. Therefore, this research project shall investigate the relationship between health behaviours and SMI in a Luxembourg sheltered work environment. The research topic is important, considering the documented reduction in physical health and lifespan that people with SMI suffer, especially considering that SMI sufferers also tend to report a lower overall quality of life (Kopp et al., 2011). This is unsurprising considering that people who have been assigned a diagnosis of SMI and are, for instance, obese or substance abusing, suffer from a double stigma and often report low self-esteem (Mizock, 2012; Radke, Parks & Ruter, 2010). From a counselling psychology perspective, it is important to support these clients, not just with their SMI, but also support and empower them in taking better care of themselves. Even if health behaviours were to only minimally contribute to the cause and maintenance of poor mental health, the fact that they are modifiable and something everybody can be exposed to makes them invaluable tools in increasing one's quality of life (Jacka, Mykletun & Berk, 2009).

This thesis will now review and criticise the literature on the topic of health behaviours and SMI. First, health behaviours will be defined. Secondly, research on health behaviours and their association with SMI will be reviewed. Thirdly, the most pertinent health behaviours, as identified by the literature, will be discussed in turn. Following this, common limitations of

studies on the research topic shall be examined. Finally, the rationale for the study and its relevance to counselling psychology will be presented.

2.1 Defining Health Behaviours

Conceptualising what constitutes a health behaviour is no easy task, as being healthy means different things to different people. For instance, Haase, Steptoe, Sallis and Wardle (2004) compared the activity levels and health beliefs of students across 23 countries, finding that activity levels were related to the awareness of health benefits resulting from activity. Thus, those from cultures that emphasise activeness as having clear health benefits tended to be more active.

To develop a working definition of health behaviours, Western government recommendations on healthy living were researched and compared. First, 'healthy living recommendations' and 'healthy living guidelines' were entered into the Google search engine. Then, the same process was repeated with the search terms translated into French and German: 'guide vie saine' and 'Tipps für ein gesundes Leben', respectively. Government agency pages were sourced, such as health departments or ministries. Recommendations made by the World Health Organisation (WHO, 2014), the French government (Programme National Nutrition Santé, n.d.), the Luxembourg government (Ministère de la santé, 2011), the German government (Bundesministerium für Gesundheit, 2015), the Austrian government (Bundesministerium für Gesundheit, 2013), the British government (National Health Service, n.d.), the Canadian government (Public Health Agency of Canada, 2012) and the American government (Centers for Disease Control and Prevention, 2014) were compared. The selection criteria for the recommendations were: a) written in English, French or German; b) freely accessible for everyone on the Internet. Thus, the working definition of health behaviours is based on easily accessible information. The search and choice of search terms can be said to have impacted the search results; different search terms or different translations of the search terms would have most likely produced different webpages and, possibly, a different working definition of health behaviours. Rather than creating an objective research-based definition of the term, the aim was to develop a definition that could be adopted by a health-conscious layperson searching the Internet, and comparing the sourced information. The

conceptualisation of an attainable health behaviour definition was the goal, as opposed to one so clinical that in real life it would be difficult to understand or adhere to.

The healthy living recommendations from the different governments show many common points; however, there are also marked differences. For example, rather than recommending five portions of fruit and vegetables a day, the American guidelines state that half of a meal plate should be made up of these foods (US Department of Agriculture, 2010). In terms of exercise, both Canadian and American guidelines advise citizens to exercise for at least 10 minutes at the time for there to be an effect on health, whereas other guidelines recommend exercise of 30 minutes per day (Centers for Disease Control and Prevention, 2014; Ministère de la santé, 2011; Programme National Nutrition Santé, n.d.; Public Health Agency of Canada, 2012). The Canadian government recommends two and a half hours of exercise per week, which results in a daily average of 21 minutes (Public Health Agency of Canada, 2012).

The definition of health behaviours adopted here comprises the common points that are found in the reviewed government recommendations. Thus, health behaviours are defined as: a) being active daily, which is defined as raising the heartbeat (exercises include walking, running, fitness classes etc.); b) eating five portions of fruit and vegetables per day; c) eating a diet low in fat and sugar; d) not smoking; e) drinking alcohol in moderation; f) not being over or underweight (i.e., maintaining a healthy BMI between 20 and 25). It is important to note that being healthy is not an all or nothing approach, as living a healthy lifestyle is more of a continuum with two extremes on either end and many positions in between. Hence, this research project will not categorise people as ‘healthy’ or ‘unhealthy’, but in terms of how many of the above health behaviours are adhered to.

2.2 Critical Literature Review

Lakeman et al. (2012) note that people assigned with a diagnosis of SMI tend to suffer from physical health issues. There are several identifiable reasons for this: First, side effects of medication for SMI, such as psychosis, may lead to weight gain, diabetes and cardiovascular disease (Casey et al., 2004). Second, people with SMI also appear to consider their physical health to be less important and often deem control of their health to be in the hands of others, such as their doctors (Buhagiar, Parsonage & Osborn, 2011). This may also be due to the

financial difficulties often experienced by people suffering from SMI, as people who find it difficult to meet their basic needs - such as adequate housing - often have little motivation to change what they perceive as less important, such as diet (Koenigsberg, Bartlett & Cramer, 2004; Shoqirat & Cameron, 2013). However, Buhagiar et al. (2011) concede that when people recover from SMI, they report greater optimism in relation to health concerns. Therefore, it could be possible that a substantial number of participants might have been in the recovery phase of their SMI, since all their participants were currently in treatment; this might explain why their participants considered their health to be less important. Third, certain negative health behaviours tend to go hand in hand, such as weight gain and increased alcohol consumption, a lack of exercise and increased smoking, smoking and drinking coffee, or smoking and alcohol consumption (Degenhardt & Hall, 2003; Gurpegui, Aguilar, Martínez-Ortega, Diaz & de Leon, 2004; Kaczynski, Manske, Mannell & Grewal, 2008; Wannamethee & Shaper, 2003). Finally, people who have negative health behaviours often have more than just one, with 60% of the population having two or more concurrently (Poortinga, 2007). For example, people suffering from schizophrenia were found to eat a more unbalanced diet, exercise less and smoke more, but drink less than the general population (Brown, Birtwhistle, Roe & Thompson, 1999; Stubbs, Williams, Gaughran & Craig, 2016b; Vancampfort et al., 2016). Brown et al. (1999) proposed that reduced alcohol consumption might be due to the financial situation of the participants, but found that controlling for social class did not, in fact, affect their findings. Brown et al. did, however, note that their sample was older and that fewer participants with active psychosis had completed their instruments; thus, their sample might not be representative for the general schizophrenic population. Consequently, research has shown that the health behaviours of people with SMI appear to influence their physical health. However, health behaviours can also affect people's psychological health. This research project will now review evidence implying that the health behaviours of people with SMI also affect their psychological health. To do this, the health behaviours of smoking, nutrition, exercise and caffeine use will be considered separately.

Before reviewing the different health behaviours, this critical literature review will provide a brief summarise the common criticisms of the literature to be reviewed. Most studies on health behaviours that categorise participants into different groups for the purpose of analysis, have small and unequal group sizes, which makes it difficult to compare them (e.g.

Heggelund, Nilsberg, Morken & Helgerud, 2011; Morisano, Wing, Sacco, Arenovich & George, 2013). Often there also is no control group and, or group allocation is non-random, which can be a further source of bias (Legrand & Heuze, 2007). For example, a non-double-blind study design can lead to bias via experimenter variables. Pearsall, Smith, Pelosi and Geddes (2014b) posit that without a double-blind procedure the control group may still be affected by the aim of a study. Similarly, Legrand and Heuze (2007) report that one of the researchers was present at the gym at which their participants trained as part of the study intervention. While Legrand and Heuze explain that this was meant to maximise participation, it may also have affected the results due to social desirability bias. Thus, their presence may have had an effect on the participants' exercise behaviour. Unequal gender distribution is also a common issue in this type of research, with samples being either mostly male or mostly female (e.g. Firth et al, 2017b). For instance, Sanchez-Villegas et al. (2009) found a higher incidence of women who were identified as depressed in their sample (324 versus 156). Being depressed was defined as having been diagnosed with depression by a physician. This could point towards a potential bias introduced by gender specific differences in help seeking behaviour.

Participant recruitment in itself may be a source of bias. A number of studies note that only a subsample of people actually participated in their study. For instance, Broocks et al. (1998), Buhagiar et al. (2011) and McCreadie (2003) report that just over half of potential participants actually consented to take part in their research. This may point towards a selection bias whereby people who are most interested or feel most strongly about some aspects of the study in question decide to participate. Furthermore, McCreadie (2003) when examining diets in Scottish people, recruited participants in an assisted living facility. However, this may mean that inadequate diets in the participants are potentially a consequence of their difficulty in caring for themselves (and thereby also living independently) as well as their mental health issues. A further issue in health behaviour research is the heterogeneity of the samples or groups used. For instance, participants are often grouped based on diagnoses. This raises issues around comorbidity, differential diagnoses and heterogeneity of the presentations put together. For example, Buhagiar et al. (2011) categorised participants into either an SMI group or a non-psychotic MI group. The latter combined people with such varied presentations as depression, anxiety and personality disorder. Dissimilar baseline

groups may also become a source of bias and can affect interpretation of the findings (Pearsall et al., (2014b).

Variable measurement might also be criticised in some studies on health behaviours. Pearsall et al. (2014b) notes that often there is a lack of measurement or reporting of participants' adherence to exercise or diet interventions (e.g. how many exercise sessions did participants attend), a lack of measurement of baseline levels of fitness and food intake, and a lack of follow-up measurements to see of changes have been maintained. However, this information is important to properly interpret the findings. If adherence to the intervention was poor and there were marked differences in baseline levels of the outcome variable, then changes in the latter may not be due to the intervention. Variable conceptualisation might also impact substantially on findings. For example, Sörberg et al. (2014) defined attempted suicide as having required an overnight hospital stay. Similarly, Ruusunen et al. (2010) defined people as depressed if they were diagnosed with depression during a period of hospitalisation. Ruusunen and colleagues note that they only had 49 participants that fit this conceptualisation of depression. Both examples may potentially exclude suicidal or depressed participants due to very specific criteria. Physical measurement might still be source of bias. McCreadie (2003) used a non-fasting blood sample to gain information on diet (i.e. cholesterol). However, if participants knew in advance that this blood test would be taken; they could have consciously or unconsciously changed their eating behaviour before the test was conducted.

Finally, the literature on health behaviours often overlooks confounding variables that may impact on health behaviours, such as medication side effects (Buhagiar et al., 2011), and previous experience of illness by the participant or family history of illness (Munro, Lewin, Swart & Volmink; 2007). Furthermore, some researchers (such as Burns & Cohen, 1998) posit that physical health needs of people with SMI are sometimes overlooked by professionals. Furthermore, Robson and Gray (2007) posit that some professionals are generally pessimistic as to the ability of people affected by SMI to adopt more health behaviours. In some services, there can also be a lack of clarity as to whose role it is to support people with their physical health (Robson & Gray, 2007). Therefore, how the professionals involved in their care react to and speak about their physical health might also influence whether people engage in health

behaviours. Addressing some of these common criticisms in the literature on health behaviour may help produce more conclusive and generalisable findings.

2.2.1 **Smoking.** An Australian study found that smoking rates for people with SMI are 1.5 times higher than those for the general population (Bowden et al., 2011). Similarly, a US study found smoking rates to be 1.7 – 3.3 times higher for people with SMI when compared to those without SMI (McClave et al., 2010). Furthermore, certain disorders have higher smoking rates than others. For instance, smoking by people affected by depression, bipolar disorder and schizophrenia tend to be 2 to 3 times higher than in the general population (Morisano et al., 2013); these differences are maintained even when age, gender and country of residence are controlled for (de Leon & Diaz, 2005). However, de Leon, Becona, Gurpegui, Gonzalez-Pinto and Diaz (2002) concede that further cross-cultural research is needed to verify whether the incidence is truly similar in different countries.

2.2.1.1 The biological effects of smoking. Nicotine influences the release of neurotransmitters, such as serotonin, which are known to be part of the pathogenesis of SMI (George & O'Malley, 2004; Picciotto, 2003). Smoking is, thus, bound to impact upon symptoms and experiences of SMI. Findings from studies on the biomedical impact of smoking have so far produced conflicting results. Some have found that smoking weakens serotonin functioning in the brain and, therefore, worsens depressive symptoms (e.g., Malone et al., 2003). However, others have found that smoking can increase the amount of dopamine in key areas of the brain (Lyon, 1999). Smoking has also been shown to impact verbal memory in people with schizophrenia - even after controlling for age, gender and years of education - but no effect was found in people affected by depression or bipolar disorder (Morisano et al., 2013). However, Morisano et al. (2013) conceded that these results may be due to the small sample sizes of each group (ranging from N= 6 to N= 32). Furthermore, the researchers were analysing secondary data from studies on cognition in people with SMI.

2.2.1.2 Medication side effects and smoking. Smoking could be associated with counteracting the side effects of medication, rather than with the actual symptoms of the SMI itself. For example, antipsychotics often leave people feeling tired - on occasion even producing Parkinson-like symptoms (Buchanan et al., 2010). Nicotine can act as a stimulant and, thus, can counteract those side effects through an increase in dopamine (Forchuk,

Norman, Malla, Vos & Martin, 1997). Conversely, research has also shown that smokers metabolise antipsychotic and antidepressant medication faster than non-smokers; thus, smokers often initially need a higher dosage of medication (Lyon, 1999; Ziedonis, Kosten, Glazer & Frances, 1994). McEvoy et al. (1995) found that people who were switched from a first-generation antipsychotic (haloperidol) to a second-generation antipsychotic (clozapine) at a therapeutically effective dosage smoked less, whereas no change was found for people that switched at a lower dose. Lyon (1999) suggests that clozapine may allow for more activation in key areas of the brain when compared to haloperidol and, therefore, it reduces the need to smoke as much in these people. Thus, smoking directly influences areas in the brain that are involved in SMI.

2.2.1.3 Social factors for smoking. Smoking can affect people's lives, not only via brain functioning, but also in different ways. For example, Williams et al. (2009) note that with an increasing number of smoking bans in place, smokers face stigma that, in turn, can negatively impact smokers' significant relationships. However, McClernon, Calhoun, Hertzberg, Dedert and Beckham (2013) and Solway (2011) found that smoking could facilitate social interactions between people and lessen feelings of exclusion. Solway (2011) notes the importance of whether in a given culture smoking is accepted or not. In cultures where it is more accepted, smoking can facilitate social interactions, whereas in cultures where it is less accepted it can lead to stigma. Smoking breaks can help structure the day and reduce boredom typically associated with being hospitalised (Kalman, Morissette & George, 2005). Lastly, some people with SMI report that smoking helps them cope with anxiety (DeHay, Morris, May, Devine & Waxmonsky, 2012).

To summarise, the relationship between smoking and SMI is complex and findings have - so far - been inconclusive. People with SMI are more likely to smoke and to smoke more heavily than people in the general population. Nicotine affects the release of certain neurotransmitters in the brain, which can directly impact SMI in both positive and negative aspects. Lastly, smoking can impact SMI by excluding people from the community or by facilitating stress management.

2.2.2 **Nutrition.** Nutrition can impact upon people's SMI, either indirectly through obesity or directly by affecting neurotransmitters in the brain. People with moderate MI tend to have a

significantly higher BMI compared to the general population (Bhattacharya, Shen & Sambamoorthi, 2014; Compton et al., 2006; Kopp et al., 2011; Robson & Gray, 2007). For instance, a study in Scotland found that 73% of their sample (N=102) was overweight, compared to 60% in the general population (McCreadie, 2003); this result is commonly found within the literature. However, studies examining the direct link between measures of weight and SMI tend to produce conflicting results. For instance, Zhao et al. (2011) found that among obese and overweight American adults, waist circumference was significantly associated with an increased likelihood of suffering from moderate-to-severe depressive symptoms. Similarly, a recent study found that people suffering from obesity and metabolic syndrome were less likely to improve from their depression (Garcia-Toro et al., 2016). Conversely, Sörberg et al. (2014) found no associated between high BMI and suicidal behaviour in Swedish men. Furthermore, Sörberg and colleagues found that hospital admissions due to psychiatric illness declined with an increasing BMI. Other studies simply found no relationship between obesity and mental health (Larsson, Karlsson & Sullivan, 2002). For example, Brown et al. (1999) note that in some people with SMI, an unbalanced diet is maintained long after the symptoms have improved. Brown and colleagues (1999) also note that an unhealthy diet does not necessarily lead too being overweight, as some unhealthy diets lack protein and carbohydrates and so weight can be either maintained or lost. Inconsistencies in these findings are possibly due to differences in populations, measures of SMI, number of variables controlled for and different measures of weight (weight gain, waist circumference or BMI; Zhao et al., 2011).

2.2.2.1 Interest in healthy eating. People with SMI appear to be aware of healthy eating guidelines, but many state that it is difficult to implement them in their daily lives (Pearsall, Hughes, Geddes & Pelosi, 2014a). However, Barre, Ferron, Davis & Whitley (2011), in a study comprising of 31 people suffering from depression, schizoaffective and bipolar disorders, found that participants were not aware of the effects of unhealthy diets upon their physical health. Furthermore, many participants stated that they were less motivated to make changes, since they felt that the medication side effects would stifle any attempts to lose weight or change their eating habits. Similarly, qualitative studies typically identify taste and gaining comfort or pleasure from certain foods as barriers to healthy eating (Pearsall et al., 2014a). McCreadie (2003) notes that people with SMI often chose unhealthy foods; however, she concedes that all but two participants in her study were unemployed, which may have had

an impact on their food choices. Furthermore, a study on General Practitioners' and laypeople's views on nutritional information found that, for most people, nutritional information is irrelevant until they have received a medical diagnosis that forces them to change dietary habits (McClinchy, Dickinson, Barron & Thomas, 2011). Thus, the interest in eating healthily may be rather low in people with SMI.

2.2.2.2 The impact of medication side effects. Research has also shown that medication side effects can lead to weight gain in people with SMI. Antipsychotics and antidepressants have been known to increase appetite and thirst (Robson & Gray, 2007), with some researchers also suggesting that the effect medication has on neurotransmitters and on insulin metabolism can lead to weight gain (Park, Usher & Foster, 2011). Alvarez-Jiménez et al. (2006) found that 78.8% of people taking atypical antipsychotics had a weight gain of approximately 7% of their baseline weight. Considering that being overweight increases the risk for diabetes and cardiovascular disease, Lakeman et al. (2012) pointed out that any weight gain related to antipsychotics and antidepressants should be considered as a life shortening effect, rather than merely a side effect.

2.2.2.3 The biological impact of nutrition. The body produces neurotransmitter involved in SMI, such as serotonin, from the chemical content of consumed food (Pearson & Long, 1982; White, 2009). Studies that investigate the relationship between nutrition and SMI on this level often focus on only one nutrient. The recent Moodfood project is a large scale European study across eight countries, which investigates the impact of diet on depression specifically (Cabout, Brouwer & Visser, 2017). The research findings focusing on nutrients, gathered as part of this project, show that a low intake of folic acid is associated with an increased risk of developing depression and an increased risk of recurrent depression (Astorg et al. 2008; Tolmunen et al. 2004). Furthermore, supplementation with vitamin B12 and B6 has been shown to reduce major depression (Almeida et al., 2010). However, it should also be noted that SMI can cause nutritional deficiencies, rather than vice versa, as SMI is often associated with poor self-care in terms of buying healthy food and eating regularly (Wallace & Tennant, 1998).

Studies that investigated how a complete diet affects SMI often find that a healthier diet improves psychological functioning. For instance, Jacka, Cherbuin, Anstey and Butterworth (2014), in a longitudinal study, found that eating a diet high in roast meat, sausages, hamburgers, steak, chips, crisps and soft drinks, and low in vegetables, fruit and grilled fish was associated with an increased number of depressive symptoms in older adults - independent of socioeconomic factors. Similarly, in a large-scale longitudinal study with 10,094 participants in Spain, Sanchez-Villegas et al. (2009) examined the effects a Mediterranean diet has on depression; a Mediterranean diet was characterised as eating mostly fruit, vegetables, nuts, legumes and fish. The researchers found that the likelihood of becoming depressed increased as adherence to the Mediterranean diet decreased. More recently, Kamali, Dastsouz, Sadeghi, Amanat and Akhlaghi (2016) found that a Western diet was associated with increased anxiety and stress, whereas a Mediterranean diet was associated with reduced anxiety, but had no impact on stress.

To summarise, the literature on the effect of nutrition on SMI appears to be inconclusive. Intuitively it makes sense for nutrition to influence mental health, as we derive the elements to synthesise neurotransmitters from the food we consume. People with SMI appear to have more issues with weight gain and may be less motivated to eat healthily. Some studies find that a healthy diet can act as a protective factor for SMI. However, other studies find no relationship between nutrition and SMI. These inconsistencies are probably due to differences in populations as well as different measurements of weight and healthy/unhealthy diets. Different populations are likely to have varying financial and environmental opportunities to make healthy food choices, which could greatly influence the findings. Furthermore, healthy eating is likely to also be influenced by other psychosocial factors, such as social support and self-esteem.

2.2.3 **Physical Activity.**

2.2.3.1 The importance of frequency of physical activity. There is a lack of studies concerned with frequency and the amount of physical activity needed to improve SMI symptoms. Studies tend to compare different kinds of exercise, such as walking and stretching (Knubben et al., 2007), or they compute varying measures of physical activity, such as weekly energy expenditure needed for significant change (Dunn, Trivedi, Kampert, Clark &

Chambliss, 2005); this makes it difficult to draw firm conclusions. A study focusing on the frequency of exercise by Legrand and Heuze (2007) compared 23 participants with depressive symptoms, who either took part in a high-intensity exercise (aerobic exercise for a minimum of 30 minutes, 3-5 times per week) or low-intensity exercise (aerobic exercise for 30 minutes per week) group. Participants in the high-intensity exercise group showed significantly lower depression scores at the end of the study. Physiological effects of physical activity that may reduce depressive symptoms include an impact on the release of endorphins and neurotransmitters, such as dopamine (Ströhle, 2009). However, Legrand and Heuze (2007) concede that their sample size was small and participants were recruited in a sports facility, implying that they might have had an initial positive expectation of exercise. Nevertheless, all participants were regular customers of the sports facility; thus, the researchers may have controlled for the impact of initially starting a new exercise regimen on depressive symptoms. More recently, exercise has been linked to a reduced likelihood of depressive symptoms and reduced depression (Hallgren et al., 2016; Prugger et al., 2017). Some research indicates that moderate intensity physical activity is optimal in achieving improvement in SMI (Daley, 2002), while cross-sectional studies tend to show that self-reported regular exercise is linked with improved overall mental health (Ströhle, 2009).

2.2.3.2 Physical activity and schizophrenia. Recent research has found that while people affected by schizophrenia engage in less moderate and vigorous exercise than controls, their engagement in light exercise is similar (Stubbs et al., 2016a). Vancampfort et al. (2013) propose that this is explained by the fact that walking is their main mode of transportation. Exercise seems to help alleviate some of the negative symptoms in schizophrenia, such as lack of energy and concentration, as well as irregular sleep patterns (Faulkner & Biddle, 1999, Kimhy et al., 2016). Pearsall et a.,(2014b) reviewed eight randomised controlled trials (RCT) to investigate the effect exercise interventions had upon people with schizophrenia, psychosis, schizoaffective and bipolar disorders. It was found that the exercise interventions had no effect on either positive or negative symptoms. However, Pearsall et al. point out that the different RCTs used different forms of exercise, which might have impacted the results. Similarly, Heggelund et al.(2011) compared two groups of people affected by schizophrenia, schizotypal and delusional disorders. One group was assigned to play videogames, while the second group was assigned to an exercise intervention (high aerobic intensity on a treadmill); no significant

differences in negative and positive symptoms were found between both groups. Conversely, a recent meta-analysis by Firth et al. (2017b) found that exercise was associated with improved cognitive functioning, such as working memory and social cognition. Furthermore, Firth and colleagues found that interventions using larger amounts of exercise and exercise supervised by professionals were more effective. Thus, research on the relationship between physical activity and schizophrenia has so far produced inconclusive findings.

2.2.3.3 Negative effects of physical activity. Research suggests that physical activity might be counter indicated for some MIs. For instance, Broocks et al. (1998) found that, for people affected by panic disorders, drug treatment worked more effective than an exercise intervention. Furthermore, the researchers note that the dropout rate for the exercise intervention was 31%, compared to 0% in the drug treatment group. Many participants engaging in exercise interventions feared heart and panic attacks while working out, while some participants with agoraphobia found it understandably difficult to run outside. Thus, it seems that people affected by panic disorders might profit from low-intensity physical activity, or they might need to improve their symptoms with drug treatments first, before they can start to profit from exercise.

To summarise, research on the link between physical activity and SMI tends to focus on specific disorders such as depression, schizophrenia or panic disorders. Different studies use varying frequencies, measures and kinds of physical activity, which makes any comparison difficult. While findings with depressed populations tends to generally be positive, findings related to schizophrenia are more inconclusive. Commonly cited barriers to physical activity in people with SMI are often part of the SMI itself, such as low mood and a lack of energy and motivation, as well as negative beliefs about themselves (Carney, Cotter, Bradshaw & Yung, 2017; Pearsall et al., 2014a).

2.2.4 **Caffeine.** Caffeine is consumed by both the general population and people with SMI alike, particularly in the form of coffee or tea. For instance, the US mean consumption of the general population is about 200-250mg per day, while psychiatric patients in the UK have a mean consumption of about 350-620mg per day (Rihs, Muller & Bauman, 1996; Sawynok, 1995). The general recommendation is to consume about 200mg per day, which is about two

cups of coffee or four cups of tea (Paton & Beer, 2001). Caffeine consumption has been linked to an increased acute vascular inflammatory response to mental stress in a non-clinical sample (Hamer, Williams, Vuononvirta, Gilbson & Steptoe, 2006). Research on the influence of caffeine on SMI has, so far, mostly focused on schizophrenia and psychosis.

2.2.4.1 Caffeine use and schizophrenia. People affected by schizophrenia tend to consume larger amounts of caffeine (Gurpegui et al., 2004). Since caffeine improves alertness and concentration (Rogers et al., 2005), it is possible that people affected by schizophrenia might consume larger quantities of caffeine to counteract the sedative effects of their medication, or to counteract negative symptoms (Yoshimura et al., 2008). Qualitative studies have shown that people with SMI tend to use caffeine as a boost or to break the routine, for social interaction opportunities, as well as to structure their day (Thompson, Pennay, Zimmermann, Cox & Lubman, 2014). Research on the influence caffeine has on people suffering from schizophrenia tends to find inconclusive results. Some researchers find that caffeine can worsen psychotic symptoms (Cerimele, Stern & Jutras-Asward, 2010; Lavan, Watt & Cowe, 2017), possibly because caffeine interacts with antipsychotics and reduces their effectiveness, so that some caffeine consumers require larger doses of medication (Hyde, 1990).

However, other research has found no link between caffeine and a worsening of symptoms in people with schizophrenia and psychosis. For example, Gurpegui et al. (2004) found that caffeine intake was not associated with worsening symptoms, nor need for a higher dosage of antipsychotic medication. Similarly, Koczapski, Paredes, Kogan, Ledwidge and Higenbottam (1989) found no effects on psychotic inpatients after switching the coffee to decaffeinated; however, the researchers concede that general psychotic symptoms in their participants may have improved over time. Therefore, no difference was found after the coffee was switched, as the participants had improved somewhat after having spent some time at the hospital. An explanation for this might be that there are two subgroups of schizophrenics: those hypersensitive to caffeine, that become agitated when they consume a larger amount of caffeine, and another subgroup that does not react to caffeine (Hyde, 1990).

2.2.4.2 Caffeine use and depression. Investigations into the effect caffeine has upon depression also tends to find inconclusive results. Simmons (1996) found that chronic caffeine

consumption could worsen depressive symptoms. Furthermore, caffeine also interacts with benzodiazepines and tricyclic antidepressants, and can decrease their effectiveness (Paton & Beer, 2001). However, more recent studies have shown that caffeine can reduce the risk of becoming depressed; for example, a prospective follow-up study (Ruusunen et al., 2010) of 2,232 men in Finland found that consuming coffee significantly reduced the risk of depression - even after controlling for socioeconomic status, alcohol consumption, smoking and BMI - while no such effect was found for tea or other sources of caffeine. However, Ruusunen et al. concede that even though they had a large sample, they had very few cases of depression, as only 49 men were diagnosed. Similar results were also found in a large prospective study of US women (N= 50,739) (Lucas et al., 2011) and a study with 3,223 unemployed people in the UK (Smith, 2009).

2.2.4.3 Caffeine use and anxiety disorders. An aversive effect has been shown between panic and anxiety disorders and caffeine; caffeine can worsen symptoms of anxiety in both disorders (Kruger, 1996; Simmons, 1996). Vilarim, Rocha Araujo and Nardi (2011) conducted a systematic review of panic disorders and caffeine, identifying eight randomised, double blind studies and discovering a positive correlation between caffeine and panic disorder symptoms. Thus, as caffeine consumption increased, so did the symptoms of panic disorder. Furthermore, the researchers point out that dropout rates were rather high, ranging from 14.3% to 73.1%. Masdrakis, Papakostas, Vaidakis, Papageorgiou and Pehlivanidis (2008) posit that similarly to people with schizophrenia, there might be two subgroups of people with panic disorders: those who have higher baseline symptoms of a panic disorder who panic after caffeine consumption, and those that have lower baseline symptoms who do not.

To summarise, the research conducted into the effects of caffeine and SMI has focused on psychosis, schizophrenia, anxiety and panic disorders, as well as depression. Findings are somewhat inconclusive, as some found a negative link between caffeine and these MIs, while others found no effect. There is evidence that caffeine consumption, particularly in the form of coffee, acts as a protective factor in relation to depression. The diversity found in the results can probably be attributed to differences in caffeine dosage and caffeine sources. Caffeine content in common products varies depending on the substance and preparation mode

(Simmons, 1996). Furthermore, the link between caffeine and SMI is likely to also be influenced by other psychosocial factors, such as personality.

2.3 Common Limitations of Research on Health Behaviours

Research on health behaviours identifies some common limitations that might explain the variability in the results reviewed. In general, since the observed populations tend to be specific, it is hard to generalise the findings. For instance, there are likely to be marked differences between stabilised (e.g., outpatient) and unstabilised (e.g., inpatient or newly admitted) participants (Tidey, Higgins, Bickel & Steingard, 1999). Furthermore, different studies tend to use varying measurements of different health behaviours. For instance, the amount of caffeine used varies greatly - between 200 and 1200mg in the studies reviewed for this thesis (Masdrakis et al., 2008; Koczapski et al., 1989). Similarly, physical activity is measured differently in different studies. Some studies did not measure intensity nor duration, some also counted daily movement at home as physical activity, while others only counted high intensity exercise as physical activity (Alverson & Kessler, 2012; Xu, Anderson & Courtney, 2010).

A further limitation is the difficulty met when trying to control for socioeconomic factors, since few people with SMI fall within higher socioeconomic categories (Osborn, Nazareth & King, 2007). Recruitment for the studies also commonly suffers from limitations. Johnson et al. (2010) notes that symptoms, such as paranoia, and the length of a questionnaire can impact upon one's willingness to participate in research. Furthermore, recruitment often relies on gateway people, such as nurses or doctors, who decide which participants are well enough or likely to take part in a study, rather than offer the opportunity to all service users. Finally, Thoma and Daum (2013) note that it is often difficult to gain consent to access medical records, making the diagnoses of participants often uncertain and inconsistent.

2.4 Other Factors that Influence Health Behaviours

The literature reviewed so far has seldom considered the other factors that are likely to influence the relationship between health behaviours and SMI, such as self-esteem, personality, motivation, self-efficacy and insight. Reviewing all of these factors in detail is, unfortunately, beyond the scope of this research project. Thus, a summary of how some of

these factors can affect the link between SMI and health behaviours shall be offered, but only insight will be discussed in some detail. Torres and Fernandez (1995) found that self-esteem is linked to health behaviours, such as not smoking, exercising, and healthy eating. Self-esteem most likely acts as a buffer for the negative effects of SMI, such as stigma, and higher self-esteem has also been linked to increased social support (Mann, Hosman, Schaalma & de Vries, 2004). Social support in itself has been linked to engaging in more health behaviours, through the effects of peer modelling and social norms (Cohen, Gottlieb & Underwood, 2000). Webb and Sheeran (2006) found that the social reactions to a behaviour can also influences behavioural changes. For example, the relationship between SMI and nutrition can be influenced by low self-esteem, socioeconomic status and social support (Gatineau & Dent, 2011). Similarly, physical activity may affect SMI through psychosocial effects, such as increased self-esteem due to the mastery of new skills, an increase in the opportunity for social interaction, a reduction in anxiety, or a distraction from worrying thoughts or stimuli (Craft, 2005; Daley, 2002; McArdle, McGale & Gaffney, 2012). Motivation and confidence can also impact upon health behaviours (Dixon, Robertson & Boyce, 2008), as a personal sense of control enables behavioural changes (Schwarzer & Fuchs, 1995). For example, perceived self-efficacy is a major force when commencing exercise and maintaining this change (McAuley, 1993). Thus, for changes to be made, a person must believe that they can make the change in the first place (Schwarzer & Fuchs, 1995).

Another important factor influencing the relationship between SMI and health behaviours is insight. Insight can be described as an awareness of one's SMI and need for treatment (Swartz et al., 1998); this concept has mostly been researched in relation to schizophrenia. Insight has been linked to better clinical outcomes, such as fewer symptoms, in Indian people with schizophrenia (Saravanan et al., 2010). Lysaker, Roe and Yanos (2007) studied the impact of insight and stigma on self-esteem and hopelessness in 75 people with schizophrenia and schizoaffective disorder. Insight was measured by one item of the Positive and Negative Symptom Scale (PANSS). Lysaker et al.'s findings revealed that people who have high insight and endorse stigmatising views of their SMI exhibited low self-esteem, less social support and more hopelessness. Conversely, those that had low insight and endorsed stigmatising views of their SMI had better self-esteem and more hope. Lysaker et al. (2007) explain that the first group likely came to realise that this diagnosis meant that they could

never achieve certain valued social roles and, thus, they internalised the stigma. Conversely, the second group with less insight did not internalise the stigma, as they were most likely to not accept the diagnosis to the same extent as the former. Furthermore, Lysaker and colleagues found that people with high insight and little stigma showed fewer symptoms, leaving them to believe that people with more symptoms may face more stigma and, therefore, have lower self-esteem. Alternatively, perceiving less stigma may lead to better symptom management. However, Lysaker et al. (2007) concede that their sample consisted of mostly males in their 40s and, thus, it is difficult to generalise from these findings. Mak and Wu (2006) found similar results, using 165 Chinese participants who were diagnosed with schizophrenia or other psychotic disorders. Mak et al. used the six-item Beck Cognitive Insight Scale. However, Mak and Wu's participants were also largely male (N=107) and they argue that further research is needed to examine how culture impacts these results.

2.5 Relevance to Counselling Psychology and Rationale for this Research Project

The British Psychology Society's (BPS) Division of Counselling Psychology practice guidelines (n.d.) outlines that counselling psychologists should be mindful of social injustice and work towards empowering clients and ending discrimination. The preceding literature review has shown that those who do not engage in certain health behaviours may suffer more, as they face double-stigma, decreased physical health, lower quality of life and a significantly reduced life span. Furthermore, the BPS indicate that counselling psychologists should aim to familiarise themselves with the diverse life experiences of the clients they work with (BPS, n.d). Thus, merely considering symptomology as a matter of therapeutic progress simplifies clients' experiences of their SMI. Counselling Psychologists should not just aim to reduce symptoms, but to increase overall well-being by providing people with tools they can use after their therapy concludes. Counselling psychology prioritises the subjective experience of clients and a more holistic way of viewing them (Cooper, 2009); however, it also combines the demand for rigorous empirical enquiry with issues at the heart of clients' subjective experience (BPS, n.d.). Physical health and overall well-being form part of the clients' subjective experience of SMI. Therefore, one aim of this research project is to inform counselling psychology practice by encouraging clinicians to consider the physical health of their clients, thereby helping to reduce social injustice. Furthermore, the National Health Service (NHS) and the National Institute for Health and Care Excellence (NICE) both

advocate physical health interventions for certain clients, such as clients with psychosis (NICE, 2014). It is important for clinicians to examine the effectiveness of such recommended interventions to ensure that clients get the best care and that service resources are used efficiently.

This research project also seeks to develop the theoretical understanding of the topic of health behaviours from a counselling psychology perspective. As the critical literature review has illustrated, much research on health behaviours is rooted within a positivist framework and the medical model. Thus, many previous studies have not accounted for the influence of other psychological factors on the relationship between SMI and health behaviours. This research project shall adopt an hourglass approach, since the critical literature review has shown that previous research on the topic is complex, fragmented and inconclusive. In order to clarify the link between health behaviours and SMI, this research project has adopted a simplified approach of measuring the most commonly recommended health behaviours and SMI symptoms in one specific population under specific conditions. No potential confounding variables were considered. It was hoped that narrowing the focus and simplifying the issue would achieve some clearer results. Following a discussion of the achieved results, however, this research report will widen the focus and discuss possible psychological factors that could underlie the findings; this will add new knowledge to the existing literature of health behaviours research.

Thus far, no existing study has looked at health behaviours and their impact on self-reported symptoms with participants having different diagnoses and considering different nationalities. The setup of this research allows the topic to be investigated within an institution that provides free healthy food options to people with SMI, therefore minimising the effect of socioeconomic status on nutritional choices. Similarly, some of the participants will be doing physically demanding work, which also minimises the effect of lack of opportunity for physical activity. While participants will present with a wide variety of diagnoses, all can be assumed to be relatively stable considering that they are currently in sheltered employment. The sheltered work environment regularly accesses their employees' quality of life and work, so all employees are familiar with completing questionnaires. Thus, this research project seeks to circumvent some of the common limitations that previous research has identified. This

project will provide information on how different health behaviours impact SMI symptoms in people with different diagnoses. Therefore, this thesis seeks to investigate the following research questions:

a) Are health behaviours associated with less SMI symptoms?
b) Are health behaviours associated with less SMI symptoms across diagnoses?
c) Is the relationship between health behaviours and SMI symptoms moderated by being aware of one's symptoms?

3 Methodology

3.1 Introduction

This chapter will explain the methodology used during this research project. First, the epistemological position shall be outlined and then the institution that the sample is drawn from will be presented. The rest of this chapter goes on to detail the research design, the participants, the materials and the procedure of data collection and analysis.

3.2 Epistemological Position

It is important to choose a methodology that is in line with the research questions to ensure that research is appropriate and ethical (Cooper & McLeod, 2011). Different methodologies were reviewed for this research project, yet were found to be unsuitable to investigate the relationship between health behaviours and mental health disorder symptoms. Qualitative methods were also considered, yet these would have not been able to provide the required information. Interpretative phenomenological analysis (IPA), for example, would have given an insight into individual experiences of the potential effects of health behaviours upon mental health (Willig, 2008). Similarly, grounded theory would have provided an inductive model of how health behaviours and mental health disorder symptoms fit together based on the data (Willig, 2008). Thus, a qualitative project would constitute an interesting follow-up to the present one, allowing for an in-depth exploration of how people make sense of health behaviour effects on their mental health, or why some people engage in health behaviours or not. However, given that this research project tries to close the gap identified in the previous literature of fragmented studies by focusing only on one health behaviour and a mental health difficulty, a quantitative design was deemed more appropriate. Thus, the research questions of this project call for a positivist and, therefore, quantitative approach, since the research questions aim to investigate a potential link between health behaviours and mental health disorder symptoms. A quantitative approach allows for an exploration of this link via correlations, which will demonstrate how variables relate to one another, as well as regression, which will show whether some variables predict others, and moderation analysis, which will indicate whether some variables moderate the relationship between others (Field, 2012). Therefore, the epistemological stance of this research project is naïve realism, which advocates that an objective reality exists that can be directly accessed by people (Ross & Ward, 1996). The BPS practice guidelines for counselling psychology (n.d.) posit that

counselling psychology combines the demand for rigorous empirical enquiry with issues at the heart of clients' subjective experience. Thus, a quantitative methodology is deemed appropriate for this research project.

3.2.1 **Methodological reflexivity.** Naïve realism posits itself within a positivist ontology. Positivist research seeks to make generalisations, based on the fact that human behaviour can be explained by the impulses that precede it (Hudson & Ozanne, 1988). This implies that there is one objective reality and that different people would assess this reality the same way, regardless of their idiosyncratic perspectives. This view also underlies the medical model and the concept of diagnosis. Within the medical model, a naïve realist approach assumes that an individual's symptom reports are a true representation of their experiences and can, therefore, be assessed and diagnosed using relevant measures (Costa & McCrae, 1985). The medical model is still the dominant approach within the mental health domain. A sign of this is the worldwide use of diagnostic manuals, such as the Diagnostic and Statistical Manual of Mental Disorders (DSM; APA, 2013) and the International Statistical Classification of Diseases and Related Health Problems (ICD; WHO, 1992); these form part of the dominant narrative used to make sense of psychiatric and psychological symptoms (Duffy, Gillig, Tureen & Ybarra, 2002). The manuals also form the basis of the NICE guidelines, which informs of the best practice guidelines in the National Health Service (NHS) and guide clinicians' treatment plans (NICE, 2016a, 2016b). Services often use diagnoses as an inclusion/exclusion criterion and to determine treatment options (Larsson et al., 2012).

Counselling psychology is critical of dominant positivist models and notes the importance of subjectivity (Orlans & Van Scoyoc, 2009). Counselling psychology is, therefore, also critical of diagnoses as it values people's subjective experiences and posits that these cannot be represented by a 'one-fits-all' label (Lane & Corrie, 2006). Both the DSM and the ICD have been criticised for creating artificial categories that do not have much in common with a client's actual presentations (Rutter & Uher, 2012). The DSM-5 has been criticised for its inclusion of subthreshold categories. These new categories, such as disruptive mood dysregulation disorder and mild neurocognitive disorder, run the risk of pathologising normal human experiences, such as normal mental decline in old age (Francis, 2013). Furthermore, there are marked differences between the DSM and the ICD. Andrews, Slade

and Peters (1999) found that while some diagnoses are similar in both (such as anxiety disorders), the criteria for others (notably posttraumatic stress and substance abuse disorders) are so different that concordance rates for clients diagnosed with both are only around 35%. It is difficult to maintain that there is just one objective reality of mental health, when a person could be diagnosed with one disorder in one country, but not in another. However, counselling psychology views all approaches as equally valid and considers each to have its own merited use in specific contexts (Cooper & McLeod, 2011). Thus, a diagnosis can also be helpful for clients and clinicians, as it can guide the treatment plan, for instance (McWilliams, 2011).

Positioning this project within naïve realism and within the medical model has substantial implications for the findings that this project can produce. As this project seeks to investigate a link between health behaviours and mental health disorder symptoms, it thereby opines that engaging in health behaviours impacts upon a participant's symptoms. Thus, there is an assumption concerning the results to start with and participants will probably pick up on this. An early question about their diagnosis will also most likely encourage participants to think of themselves as 'I am X with a depression diagnosis'; thus inevitably impacting upon how they answer questions. Locating the project within the medical model may also lead to an imbalance of power between the subject of this paradigm (the participants) and the paradigm itself (Duffy et al., 2002). Thus, the participants may feel that their experiences are pathologised, as their alleged unhelpful lifestyles are presumed to cause them more difficulties (Mizock, 2012).

3.2.2 **Personal reflexivity.** While the epistemological stance of naïve realism is adopted in this project, it is not my default subscription. I am also not a blind subscriber to the medical model or the concept of diagnosis; I am aware of the limitations a diagnosis can have, as mentioned previously. However, I do believe that they can also be useful. For example, a diagnosis can provide people with access to services and benefits, as well as be an important part of the meaning-making process for people with difficulties (Huibers & Wessely, 2006). McWilliams (2011) notes that diagnostic categories give clinicians and clients a language to mentalise and discuss their difficulties, thus helping with treatment planning and prognosis. In my own clinical work, I have seen both: clients that felt stigmatised by a diagnosis and clients that reported that it gave them hope and that it was soothing to hear that there are others like

them out there. Given that the NHS is an important source of employment for counselling psychologists, it is important to be able to work within the medical model while at the same time being mindful of its limitations (Larsson et al., 2012).

In terms of epistemology, I would self-identify as a social constructionist. Social constructionism posits that any given reality is created between people and is, therefore, time- and culture-specific (Burr, 1995). From a social constructionist view, the medical model and the diagnostic manuals are not representing an objective reality; instead, they represent the view of the majority (Duffy et al., 2002). The fact that the medical model is such an integral part of mental health (it features in clinicians' training, often determines the hierarchy in multi-disciplinary work and insurance companies use it to decide what kinds of treatment they cover) makes it seem like it is the most dominant and accepted paradigm (Duffy et al., 2002; Larsson et al., 2012). Within this context, social constructionism provides a useful starting point to critically evaluate the medical model and be mindful of its limitations (Harper, 1999, cited in Larsson et al., 2012).

As a reflective counselling psychologist, it is imperative to be able to hold different epistemological positions and use the one that is most appropriate for the task at hand (Larsson et al., 2012). Doing this naïve realist project as a social constructionist, made me aware of certain things. One was the power dynamics that come with aligning oneself within the medical model. Some participants seemed anxious to give the right answers and to assure me that they were eating healthily and not consuming any alcohol. It also soon became clear that physical health and their lifestyle, in general, was not something that many potential participants wanted to engage with. People that declined participation usually did so, saying that they had enough issues with their psychological health and were not interested in exploring their lifestyles in relation to these. The general feeling amongst those that did not participate was that there was nothing they could do to change, since their medication caused them to gain weight and feel lethargic. Personally, it seemed that people felt somewhat powerless in relation to the mainstream medical treatment. Very few potential participants felt that there was anything they could do themselves to help them feel better. Given the positivist nature of the study, these individuals and their experiences are not featured in the results. Another notable aspect was how difficult it was to assess people's symptoms - even with well-

established measures. Several participants noted that the questionnaires asking about their symptoms did not adequately reflect their experiences. As previously discussed, there are definitely benefits to providing a coherent language to discuss symptoms or any experience of difficulties (McWilliams, 2011). However, a diagnostic questionnaire provides merely an outline of common occurrences in people affected by mental health disorders (Hudson & Ozanne, 1988).

The institution from which this sample was drawn uses the ICD-10, rather than the DSM-5; as discussed previously, there are marked differences between both. Rutter and Uher (2012) note that both have different underlying philosophies. Thus, the DSM only has one classification, which combines research and clinical needs, while the ICD's main classification is for clinical purposes. The use of the diagnostic categories was further complicated by the fact that Luxembourg is a very multicultural country. Therefore, some participants had been seen by psychiatrists hailing from francophone countries, while others from psychiatrist coming from germanophone countries. The difference in terminologies between the different nationalities was substantial and, without the actual classification code, it would have been near impossible to match them up. This is an important limitation, given that diagnostic classifications are meant to provide clinicians and clients with a common language to discuss difficulties and given that the ICD is aimed at international use (Rutter & Uher, 2012; McWilliams, 2011).

The following research aimed to investigate a potential link between health behaviours and mental health disorder symptoms. Thus, the research project assumes that human behaviour can be explained by the impulses that precede it (Hudson & Ozanne, 1988). The reaction of people that declined to participate indicates that this is a simplification of the issue. People are likely to engage in health behaviours for a variety of reasons, such as family customs, a given culture's beauty standards, their previous histories and personality - to name a few. Furthermore, as has been discussed previously, mental health disorders can be exacerbated by several factors other than a person's lifestyle, such as stigma for instance (Lysaker et al., 2007). However, a project needs to start somewhere and I do believe that this was a worthwhile and useful starting point. I have learned that people affected by mental health disorders seem to feel little agency regarding the management of their symptoms and

appear to mostly rely on the medical treatment of their difficulties; this also shows the hierarchical position the medical model still holds in Luxembourg. Psychiatric monitoring is certainly advisable for people affected by severe mental health disorders and is also recommended by the NICE guidelines for psychosis and schizophrenia, for instance (NICE, 2016b). However, I believe that it is important to consider clients in a holistic way. This includes an awareness of how physical health can affect them and exacerbate their situation. For example, previous research has found that people who have a mental health disorder and who are obese or substance abusing, suffer from a double stigma and often report low self-esteem (Mizock, 2012; Radke et al., 2010). Therefore, it is a shame that this research project indicates that people do not see their physical well-being as a priority.

3.3 The Sheltered Work Environment in Luxembourg

Participants for this research project were recruited from the "association d'aide par le travail thérapeutique pour personnes psychotiques" (ATP). The ATP provides sheltered work environments for people affected by long-term mental health disorders. To be eligible to work in one of their sheltered work environments, the individual must: a) be over 18 years old, but still within the legal working age; b) be self-referred; c) be motivated to work, and; d) have a mental health disorder (A. Jodocy, personal communication, 16 March, 2016). The ATP uses the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10; WHO, 1992). Diagnoses to be considered eligible for work within the sheltered work environment are: a) mental and behavioural disorders due to psychoactive substance use (F10-F19); b) schizophrenia, schizotypal and delusional disorders (F20-F29), and; c) mood (affective) disorders (F30-F39) (WHO, 1992; A. Jodocy, personal communication, 16 March, 2016). The procedure for people wishing to work in a sheltered environment is to write a cover letter, visit the site and to have an informal interview with a person within the psychosocial team. Their candidature will then be reviewed by a committee consistent of members of the psychosocial team from all sites, who will decide whether this person is suitable or not (A. Jodocy, personal communication, 16 March, 2016).

The ATP has four sites across Luxembourg, each with between 40 and 60 sheltered employees and multidisciplinary staff, including social workers, psychologists and educators (ATP, 2014). The four sites provide different workshops for employees to work in (see Fig. 1);

however, all sites provide a free main meal and free fresh fruit for their employees. The ATP aims to provide their sheltered employees with a meaningful work experience and to increase their well-being by facilitating feelings of belonging and of being a useful member of society (ATP, no date). A further aim is the reintegration of people into work after long periods of sickness and, thereby, reducing the socioeconomic unfairness to people affected by poor mental health (ATP, no date).

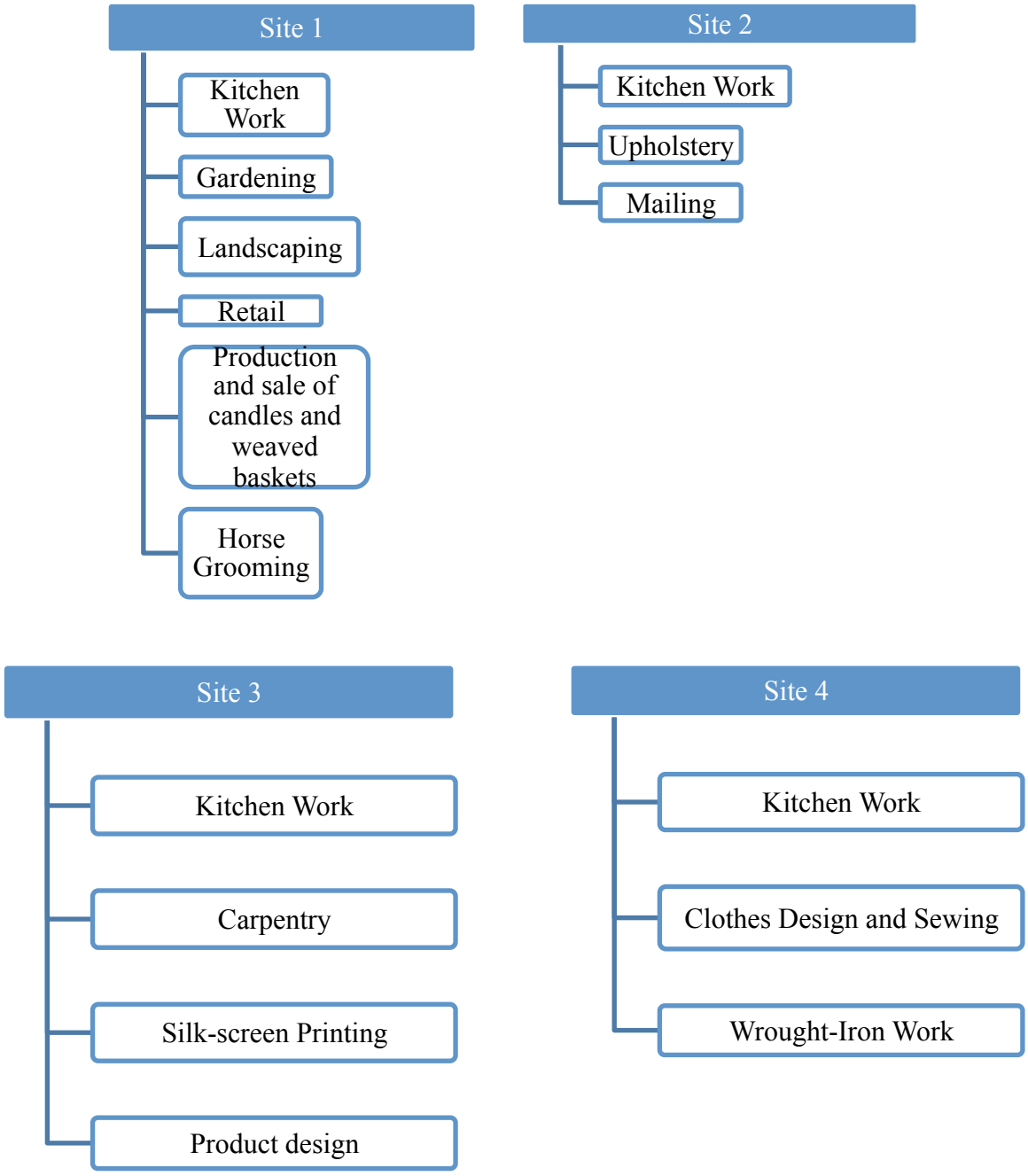

Figure 1. Sheltered workshops offered across the four ATP sites.

3.4 Study Design and Sample Size

This research project is an observational study, since no variable was manipulated (Pallant, 2013). It is a cross-sectional design, as it investigates individual level variables at a specific point in time (Field, 2012). A maximal sample of about 190 participants was possible, given sheltered employee numbers across the different sites. A total sample size of N=84 was achieved during data collection. G*Power 3 calculations indicate a sample size of 70 to detect a medium effect size for t tests, a sample size of 80 to detect a large effect size for ANOVAS and a sample of 70 to detect a large effect size for a multiple linear regression with 7 predictors (Faul, Erdfelder, Lang & Buchner, 2007). Due to the nature of the data, bootstrapping was used. Chernick (2007) notes that bootstrapping can be used with smaller samples (N=20), while Hall (1992) reports that bootstrapping can be used with samples as small as 8; thus, the sample size can be assumed to be satisfactory. There was no further recruitment, as this would have been contrary to the rationale of the research project. Participants were recruited from the ATP as they were in receipt of a free main meal and are familiar with participating in research. Furthermore, there was the possibility to triangulate a variable of symptom awareness by having a third party who knows the participants well assess their symptoms; this would not have been possible anywhere else. Therefore, further recruitment would have led to substantial missing variables. The questionnaire was administered in three different languages - Luxembourgish, German and French: 35.7 % (N=30) participants answered the Luxembourgish version, 28.6 % (N=24) the French version and 35.7% (N=30) the German one.

3.5 Participants

Overall, 84 people participated in this research project. The exclusion criteria included individuals that I had previously worked with during my time as an Assistant Psychologist at one of the ATP sites. Of those people that still worked in the facility, none chose to participate in the study. Thus, no people were excluded from the sample. Table 1 shows participant characteristics: 66.7 % (N=56) of participants were men and 33.3 % (N=28) women; 74.4 % (N=61) participants reported being of Luxembourg nationality, while 1.2 % (N=1) were Belgian; 2.4 % (N=2) were German, and; 2.4% (N=2) were French. Overall, the sample included eight nationalities. The participants' ages ranged from 21 to 62 years (M=40.5 years,

SD=9.8 years) and 31 % (N=26) of participants lived alone. The majority of participants reported multiple diagnoses (38.2 %, N=29).

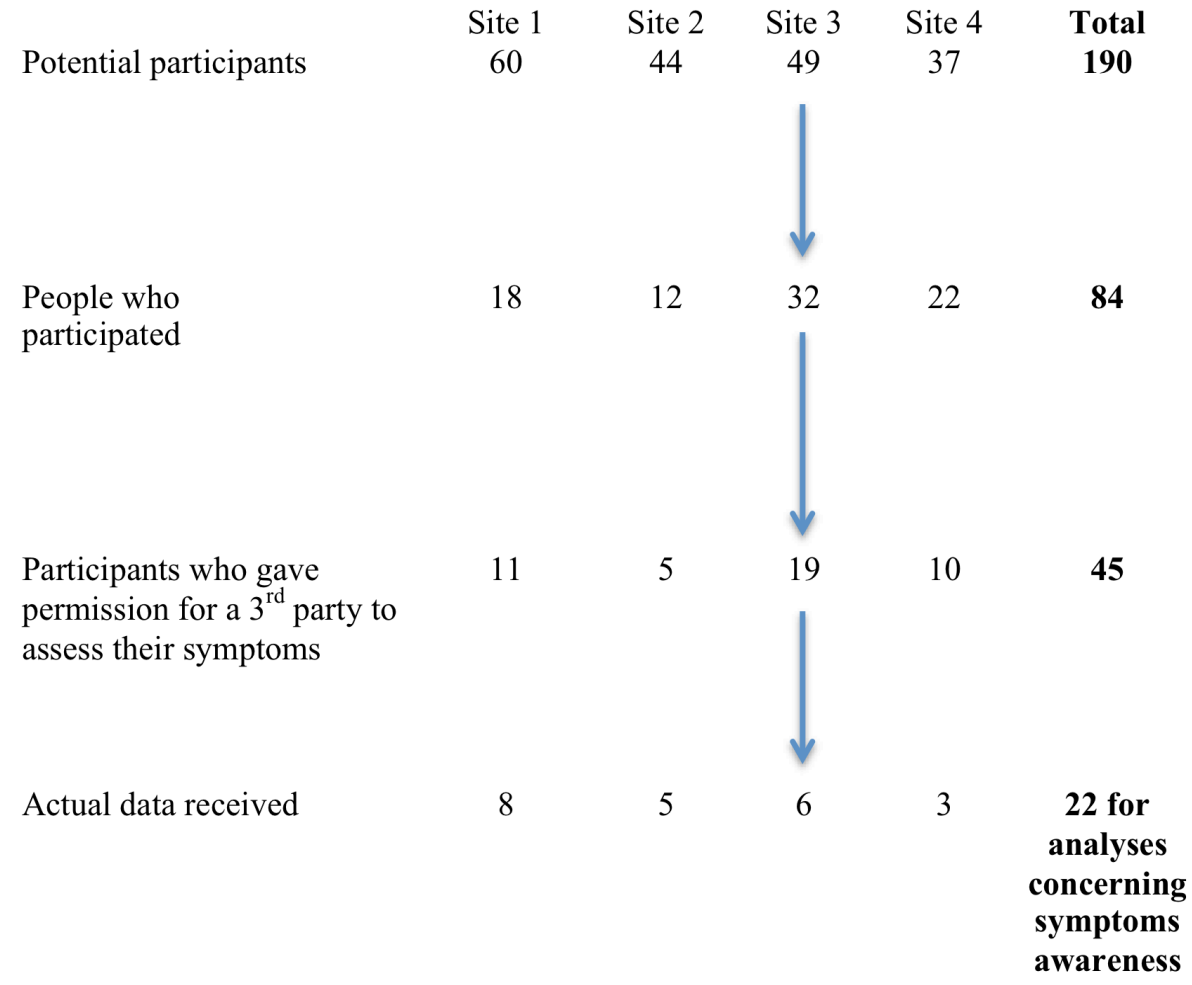

Figure 2. Sample attrition for the research project

3.6 Ethical Considerations

Potential sources of risk to the participants of this study came from the fact that the questionnaire contained questions on some sensitive topics (mental health disorder symptoms, as well as alcohol, food and cigarette consumption), required access to confidential information (participants' diagnosis) and access to sensitive information from a third party (a third-party rating participants' symptoms) (BPS, 2014). To manage this risk, a detailed participant information sheet explaining why these topics were covered was produced, so that participants could make an informed decision (see Appendix A for the information sheet). Furthermore, to protect participants, they had to give separate consent to participate in the

study, to allow access to their diagnosis and to have a third-party rate their symptoms. This provided participants with granular control over what information they were willing to share. The information sheet, furthermore, explained that participation was voluntary, anonymous and that consent could be withdrawn at any point up to the start of data analysis (six weeks after data collection) (BPS, 2014).

Since it was difficult to predict in how far questions relating to participants' mental health disorder symptoms and their food/alcohol/cigarette consumption would cause certain participants distress, the resident psychologist on each site was present during data collection to discuss any potential issues that may be raised by participants. These psychologists would also be able to signpost participants to other agencies that could support them should they decide that they wanted to reduce their alcohol or cigarette consumption. However, none of the participants wanted to be sign posted to get support. The psychologists would also able to liaise with the participants' general practitioner or psychiatrist, should participants wish to discuss any issues surrounding their symptoms or general health. However, none of the participants raised any concerns after participating in this project. Therefore, any potential distress caused by the research project was minimised. At the time, I also had four years' worth of clinical experience and was, therefore, confident that I could recognise distress in any of the participants and alert the resident psychologist to this.

Since I had previously worked as an Assistant Psychologist with the ATP three years ago, there was also a potential issue concerning a conflict of interest. After discussing this issue in supervision, it was decided to exclude any sheltered employees that I had previously worked with. Furthermore, I trained the members of staff present during data collection, so they could answer any questions and I was further removed from data collection. To ensure that participants understood I was no longer affiliated with the ATP, only the London Metropolitan University logo was displayed on the participant information sheet.

Another possible issue with this research project was the potential involvement of the ATP during data analysis. The ATP is supported by government grants and findings suggesting that their services could possibly help encourage sheltered employees to engage in more health behaviours may increase that funding. However, the ATP's involvement in the

study - apart from during data collection - was minimal in that no input on measures or research questions were given. Furthermore, it was agreed from the onset that findings would only be shared once the data had been processed, to ensure that anonymity and confidentially was maintained.

Finally, a specific issue of this study was that data collection and data processing took place in two different countries; this raised issues on the safe transport of data and under which legal systems the data would be considered. Data was processed in line with the Data Protection Act of 1998. The participant information sheet was detachable from the questionnaire; however, both were linked by a common code. That way, I could identify which code belonged to which participant. The detached participant information sheet and the questionnaires were transported separately in sealed envelopes. Furthermore, all data were transported in my hand luggage to ensure my constant supervision. This research project was approved by the London Metropolitan University Psychology Department Research Ethics Committee (see Appendix C).

Table 1
Participant characteristics

Education level (%/N)	Postgraduate 3.8/ 3	Undergraduate 5/ 4	Secondary School 27.5/ 22	CATP 28.7/ 23	No degree 22.5/ 18	Other 12.5/ 10		
Source of income (%/N)	Contract 42/ 34	ATI 16/ 13	RPGH-RTH 9.9/ 8	RMG 6.2/ 5	RPGH-RTH & RMG 4.9/ 4	Unemployment benefits 1.2/ 1	None 2.5/ 2	Other 17.3/ 14
Living situation (%/N)	Alone 31/ 26	Family 31/ 26	Partner 16.7/ 14	Child(ren) 3.6/ 3	Assisted Living 15.5/ 13	Other 2.4/ 2		
Permission to access diagnosis? (%/N)	Yes 53.6/ 45	No 46.4/ 39						
Participant self-diagnosis (%/N)	Depression 13.2/ 10	Anxiety/ Panic Disorder 6.6/ 5	Schizophrenia/ Psychosis 30.3/ 23	Other 11.8/ 9	Multiple Diagnoses 38.2/ 29			
Undergoing therapy? (%/N)	Yes 60.7/ 51	No 36.9/ 31						
Currently on medication? (%/N)	Yes 83.3/ 70	No 15.5/ 13						
Do you smoke? (%/N)	Yes 56.6/ 47	Not anymore 12/ 10	Never 31.3/ 26					
Number of cigarettes (%/N)	< 1/day 10.4/ 5	1-10/day 20.8/ 10	10-20/day 31.3/ 14	20+/day 35.4/ 17				
Did you drink alcohol? (%/N)	Everyday 4.8/ 4	Very Often 4.8/ 4	Often 3.6/ 3	Sometimes 21.4/ 18	Somewhat rarely 2.4/ 2	Rarely 13.1/ 11	Very rarely 48.8/ 41	
Did you drink more than 2 cups of coffee? (%/N)	Everyday 27.7/ 23	Very Often 1.2/ 1	Often 14.5/ 12	Sometimes 9.6/ 8	Somewhat rarely 16.9/ 14	Rarely 7.2/ 6	Very rarely 22.9/ 19	
Did you exercise at least 30 min per day? (%/N)	Yes 30.9/ 25	No 69.1/ 56						
Did you exercise at all? (%/N)	Yes 31/ 26	No 67.9/ 57						
Permission third party symptom evaluation (%/N)	Yes 53.6/ 45	No 46.4/ 39						

3.7 Study Materials

Standardised measures were considered for this research project, but no single complete measure was established to be suitable for this project. As the length of the questionnaire had been identified as a limitation in previous research (Johnson et al., 2010), the main consideration when devising the measures was to keep the questionnaire as brief as possible. Thus, sociodemographic questions were developed, with a focus on only those factors that have been identified as important in previous research. For instance, the item on income was replaced by the type of contract the participant has within the sheltered work environment; this information provided a measure of the average income this person has, as well as the security and stability of this income, as different types of contracts can be terminated easily (Kohl, 2015). Different measures were used to compose the final questionnaire used in this research project: a) the Eating Habits Measure; b) the Health Behaviours Measure; c) the Eppendorf Schizophrenia Inventory (ESI); d) the Psychological Symptoms Index, and; e) the Mental Health Inventory. The complete versions of the ESI and the Psychological Symptoms Index were used. To keep the final questionnaire as short as possible, some items were dropped from the other measures. Finally, questions to investigate smoking behaviours, alcohol and caffeine use were developed (see Appendix B for the complete questionnaire). All measures were standardised to query about the last seven days, apart from the ESI which asked about the last month. The questionnaire was translated into Luxembourgish, German and French by native speakers not affiliated with the study (Kohl, 2015).

The *Eating Habits Measure* (Dailey, Richards & Romo, 2010) has 14 items in its original form. To ensure the questionnaire's conciseness, only the nine most pertinent items to this project were used. Items are answered on a 7-point Likert scale, from 'very rarely' to 'every day', with higher scores indicating healthier eating habits. Thus, the maximum possible score was 63. Dailey et al. (2010) report good internal consistency reliability for this measure ($\alpha = .82$). Sample items are 'I ate a variety of fruits' and 'I ate foods high in sugar'. The Eating Habits Measure had acceptable reliability in this research project ($\alpha = .52$). Tavakol and Dennick (2011) point out that scales with few items can have lower Cronbach's alpha values.

The *Health Behaviours Measure* (Robb, Campbell, Evans, Miles & Wardle, 2008) enquires about smoking status, fruit and vegetable intake, as well as physical activity, which is defined as being active daily. Due to the idiosyncratic nature of the answers to these questions, psychometric features for this measure are not available (Kohl, 2015). Sample items are 'During the past seven days, on how many days did you engage in vigorous activity that caused you to breathe much harder than normal and sweat (e.g., jogging, football, aerobic)?' and 'On average how many minutes did those activities last?'

The *ESI* (Mass, 2000) is a 40-item measure that allows individuals to self-assess their schizophrenia-related symptoms; the assessment is based on the last four weeks. Answers are given on a 4-point Likert scale, ranging from 'absolutely true' to 'not true at all'. The ESI consists of four subscales: a) 'Attention and Speech Impairment' (AS, 10 items, $\alpha = .87$) enquires about impairments relating to adequate reception and interpretation of stimuli; b) 'Auditory Uncertainty' (AU, 8 items, $\alpha = .78$) enquires about insecurities around discriminating between thoughts and words; c) 'Ideas of Reference' (IR, 7 items, $\alpha = .77$) enquires about the tendency to interpret ubiquitous events in a meaningful way and a delusional mood, and; d) 'Deviant Perception' (DP, 9 items, $\alpha = .83$) enquires about aberrations of perceptual processes. To gain the scores of each scale, the item answers are summed; higher scores indicate worse symptoms (Kohl, 2015), with the highest possible score being 160. Sample items are 'I have already felt being at the threshold of a significant revelation' and 'Sometimes common, well-known noises sound to me changed in a curious way'. Overall, the ESI had good reliability in this research project ($\alpha = .98$).

The *Psychological Symptoms Index* (Schafer & Ferraro, 2013) is a 6-item measure ($\alpha = .90$) that assesses symptoms such as hopelessness. Items are answered on a 5-point Likert scale, ranging from 'none of the time' to 'all of the time'. Higher scores indicate worse symptoms and the maximum score is 30. Sample items are 'In the last seven days how often have you experienced the following symptoms: being nervous' and 'feeling that everything is an effort'.

The *Mental Health Inventory* (Veit & Ware, 1983) has 40-items in its original form ($\alpha = .93$) and assesses the affective disorder-related symptoms. Only the 'anxiety' subscale is

used in this research project. This leaves 10 items (α = .90), all positively scored, where a higher score identifies less severe symptoms. The maximum score is 50. Items are answered on a 5-point Likert scale, ranging from 'none of the time' to 'all of the time'. Sample items are 'In the last seven days how often have you experiences the following symptoms: difficulty trying to calm down' and 'being a very nervous person'. The Mental Health Inventory was reverse coded during data analysis and its score added to the ESI score and the Psychological Symptoms Index score to compute an overall symptoms score, where higher scores reflect worse symptoms. The Mental Health Inventory and the Psychological Symptoms Index were one scale in this research project and had good reliability (α = .74).

The author of the ESI had been contacted and had given his permission for this measure to be used in this research project. All other measures were available on PsycTest and could be used without the need for permission. The ESI, the Mental Health Inventory and the Psychological Symptoms Measure were also given to a third party (the psychologist on site, if the participant gave his/her consent) for them to assess the participants' symptoms. To my knowledge, this is the first project to triangulate participants' awareness of their own symptoms in this way. While insight is a multidimensional concept, it has also been linked to increased awareness of one's symptoms of mental health (Mak & Wu, 2006). Thus, a variable called 'symptom awareness' was created by calculating the difference between participants' self-assessed scores and the scores from the psychologist assessment of their symptoms. While this may represent a restricted definition of insight, as it only focuses on one aspect of it, it adds to the previous literature on insight and mental health. A lack of insight is a common feature of psychosis and, therefore, may make self-assessment unreliable (Saravanan et al., 2010). Furthermore, given the links between insight and improved mental health, as well as insight and self-stigmatisation proposed in previous literature, an investigation of how insight influences the relationship between health behaviours and mental health disorders seemed necessary (Mak & Wu, 2006).

Table 2

Main study variable characteristics

Healthy eating	A continuous variable measuring participants' eating habits over the last 7 days. A higher score signifies healthier eating habits.
Participant BMI	A continuous variable calculated by divided a participant's weight in kg, by their height in meters squared (kg/m^2).
Age	A continuous variable of participants' age in years
Gender	A categorical variable made up of 3 categories (female, male and transsexual). However, none of the participants in this sample self-identified as transsexual and so the variable becomes dichotomous (female and male).
Exercise 30 minutes per day	A dichotomous variable measuring whether participants that indicated that they exercised over the last 7 days, did so for 30 minutes per day.
Alcohol consumption	A dichotomous variable measuring whether participants consumed alcohol over the last 7 days.
Coffee consumptions	A dichotomous variable measuring whether participants consumed coffee over the last 7 days.
Smoking	A dichotomous variable measuring whether participants smoked cigarettes over the last 7 days.
Overall symptoms	A continuous variable computed by adding the scores of the ESI, the psychological symptoms index and the mental health inventory. A higher score signified worse symptoms.
Symptom awareness	A continuous variable computed by subtracting the overall symptoms score from the overall symptoms score computed for the 3rd party evaluations of symptoms. For ease of interpretation a negative sign was discounted.
Participant self-diagnosis	A categorical variable of participants' diagnosis provided by themselves. This variable has 5 categories (depression, schizophrenia/psychosis, anxiety/panic, other and multiple diagnoses).

3.8 Procedures

There were two data collection points each day - one in the morning and one in the afternoon - to ensure that disruptions to the participants' workday were kept to a minimum. Thus, some participants participated either before their coffee break or after, depending on what was most convenient for them. Participants were invited into the dining room to hear a short presentation about the research project and its purpose. Following this, those that wanted to participate remained, while those that did not were free to continue with their work. Participants were then given the information sheet and the questionnaire in the language of their choice (French, German or Luxembourgish). Explanations about confidentiality, anonymity and the participation being voluntary were given. Following this, participants were talked through the information sheet and invited to ask questions. Once all questions were answered, participants were invited to start the questionnaire and to address any questions or concerns to a member of staff present during the data collection. The questionnaire took approximately 30 minutes to complete.

Once participants completed the questionnaire, I checked which ones had consented to their diagnosis being accessed and/or their symptoms being rated by a third person; this resulted in two lists of names. For those that had consented to me accessing their diagnosis, the psychologist on site provided their diagnosis, as shown on the document certifying their diagnosis; I noted this down on the person's questionnaire. For those that had consented to a third person rating their symptoms, I sat down with the psychologist on site who rated their symptoms, unless the psychologist had not met them before or had not seen them recently; this was the case when participants were new at the sheltered work environment, or for those that had a long leave of absence. Due to time constraints, the psychologists would only use the questionnaire most salient to the participants' diagnosis (i.e., the ESI for those with a psychosis or schizophrenia diagnosis, the scale made up by the Mental Health Inventory and the Psychological Symptoms Index for the others). This was the ATP's preferred method, as having the sheltered employees' supervisor rate their symptoms would have caused too much disruption to people's workdays; it also saved the psychologists time. After this process, all consent forms and questionnaires were sealed in separate envelopes. Once collection was

completed and the data had been returned to the UK, the data was entered into SPSS before the questionnaires and consent forms were shredded.

3.9 Analysis

All analyses were conducted using the software IBM SPSS versions 23.0 and 24.0 (IBM Corp, 2015; 2016). Preliminary data screening showed no entry errors. Missing values were, perhaps unsurprisingly, more common for sensitive questions, such as diagnosis, weight and alcohol consumption. However, there were few missing values overall. During analysis, cases with missing values were excluded pairwise, to not unnecessarily restrict sample size (Pallant, 2013). Following this, the assumptions for multivariate analysis were examined using a multiple linear regression (Pallant, 2013). Case-wise diagnostics showed no outliers outside three standard deviations. Cook's distances were also all well below 1 and, therefore, also revealed no significant influence of any one case on the model (Field, 2012). The independence of errors was assessed using the Durbin-Watson test. A value close to 2 would indicate that this assumption had been sufficiently met (Field, 2012). In this sample, its value was 1.94. Collinearity diagnostics indicated that tolerance was above .10 and VIF was below 10; thus, this assumption was not violated (Field, 2012). A normal P-P plot showed that the assumption of linearity was sufficiently met, while a scatterplot showed that the assumptions of homoscedasticity were also sufficiently met. However, the Kolmogorov-Smirnov and Shapiro-Wilk tests of normality were significant for most variables, confirming that the data were not normally distributed (Field, 2012). Since the assumption of normality was violated, a robust approach using bootstrapping was implemented for the rest of the analyses (Field, 2012). Bootstrap confidence intervals and significant values do not rely on the assumptions of normality and homoscedasticity (Field, 2012; Fox, 2002). Bootstrapping is a technique in which different samples are pulled from the study sample (Bollen & Stine, 1990; Fox, 2002); it considers the study sample to be the population (Lockwood & MacKinnon, 1998). Thus, bootstrapping 1,000 samples, for instance, will produce 1,000 parameter estimates from the original sample (Field, 2012). Bias-corrected and accelerated confidence intervals were also chosen to account for the skew in the data (Fritz & MacKinnon, 2007).

4 Results

4.1 The Relationships Between Different Variables

Table 3 shows the means, standard deviation, Pearson's and point-biserial correlations for the research project variables. The mean age of participants was 40.5 years of age. The mean BMI was 28.1, which is within the overweight range (WHO, 2017). The mean healthy eating score is rather high - at 40.2 - given a possible maximum score of 63 (Dailey et al., 2010), indicating that participants had eaten healthy in the last seven days. The mean overall symptoms score was 106.19, which given a possible maximum score of 240, is not very high and might indicate good symptom management in this population. Participants' age was positively correlated to the healthy eating score, r = .30, BCa CI [.09, .50], p = .01. Thus, an increase is age is associated with an increase in the healthy eating score and, thus, healthier eating. Participants' BMI was positively correlated with alcohol consumption, r_{pb} = .25, BCa CI [.03, .43], p = .03 and the healthy eating score was positively correlated with exercising 30 minutes per day (referred to simply as exercising from here on), r_{pb} = .31, BCa CI [.06, .51], p = .01. Overall symptoms were also significantly positively correlated with exercising, r_{pb} = .30, BCa CI [.07, .50], p = .01. Thus, alcohol consumption is associated with an increase in BMI, while exercising is associated with an increase or worsening of symptoms, but also healthier eating. No other correlations were significant.

To investigate participants' awareness of their symptoms, a separate Pearson's correlation was conducted to investigate whether the self-assessed symptoms scores were correlated to the staff-evaluated scores. The analysis showed that the self-reported symptoms for only those participants that consented to the evaluations of their symptoms by a third-party (N=26) were significantly positively correlated with the symptoms reported by staff, r = .49 BCa CI [.21, .72], p = .01. Furthermore, a Wilcoxon Signed Rank Test was used to determine whether the participants' reported symptoms and the staff reported symptoms scores were significantly different (Field, 2012). This showed no significant difference between the self-reported symptoms score and the staff-reported symptoms score for those participants that consented to third-party symptom evaluation, z = -.90, p = .37.

Table 3

Means, standard deviation and correlations for the study variables

Variable	M	SD	1	2	3	4	5	6	7	8
1. Age	40.50	9.79	-	.05	.30**	-.16	-.02	-.03	-.01	.09
2. BMI	28.04	6.63		-	-.01	.13	-.13	.20	-.11	.25*
3. Healthy Eating score	40.20	8.87			-	.10	.31**	-.09	-.04	.10
4. Overall symptoms [a]	106.19	25.27				-	.30*	-.01	.06	-.04
5. Exercise 30 mins/day	-	-					-	-.03	.11	-.10
6. Smoking yes/no	-	-						-	-.17	.08
7. Coffee yes/no	-	-							-	.07
8. Alcohol yes/no	-	-								-

Note. [a] Symptoms are scored so that higher scores equal worse symptoms. Correlations based on 1,000 bootstrap samples with 95% bias corrected and accelerated confidence intervals. * $p < .05$. ** $p < .01$

4.2 Revisiting the Research Questions

4.2.1 Research Question 1: Are health behaviours associated with less SMI symptoms?

The first research question was tested using a bootstrapped multiple linear regression with seven independent variables (binary variables for coffee consumption, alcohol consumption, smoking and exercise, as well as the participants' BMI score, gender and age) and their interaction scores to predict a change in overall symptoms. The interactions included in the analysis were chosen based on their occurrence in previous literature and the correlation results from this study; results from the analyses are shown in Table 4. Participant BMI, rather than the healthy eating score, was used as both variables were not highly correlated. It was assumed that the healthy eating score may, therefore, not fully represent participants' eating behaviour. The eating score only reflects participants' diet during the last seven days and could reflect either social desirability related answers (Herbert et al., 1997) or an attempt to shift their BMI into the healthy range. The final model using the interactions explained 34% of the variance in overall symptoms and is significantly better than the mean at predicting the desired outcome, $F(13, 71) = 2.29$, $p = .02$. Whether the participant exercised or not and the interaction between healthy eating and exercise were significant predictors in this

model. For participants that exercise, the overall symptom score decreases by 2.10 standard deviations, meaning a decrease of (2.10 x 25.27) 54.01 in the overall symptom score. However, for participants who eat healthy and exercise, the overall symptoms scores increased by (1.89 x 25.27) 47.76 points. A higher symptom score means worse symptoms.

Table 4

Results of the multiple regression analyses. Note that all the results are based on 1,000 bootstrap samples with 95% bias corrected accelerated confidence intervals.

	b	SE B	*β*	*p*
Step One:				
Constant	105.04**	25.53		.01
	(55.56, 154.98)			
Participant age	-.40	.29	-.17	.16
	(-.94, .12)			
Participant Gender	-2.45	5.51	-.05	.65
	(-14.29, 9.33)			
Participant BMI	.71	.43	.21	.10
	(-.04, 1.51)			
Exercise (30 min)	15.64*	7.18	.31	.03
	(1.74, 30.29)			
Smoking	-1.70	5.91	-.04	.77
	(-13.47, 8.85)			
Alcohol consumption	-3.38	9.05	-.05	.72
	(-20.55, 17.46)			
Coffee consumption	2.19	6.14	.05	.74
	(-9.19, 12.92)			
Step Two:				
Constant	-46.07	101.24		.46
	(-216.48, 290.58)			
Participant age	.00	.46	.00	1.00
	(-.80, .72)			
Participant Gender	-2.16	5.42	-.04	.70
	(-15.33, 11.98)			
Participant BMI	4.89	6.80	1.41	.21
	(-12.50, 10.31)			
Exercise (30 min)	-104.94**	41.42	-2.10	.01
	(-209.92, -18.85)			
Smoking	28.34	67.67	.61	.51
	(-53.27, 277.64)			
Alcohol consumption	50.57	48.86	.77	.15
	(-43.27, 102.59)			
Coffee consumption	33.99	17.82	.74	.07
	(5.63, 56.51)			
Interaction BMI, Alcohol	-2.14	3.41	-1.59	.28
	(-5.06, 7.02)			
Interaction Exercise, Smoking	21.74	13.94	.65	.11
	(-5.25, 48.20)			
Interaction Smoking, Coffee	-19.97	12.00	-.86	.11
	(-50.86, 12.42)			
Interaction Smoking, Alcohol	-1.82	33.77	-.09	.93
	(-99.43, 28.32)			
Interaction Healthy Eating, Exercise	2.09**	.73	1.89	.01
	(.80, 3.68)			
Interaction Healthy Eating, Age	-.01	.01	-.24	.24
	(-.03, .01)			

Note: $R^{2=}$ .15 for step one and $R^{2=}$ .19 for step two. **p<.01, *p<.05

To conclude, only exercise and the interaction of eating healthy and exercising are associated with mental health disorder symptoms, and exercising while eating healthy is linked to an increase in self-reported symptoms. However, this effect is very small and may be due to a statistical artefact. The main finding of the first research question is that exercising in line with the World Health Organisation's guidelines is associated with a decrease in self-reported symptoms. The change in b for exercise when the interactions are included in step 2 of the regression analysis is important. The value of b is substantially increased, which points towards a statistical artefact in the data. The size of this sample may not be sufficient for a regression analysis with that many variables. Furthermore, including all the interactions is also more likely to lead to collinearity-related issues, due to the clustering of certain health behaviours as discussed in the introductory chapter. Multicollinearity in the data increases the standards errors and widens the confidence intervals, making interpretations regarding the p value more unreliable (Field, 2012).

4.2.2 **Research Question 2: Are health behaviours associated with less SMI symptoms across diagnoses?** The second research question was tested using a Kruskall-Wallis test to compare the overall symptoms scores between the different self-diagnoses. The Kruskall-Wallis test is used to compare the means of three or more groups (Field, 2012). It is appropriate provided that the independent variable is categorical or nominal (such as diagnosis) and the dependent variable is continuous (for example a symptom score) (McDonald, 2014). It is the non-parametric equivalent of a one-way analysis of variance and the recommended procedure for data that is not normally distributed (Field, 2012). The assumption of independence of categories is maintains in this design as participants with multiple diagnoses are categorised separately. Thus, participants would not figure in more than one category of the independent variable. For this test, the self-diagnosis variable was recoded to account for categories with few cases; thus, the smallest categories of 'anxiety/panic disorder' and 'other' were collapsed. The Kruskal-Wallis test showed no significant differences between the overall symptoms score across different self-diagnoses, χ^2 (3)= 2.42, p = .49. The Kruskal-Wallis test does not indicate which of the groups differ, only that there is a difference. Further post hoc analyses are needed to identify which groups differ significantly (Field, 2012). However, given the non-significance of the Kruskal-Wallis test, post hoc tests

would not be appropriate. Furthermore, a multiple regression with dummy variables for the self-diagnoses (schizophrenia/psychosis as a base category, anxiety and other combined) showed that including the diagnosis did not significantly improve the model and that none of the dummy variables significantly predicted the overall symptoms score ($\Delta R^2 = .02$, $p = .63$). This further analysis confirms the result of the Kruskal-Wallis test that there is no difference in the association between health behaviours and SMI symptoms across different diagnoses in this sample. However, these results need to be considered in the context of a small overall sample size, as well as small and unequal groups sizes (N= 10 for depression, N= 14 for the combined anxiety/panic and other group, N= 23 for schizophrenia, and N= 29 for multiple diagnoses). Unequal and small group sizes make comparison between groups more difficult. Finally, at least two of the groups (multiple diagnoses and the combined anxiety/panic and other group) are likely to be very heterogeneous, furthermore undermining the statistical power of both the Kruskal-Wallis test and the multiple regression analysis.

4.2.3 Research Question 3: Is the relationship between health behaviours and SMI symptoms moderated by being aware of one's symptoms?

The 'PROCESS' macro model 1 for simple moderation analysis (Hayes, 2013) was used to determine whether different levels of symptom awareness influenced the relationship between exercise and overall symptoms (Preacher, Rucker & Hayes, 2007). This macro calculates a regression analysis to determine if there is moderation (Hayes, 2013), as moderation is established by a significant interaction effect between the independent and dependent variables (Aguinis & Gottfredson, 2010). The 'PROCESS' macro calculates not only the interaction term automatically, but also the simple slopes analysis (Field, 2012). The simple slopes indicate the results of three different regressions: One for a high, medium and low level of the moderator (Field, 2012). Two moderation analyses were conducted: The first examined whether the level of symptom awareness moderated the relationship between exercise and overall symptoms. The second analysis sought to further investigate the results concerning how exercising and eating healthy are linked to an increase in overall symptoms. Therefore, the second analysis examined the relationship between exercise and overall symptoms with healthy eating as a moderator. In both analyses, the moderator and predictor variables were centred to ensure that zero was a meaningful value for them (Kenny, 2015). As both moderators (symptom awareness and

healthy eating) are continuous variables, one standard deviation below the mean, the mean, and one standard deviation above the mean were used to represent the low, moderate and high levels of either moderator respectively (Hayes, 2012). All moderation regression analysis controlled for gender, age, smoking, coffee and alcohol consumption. All results are based on 5,000 bootstrapped resamples. The results of the regressions are summarised in Table 5.

Table 5

Results of the moderation regressions of exercise on overall symptoms moderated by symptoms awareness, and exercise on overall symptoms moderated by healthy eating.

Exercise on overall symptoms	*b*	*SE B*	*t*	*p*
Symptom awareness (centred)[a]	.82** (.38, 1.25)	.20	4.06	.00
Exercise (30 min)	-21.87** (-34.58, 9.16)	5.88	-3.72	.00
Interaction Symptoms awareness, Exercise (30 min)[b]	.55 (-.51, 1.61)	.49	1.12	.28
Exercise on overall symptoms (moderated by healthy eating)				
Healthy Eating (centred)[c]	.30 (-.38, .97)	.34	.88	.38
Exercise (30 min)	6.64 (-6.16, 19.44)	6.41	1.04	.30
Interaction Healthy Eating, Exercise[d]	1.67* (.24, 3.11)	.72	2.33	.02

Note: **p<.01, *p<.05, a: Range = 53, b: Range = 19, c: Range 38, d: Range = 56

No significant moderator emerged from the analysis for the first moderation, as confirmed by the interaction effect not being significant (Field, 2012). Examining the simple slopes of symptom awareness on the relationship between exercise and overall symptoms indicated that across all levels of symptom awareness, there is a negative association between exercising and overall reported symptoms: low level of symptom awareness, b = -29.28, t(13) = -3.22, p = .00, medium level of symptom awareness, b = -21.87, t(13) = -3.72, p = .00 and high level of symptoms awareness b = -14.10, t(13) = -1.59, p = .13. It should be noted that N for this moderation analyses was 22. Despite the statistical significance of the lowest and medium level, symptom awareness does not moderate the relationship between exercise and overall symptoms, as a significant interaction is a prerequisite for moderation to be confirmed

(Field, 2012). This result is most likely due to the small sample size. It should also be noted that the standard error for the unstandardized beta (SE B) for the interaction between symptoms awareness and exercise is rather big given a *b* value of only .55. This means that the values are spread far from the regression line, indicating a poor fit of the model (Field, 2012). Furthermore, the symptom awareness variable as conceptualised in this study may be susceptible to a selection bias. It is possible that participants with a certain level of awareness may have consented for their symptoms to be assessed by a third party. This bias could further undermine the statistical power of this moderation analysis.

Examining the moderation of healthy eating on the relationship between exercise and overall symptoms confirms a significant interaction effect and, thereby, moderation (Field, 2012). Looking at the simple slopes indicates that across two levels of healthy eating, there is a positive association between exercising and overall reported symptoms. However, this association becomes stronger and only reaches statistical significance at the high level of healthy eating: low level of healthy eating, $b = -8.15$, $t(65) = -.78$, $p = .44$, medium level of healthy eating, $b = 6.64$, $t(65) = 1.04$, $p = .30$ and high level of healthy eating $b = 21.44$, $t(65) = 2.89$, $p = .00$. Thus, a high healthy eating score and exercising is associated with an increase in self-reported overall symptoms. These results are abated by the small number of people within the overall sample that exercised and the heterogeneity of the sample. Furthermore, the healthy eating variable was only modestly associated with BMI in this population. Thus, the healthy eating variable might represent a social desirability bias rather than an actual representation of this sample's food intake. Again, such a bias would undermine the statistical power of this analysis. Multicollinearity may also affect both moderation analyses as the interaction term and the main effects term are present in the model. The interaction terms tend to increase the standard errors, which affects statistical power (Field, 2012).

4.3 Participants' views on health behaviours.

Open-ended questions permitted participants to indicate why they engage (or do not engage) in certain health behaviours. This section will summarise the biggest themes. The most common reasons given for smoking were relaxation, enjoyment and social aspects. 18 out of the 59 answers pertained to the theme of relaxation. Thus, as one participant put it, 'It helps me relax' (participant 138). The second most common theme was the enjoyment of

smoking, for example ‘I like the taste’ (participant 68; 14 answers). Another theme was the social aspect of smoking, with people referring to it happening to get into contact during breaks or when out with friends (4 answers). The other statements indicated that participants smoked due to ‘habit’ (participant 41; 3 answers) or other reasons, such as ‘can’t explain’ why (participant 133; 3 answers). Participant who explained why they did not smoke most commonly cited it being ‘unhealthy’ (participant 110; 10 out of 59 answers) or not liking it (7 answers).

When it comes to food, the majority of participants explained that they eat what they eat due to enjoying the food (26 out of 71 answers). Thus, one participant explained ‘I eat what I want, when I want’ (participant 129). The second most common reason was trying to eat healthy (18 out of 71 answers). One participant, for example, said they watch ‘what and how much’ they ate (participant 29), while another one noted ‘I eat healthy so that I can stay healthy even at an older age’ (participant 156). However, some participants also acknowledged using food to manage negative emotions, for example ‘Sometimes when I’m depressed, I need to eat something so that I feel better’ (participant 36; 8 answers). Another common theme was participants not really knowing or seemingly caring about what they eat (10 out of 71 answers), simply stating ‘a man has got to eat’ (participant 63). Eight out of the answers indicated food choices based on financial reasons, while only one statement related to the influence of medication on weight and hunger.

In relation to why participants drink alcohol, most people indicated that they drink because they enjoy it (22 out of 65 answers). One participant explained that it ‘feels good’ (participant 50). Participants also indicated that they drink due to social aspects (8 answers), such as ‘when I’m out with friends, cause one can have more fun’ (participant 138). Alternatively, some participants indicated that they use alcohol to help them cope: ‘I can forget my negative thoughts’ (participant 118; 8 answers). Participants explaining why they did not drink alcohol noted they ‘don’t like drinking’ (participant 126; 10 answers), citing that it is unhealthy (5 answers) or that they cannot drink due to a potential interaction with their medication: ‘I don’t drink, because of the meds. It may lead to negative side effects’ (participant 141; 9 answers). The rest of the answers indicated participant just never consumed alcohol (3 answers).

Participants mostly explained that they drink coffee, because they ‘enjoy it’ (participant 127; 26 out of 72 answers). Another common reason for caffeine consumption was to manage tiredness, as one person put it ‘I drink coffee as I am often tired’ (participant 64). 21 answers were concerned with drinking coffee as a way to manage exhaustion. Another common theme was that of habit and, thus, drinking coffee because ‘coffee after lunch is just part of the meal’ (participant 37; 10 answers). Four participants explained that they felt that coffee helped them manage emotions, for instance ‘It helps me be less stressed’ (participant 132). One participant explained that they drank coffee due to the social aspect of taking breaks together. People that indicated that they did not drink coffee explained this by not liking it or that it makes them ‘nervous’ (participant 28, 9 answers). One participant said that they did not drink coffee, as it was unhealthy.

Finally, in relation to why participants exercised, no big themes emerged; instead, an increased number of smaller themes could be identified. For instance, people that exercised explained they did so because: it helps them relax (6 out of 70 answers); they enjoy it (7 answers); it is healthy (4 answers); to lose weight (8 answers), and; it helps them ‘feel better’ (participant 144; 6 answers). Alternatively, people who indicated that they did not exercise explained this by being active enough at work (7 answers), having no time (3 answers) or being too tired (4 answers). Some explained that they did not exercise but were active in different ways, such as by walking the dog (5 answers). Some participants put down the type of exercise they do at home (10 answers). The rest of the participants noted that they simply did not exercise (10 answers).

5 Discussion

The following chapter will summarise the findings, before placing them into the relevant context; thus, the results will be examined in relation to the previous and current literature. This chapter will also revisit the reflexive statement and consider possible implications of the research project's results for the practice of counselling psychology, as well as propose the potential implications of counselling psychology for the topic of health behaviours. Finally, the limitations of the research project and future directions will be discussed in detail.

5.1 Summarising the Findings

This research project set out to quantitatively investigate a potential link between health behaviours, such as not smoking, moderate alcohol consumption, healthy eating, being within a healthy BMI range, exercising, and SMI symptoms. In order to do this, participants were recruited from a sheltered work environment in Luxembourg, where employees have access to free fresh fruit and a free balanced main meal per day. Within this sample, most people (56.6%) smoked and indicated that they smoked over 20 cigarettes per day; they also reported not exercising at all during the previous week. Conversely, the smoking rate in the general population in Luxembourg is at about 24% (Fondation Cancer, 2011); this is in line with previous research that found that people with SMI tend to smoke more and more heavily (Bowden, Miller & Hiller, 2011; McClave et al., 2010). Participants' answers to the question concerning why they smoked indicated that they did so to facilitate relaxation and due to the social aspects of smoking with others. Previous research found similar results, in that people reported smoking as a facilitator for social interactions and that it reduces anxiety (Solway, 2011; DeHay et al., 2012).

This population indicated a low alcohol and coffee consumption. The reasons for this were given as that alcohol and coffee consumption are unhealthy, not liking either and that their medical advice stated it would be unwise to consume alcohol in combination with certain medication. These answers may reflect a social desirability bias; thus, participants may have felt unable to be honest in their answers (Paulus & Vazire, 2010). However, previous research has found reduced alcohol consumption levels in people affected by SMI. Brown et al. (1999)

proposed that reduced alcohol consumption maybe due to reduced financial means, but this answer did not feature in this research project.

The mean BMI for this population was in the overweight range (WHO, 2014); this corroborates previous research findings, that people with SMI tend to be more overweight than the general population (Bhattacharya et al., 2014; Compton et al., 2006; Kopp et al., 2011; Robson & Gray, 2007). Furthermore, in this sample, participants' age was positively correlated with healthy eating. Thus, as participants aged, their eating habits tended to improve. These findings differ from the previous research, which found that age negatively impacts eating habits due to decreased food intake and lack of nutrients (Payette & Shatenstein, 2005). However, other research has found that as people get older they consume less calorie-dense food, such as sweets and fast foods, and instead eat healthier foods, such as grains, vegetables and fruits (Drewnowski & Shultz, 2001). Many participants indicated that they were trying to eat healthy, while other explanations of why people ate what they ate was due to their enjoyment of food and not worrying about what they ate. Financial constrains around food choices are commonly cited as barriers to healthy eating across multiple populations (Caperchione et al., 2012; Waterlander, de Mul, Schuit, Seidell & Steenhuis, 2010). This theme featured in this research project, but was less common. This may confirm that having access to a free main meal and free fruit mitigates any reduced financial resources in this population. Similarly, previous research has identified weight gain from medication side effects as a motivational obstacle to change eating habits for people with SMI (Barre et al., 2011). Again, this theme also featured in this research project, but was only indicated by one person. Some participants explained that they used food to manage emotions. This is in line with previous research that has shown that people believe that fattening foods will make them feel better (Dingemans, Martijn, Jansen & Van Furth, 2009a). More immediate affect regulation then takes precedence over long-term and delayed goals, such as weight loss or being healthier (Dingemans et al., 2009a).

This research project also aimed to triangulate participants' symptoms in order to investigate the effect of symptom awareness upon the link between health behaviours and SMI symptoms. To do this, participants were asked to give consent for their clinical diagnosis to be accessed and for their symptoms to be assessed by psychologists within the sheltered work

environment. The results showed a significant positive correlation between self-assessed symptoms and staff-assessed symptoms. Furthermore, there was no significant difference between self-assessed and staff-assessed symptom means. Thus, it seemed that these participants generally had a good awareness of their symptoms. Of course, it may also be the case that those participants with good symptom awareness were more likely to give their consent for staff assessment.

The first research question asked whether health behaviours would be associated with less SMI symptoms. In this population, exercising and the interaction between healthy eating and exercise significantly predicted participants' self-reported symptoms. In the findings, it was found that exercising was associated with healthier eating for people with a wide range of SMI diagnoses; this may imply that some participants were actively trying to be healthier by eating healthier diets and exercising regularly. Exercising was also associated with a decrease in self-reported symptoms. However, eating healthy and exercising every day was linked to an increase and, thereby, a worsening of self-reported symptoms. The findings of this first research questions are affected by some statistical weaknesses. The sample size is not appropriate for a regression analysis with that many predictors. Furthermore, including the various interaction effects is likely to lead to multicollinearity within the data. This is due to the clustering of many health behaviours, as well as the inclusion of main and interaction effects in the model. Finally, only a modest number of participants in this sample exercised in the first place. Therefore the above findings should be considered with caution. The main finding of research question one is that exercise is linked to a reduction in self-reported symptoms in this sample.

Previous literature on exercise and SMI found that physical activity reduces symptoms for people assigned a depression diagnosis (Legrand & Heuze, 2007). For people affected by schizophrenia, the results have so far been mostly inconclusive. Some studies have found that physical activity helps alleviate symptoms of schizophrenia (Faulkner & Biddle, 1999; Hallgren et al., 2016), while others do not (Pearsall et al., 2014b). A recent study found that people affected by schizophrenia spectrum disorders who took part in a walking intervention reported improved quality of life, social support and a decrease in symptoms (Browne, Penn, Battaglini & Ludwig, 2016). Thus, the findings of this research project - that exercising is

associated with a reduction in self-reported symptoms - is in line with previous research. Firth and colleagues (2017b) posited that further research is needed to ascertain the length and intensity of the exercise required to enhance cognition. In this research project, exercising for at least 30 minutes per day was associated with reduced reported symptoms.

Participants in this sample indicated that they exercised, because it helped them relax and it helped them feel better. This is in line with previous research that has found that participants indicated that exercise helped them ease psychiatric symptoms (Firth et al., 2016a; Firth et al., 2016b). Firth and colleagues (2016a) report that their participants explained that exercise helps inhibit hallucinations and intrusive thoughts by distracting them. Previous literature has identified low motivation as a key barrier to engaging with exercise, and even to engaging in research concerning exercise, in people affected by schizophrenia (Firth et al., 2017a). In line with this finding, the majority of those people who decided not to take part in this research project indicated that they were uninterested in the topic. However, while this can account for the low participation rate in this research project, it did not feature as an answer in the open-ended questions; this may have been due to a selection bias. Thus, maybe those who have more positive views of exercise or health behaviours in general, were more likely to take part in this research project.

The second research question for this study investigated whether health behaviours affect people with different diagnoses differently; however, no significant evidence was found to suggest that. Again, this finding has to be considered in the context of a small number of people in each category and the heterogeneity of some categories. Thus, the categories of multiple diagnoses and combined categories of anxiety/panic disorder and other diagnosis are likely to contain a very heterogeneous mix of participants. Substantial heterogeneity impedes the ability to draw correct interferences from research, as changes in outcome could be due to a number of factors (Field, 2012). Nonetheless, this finding differs from previous studies that found some health behaviours being associated with specific diagnoses, such as healthy eating or exercise with depression (Harbottle & Schonfelder, 2008; Legrand & Heuze, 2007; Sanchez-Villegas et al., 2009), exercise and schizophrenia (Hallgren et al., 2016), caffeine and schizophrenia (Cerimele et al., 2010), or caffeine and anxiety disorders (Simmons, 1996). This finding might be explained by the fact that the majority of participants in this sample had

multiple diagnoses. The sample size might also have been too small to find any differences. Finally, it could be that in this population health behaviours impact all diagnoses in the same way.

The third research question - that symptom awareness might moderate the relationship between health behaviours and SMI symptoms - was not confirmed in this research project. This is contrary to previous research that has linked insight to fewer symptoms, at least in Indian people with schizophrenia (Saravanan et al., 2010), and other research that found that high insight might lead to a worsening of symptoms. Again, the lack of significant results in this research project may be due to the small sample size. Furthermore, the standard error for the interaction between symptoms awareness and exercise is substantial, indicating a poor fit of the model for this moderation (Field, 2012). The way that symptoms awareness was conceptualised in this research project may also be a further source of bias. It is possible that participants with a certain level of awareness may have consented for their symptoms to be assessed by a third party, introducing a selection bias. Finally, this research project specifically investigated symptom awareness, as opposed to a more multidimensional concept of insight. While this part of insight does not moderate the relationship between exercise and SMI symptoms in this sample, other dimensions of the insight concept might do; therefore, future research is needed to clarify this issue.

A second moderation analysis investigated whether the relationship between exercise and SMI symptoms was moderated by the level of healthy eating. The results indicate that being at a high level of healthy eating and exercising is associated with an increase in self-reported symptoms. This result needs to be considered within the context of a small number of people within the overall sample that exercised and the overall heterogeneity of the participants due to different nationalities and a wide age range within the sample. Furthermore, the healthy eating variable was only modestly associated with participant BMI, and therefore might not be an appropriate representation of this sample's food intake. Multicollinearity may also cause further issues in both moderation analyses as the interaction and main effects were included in the models. Multicollinearity can impact on statistical power and can impede on the ability to assign changes to specific variables, as the variables are clustered together (Field, 2012). In the open-ended questions, participants indicated actively trying to make food related changes.

Therefore, the increase in self-reported symptoms may stem from the stress of making changes and – possibly - being self-critical. Previous research noted negative effects of exercise on mental health symptoms only for people with panic or anxiety disorders, possibly due to people fearing panic attacks or struggling with outside interventions (such as running for people with agoraphobia; Broocks et al., 1998); it is unlikely that this is the case in this study, as only a minority (6.6%) had panic or anxiety diagnoses.

To conclude, the literature on health behaviours and their influence on SMI is complex and multidimensional. This exploratory research project, while adopting a simplified approach, has added to the literature in several ways. First, it confirmed in a new population that exercising is associated with a reduction in self-reported symptoms for people with a variety of assigned diagnoses. Second, this project also identified that exercise and a high level of healthy eating is associated with an increase in self-reported symptoms across different diagnoses. It is assumed that this process is facilitated by self-criticism, with self-compassion being proposed as a possible remedy in the implications for counselling psychology practice. Since this research project suffered from some statistical weaknesses, further research needs to be done to confirm the results. After revisiting the reflexivity, this research project will review the implications for counselling psychology for these findings.

5.2 Reflexivity Revisited

At the end of this research process, I have become aware of how my assumptions have influenced the project and the results. This project was positioned within positivism and in the medical model; as such, it has produced quantitative data. It is clear now that such a simplification of individuals' experiences could not fully grasp the actual relationship between health behaviours and mental health symptoms. I think that this is also reflected in the poor response rate of participants. Many of those who did not wish to participate in the research project explained that they did not want to 'be lectured' about their life choices. Some behaviours, such as being obese, are viewed as self-inflicted by society and are stigmatising (Puhl & Heuer, 2010). I think that maybe, within that context, it could have felt somewhat judgemental to ask participants about their food, alcohol or exercise choices. Perhaps some felt that the questionnaire was implying that it was their choice or fault that they did not engage in health behaviours. Therefore, I think that in that sense approaching this from the

medical model standpoint may have put me at a disadvantage. Reflecting on the experience of collecting data at the sheltered work environment, it seemed as if some potential participants felt that I was on a par with their general practitioner or psychiatrist - as if I had come to tell them that how they ate or exercised was wrong. Some spoke of being unwilling to give up some of the last pleasures they had. Thus, my identity as a Trainee Counselling Psychologist may have influenced how people perceived the rationale of the research project. Since therapy is often about behavioural changes, they may have assumed that by conducting research on health behaviours I was implying that their current behaviours were inadequate and in need of changing. While I was initially very disappointed at the low response rate, I can now understand why people may not have been willing to engage with the research project. I wonder whether a qualitative approach would have suffered the same issues, or whether an interview format would have come across as more curious.

Furthermore, my 'symptom awareness' variable is based on two assumptions. Firstly, it assumes that questionnaires adequately reflect people's experience of their symptoms. Secondly, it assumes that a psychologist would be able to accurately and objectively assess a participant's symptoms. It also implies that if a person lacks symptom awareness, the psychologist's assessment would be a more accurate representation of the participant's symptoms. However, a divergence between participant and psychologist scores could also simply be due to the measures not accurately measuring the participants' lived experience (Hoskin, 2012). It should be noted that participants generally tended to rate their symptoms as worse than the psychologists. This may be an honest evaluation from their perspective or it may be a form of social desirability bias. Thus, participants may have slightly exaggerated their answers to show that they have answered honestly and are aware of their symptoms (Paulus & Vazire, 2010). It was also disappointing to me that the number of participants for whom I was able to get third-party symptom assessments was smaller than expected. Initially, I was delighted that over half of the participants consented for their symptoms to be assessed by a psychologist on site, but I did not anticipate issues from the psychologists' side. However, I understand their reluctance at assessing someone whom they may not have yet interacted with in a meaningful way, or had not done so recently. Nonetheless, 23 participants were removed from that specific analysis in this way. Furthermore, the psychologists were also reluctant to fill out the whole questionnaire, instead opting for the part that was specific to

the participants' diagnosis (e.g., the ESI for schizophrenia). Again, this was not something I had anticipated and was not in agreement to what I had discussed with the director of the ATP. While my research project has still produced valuable results, a mixed methods approach may have been a better choice. The questionnaire could have been supplemented with a semi-structured interview asking about experiences of stigma and self-compassion; this would have given participants more of a voice and would have enabled a more collaborative way of working together (Stringer, 1999). In addition, it may have persuaded more people to participate if they would have been able to speak about why they struggle (or not) to engage in health behaviours. Similarly, the interview could have been used to investigate insight as a more multidimensional construct, as opposed to the very specific 'symptom awareness' variable used in this research project. This would also avoid the issue of a third-party being unable to assess participant symptoms or only being willing to assess part of the participants' presentation.

Thinking back on the overall experience of this research project, I think that my previous relationship with the ATP also influenced my assumptions about the project and the findings. When I did not nearly get as many participants as expected, I felt somewhat embarrassed and this was also because I wanted to impress my former employers with my research project. It was important to me to produce a project that would lead to useful results, which would have real life implications such as informing interventions. In doing so, I fell for an assumption that I recognise all too well from my clients in therapy: that there is a simple linear quick solution to complex mental health issues. Thus, my assumptions were that a healthy lifestyle would have a positive effect on mental health. After all, I personally knew that I felt better and more able to manage stress when living a healthier lifestyle; my friends and family reported the same. At my work in the Community Mental Health Team, every group (such as STEPPS for emotional unstable personally disorder and bi-polar relapse prevention) included sessions on exercising and balanced eating as part of teaching coping strategies. Therefore, I was surprised to find that exercise in conjunction with eating healthy worsened symptoms. In hindsight, just as clients learn that there is no easy cure for their issues and that their presentations are very complex, I was reminded that there is no easy way for people to manage their mental health. Instead, mental health is a complex phenomenon and health behaviours may play a part for some of them, but not others.

Despite my initial disappointment at the low participation rate and my perceived lack of results, I have enjoyed the process and learned a lot. I was reminded to keep an open mind, despite strong assumptions and anecdotal evidence. Furthermore, I believe that it was useful for me to experience first-hand the feeling of realising that things were not as straightforward as I had assumed and that there is, in truth, much more complexity and uncertainty to the phenomenon of mental health. I feel that this lesson will provide me with a better understanding of clients coming to therapy, expecting a quick cure or a magic wand and their subsequent discontent upon realising that this is not possible. In addition, I have also learned how to plan, execute and write up a research project. I hope to take my findings further at some point, to advance the development of the project and to replicate it with a more generalisable population and a bigger sample size. Should my results be confirmed, there may be an indication to supplement activity interventions within the NICE guidelines with self-compassion interventions to better support clients in their care.

5.3 Implications and Relevance to Counselling Psychology

Bridging the gap between mental and physical health has become an important part of the NHS agenda (Department of Health, 2006; Naylor et al., 2016; Salford Royal NHS Foundation Trust, 2013). For instance, the National Institute for Health and Care Excellence (NICE, 2015) guidelines recommend that people affected by psychosis and schizophrenia are given healthy lifestyle advice at diagnosis, as well as at an annual review. Furthermore, some trusts, such as the Berkshire Healthcare NHS Foundation Trust and the Bradford Distract Care NHS Foundation Trust, have started to implement a more holistic treatment of their service users and, therefore, offer physical health checks such as a cardiovascular risk assessment (Berkshire Healthcare NHS Foundation Trust, 2016; Dale & Bowker, 2017). Thus, an increased focus on physical health is becoming part of a client's experience upon entering the NHS. Up until now, this is done without any psychological input on that matter. The findings of this research project, if replicated, could point towards an important extension of these recommendations. The results point towards the fact that, at least initially, exercising and eating in line with the WHO recommendations may worsen symptoms and that self-compassion focused interventions may help buffer or negate this effect. Thus, healthy lifestyle interventions should be complemented with self-compassion interventions to avoid

exacerbating people's SMI symptoms. Therapeutic self-compassion interventions can include evoking self-compassionate imagery, writing a compassionate-self letter, loving-kindness meditation and affectionate breathing (Adams & Leary, 2007; Neff & Germer, 2013). These approaches can be delivered cost effectively in group workshops, training sessions or self-initiated exercises, and can be especially valuable for populations for whom health behaviour changes are critical (Sirois, Kitner & Hirsch, 2015). Furthermore, Wei, Shaffer, Young and Zakalik (2005) found that positive mediators may elicit less resistance in therapeutic interventions and help provide proximally achievable goals. Focusing on self-compassion may, thus, be particularly helpful for clinicians working in a time-limited setting (Raque-Bogdan et al., 2011). Similarly, medical personnel could frame their recommendations to clients in ways that encourage self-kindness and a non-judgemental approach to their difficulties (Terry & Leahy, 2011). Finally, self-compassion is independent and positively related to mental health and well-being (Raque-Bogdan et al., 2011). Thus, the findings of this study could potentially influence guidelines and policies on how to best bridge the gap between mental and physical health; this could also help reduce the health inequalities that people with SMI currently face.

The available counselling psychology-based research on the topic of health behaviours is scarce. As this research project has shown, most literature is rooted within the medical model. Consequently, the focus is on the outcomes of health behaviour interventions on SMI. Very few studies examine the factors that underlie the adherence to health behaviours. A counselling psychology perspective can add to this topic by linking in the underlying factors. This can help make health behaviour interventions more appropriate and effective, thereby reducing health inequalities for clients. According to Woolfe, Dryden and Strawbridge (2003), counselling psychology can help enhance the services of organisations, such as the NHS, and advance educative and preventive aspects of mental health. Therefore, this section will examine possible factors that may underlie poor engagement in health behaviours from psychodynamic and cognitive behavioural perspectives, which could inform counselling psychologists' practice.

Jacobs (2012) notes that issues around eating (e.g., starvation and over-eating) and issues with delaying gratification (e.g., exercising or dieting so that one is healthier at a later

point) stem from difficulties associated with trust and attachment. According to attachment theory, caregivers that respond consistently and suitably to their infants are eventually internalised as a secure base (Bowlby, 1969). However, if a caregiver fails to respond to an infant's needs, it will grow up not trusting that others are able to meet his or her needs (Ainsworth, 1979). Neglecting self-care in the form of not eating properly, drinking or smoking excessively and not exercising may, thus, mirror feelings of neglect experienced in childhood where caretakers may not have taken care of infants in the way that was needed. Khantzian and Mack (1983) posit that the care received in childhood contributes considerably to an individual's later capacity to take care of themselves. Khantzian et al. explain that the failure of the caregiver to mirror an infant's needs leads to a failure in the infant's internalisation of parent functions relating to self-care. If a caregiver does not respond adequately to an infant, the infant can learn that they have little agency or control over their body, making it unlikely to engage in proper self-care (Bruch, 1962). Research has found that parent separation and neglect are linked to various self-destructive behaviours, such as self-harming (Van der Kolk, Perry & Lewis Herman, 1991). Van der Kolk and colleagues note that these behaviours can also act to punish the self. People with attachment issues can struggle to express anger in appropriate ways (Bowlby, 1980). Thus, clinicians working with people who struggle to engage in or maintain health behaviour could focus their work on attachment and help clients to internalise new values of self-care.

Alternatively, not engaging in health behaviours may be a consequence of negative beliefs about the self. Khantzian et al. (1983) link a lack of self-care to a lack of self-esteem, as well as an underlying experience that the self is not worth preserving or caring for. This can also be related to parenting style. Thus, Klein, O'Bryant and Hopkins (1996) link an authoritarian parenting style to low self-worth and low self-care. For instance, Brewin, Andrews, & Furnham (1996) found that parental discouragement of psychological autonomy has been positively correlated with self-criticism. Critical parents can also be internalised, leading to increased self-criticism and low self-worth (Brewin at al., 1996). Therefore, another way to support clients who struggle with self-care could be to challenge negative beliefs about the self, including high self-criticism and low self-esteem.

McWilliams (2011) notes that early losses or needs not being met can leave people orally fixated, with a preference for eating, drinking and smoking. People with unmet needs may try to fulfil them through oral gratification or alternatively preferring behaviours that are instantly gratifying (Jacobs, 2012). For example, Taylor, Parker, Bagby and Bourkes (1996) conceptualised and found evidence for an underlying sense of interpersonal distrust, difficulties in identifying and managing emotions, as well as a sense of lack of control over one's life in people affected by eating disorders. Taylor et al. propose that eating is used to numb such unpleasant experiences. Similarly, Gibson (2012) notes that comfort foods are often linked to childhood favourites or foods linked to special occasions as experienced in childhood. Hence, eating unhealthy foods can activate feelings of security and belonging, thus distracting from negative ruminations (Gibson, 2012). Therefore, helping clients become aware of their unmet needs and finding appropriate ways to fulfil them could facilitate engagement with health behaviours.

Engaging - or not engaging - in health behaviours can also be conceptualised as a (mal)adaptive coping strategy; thus, clients often self-medicate with alcohol or excessive food, for instance (Carrigan & Randall, 2003; Gibson, 2006; Wonderlich et al., 2014). Studies found that binge eating, for example, is best understood as a maladaptive way to regulate unpleasant emotions (e.g., Telch, Agras & Linehan, 2001). The link between food and mood is not restricted to eating disorders. Dunn, Mohr, Wilson and Wittert (2008) note that many people describe enjoyment, happiness and instant satisfaction when eating high calorie food. Dingemans, Martijn, Van Furth and Jansen (2009b) describe how the food industry uses this to market high calorie foods, such as chocolate, by linking them to feelings like 'happy' and 'loved'. Teaching clients more adaptive ways to manage difficult emotions would be another way to support clients struggling with health behaviours.

Furthermore, research has shown that people in general struggle to know what is good for them. They will often overestimate how happy they will be when they reach a goal or will overestimate the importance of one factor in reaching their goal (Wilson & Gilbert, 2005). Thus, many people overestimate the role body shape and weight play in their health or happiness. These unrealistic standards may expose them to repeated failure, since they are attempting to lose weight beyond what their body can manage (Laliberte, Newton, McCabe &

Mills, 2007). Furthermore, even when people know that something is good for them, they might still decide against it. For example, Schiffer and Roberts (2017) found that even when people knew which type of activities made them happy, they still chose not to engage in them when they seemed daunting. Schiffer et al. propose that since the new activity is perceived as daunting with a delayed reward, people instead chose the instant reward of an old habit - such as eating unhealthy.

Whether people engage in health behaviours also depends on whether they believe they can make and maintain changes (Mazurek Melnyk et al., 2006). On one hand, people who report low self-control, tend to feel more vulnerable and, therefore, frame their goals more negatively in terms of avoidance and losses (e.g., 'I should avoid chocolate'); this makes changes about obligations with little space for mistakes (Scholer & Higgins, 2010). On the other hand, people who report high self-control set their goals to be less avoidance-oriented, making it easier for them to invest towards long-term goals (e.g., increase exercise) and to resist behaviours that hinder this goal (e.g., increase food intake; Cheung, Gillebaart, Kroese & De Ridder, 2014). Similarly, Laliberte et al. (2007) found that people in a non-clinical sample who held self-critical beliefs about their weight, such as 'If my weight is more than I want it to be, then I am at fault', were more likely to binge eat, have low self-esteem and be dissatisfied with their bodies. However, participants who only focussed on being healthy were less likely to eat in a disordered way (bingeing or restricting). Thus, perceived agency plays an important part when engaging in health behaviours. In this population, perceived agency appeared low, since some sheltered work employees who declined to take part in the research project indicated that health behaviours were not a priority for them. They explained that the medication made them tired and caused weigh gain anyway, and had therefore concluded that there was nothing they could do about that.

An individual's context also plays a part in whether they engage in health behaviours. For example, Sheldon and Houser-Marko (2001) note how unsupportive social contexts can deplete people's motivation and well-being, thus hampering their ability to internalise and maintain behavioural changes. Similarly, Smith, Straker, McManus and Fenner (2014) investigated barriers to healthy lifestyle changes. Smith at al. found that a busy lifestyle in combination with the cheap and easy availability of junk food can act as barriers to

behavioural changes. Furthermore, being overweight can become normalised within a family, decreasing the likelihood of making lifestyle changes (Smith et al., 2014). Therefore, supporting clients with deciding what is important for them at any given time, using techniques aimed at increasing perceived agency, and empowering clients to challenge unsupportive social contexts can be further ways of supporting clients who struggle with health behaviours.

People's efforts to make lifestyle changes are also often disrupted by negative reactions to minor failures, such as self-criticism (Sirois & Giguère, 2013). Polivy, Herman and Deo (2010) found, for instance, that a diet transgression could result in feelings of shame and self-criticism. Furthermore, Terry and Leary (2011) posit that negative reactions to challenges and failures can interfere with effective self-regulation in several ways. For example, people who experience negative affect are more likely to engage in self-defeating and unhealthy behaviours - such as overeating or not exercising - that are gratifying in the short-term but have negative consequences over the long-term to regulate their mood (Baumeister, Zell, & Tice, 2007; Sirois & Pychyl, 2013). More recently, a study has linked shame, negative comparisons and self-criticism to increased disinhibited eating and susceptibility to being hungry (Duarte et al., 2017). Duarte and colleagues (2017) found that shame and self-criticism were also negatively associated with weight loss. This could potentially explain why in this research project the mean BMI was in the overweight range, even though participants indicated generally eating rather healthy (as shown in the high healthy eating score). Therefore, people may be trapped within a vicious cycle of slipping up while trying to make changes, being hard on themselves and then slipping up more – all due to them being hard on themselves.

A concept that could be helpful in this context is self-compassion. Neff (2003) defined self-compassion as taking a kind, compassionate and accepting stance toward oneself during difficult times. Prior research found that self-compassion is associated with less negative reactions after imagining a diet-breaking scenario (Adams & Leary, 2007). Furthermore, Leary, Tate, Adams, Allen and Hancock (2007) found that self-compassion moderates reactions to distressing situations involving failure, rejection, embarrassment and other negative events. Leary and colleagues posit that this happens via three possible methods: First,

they found that highly self-compassionate people judged themselves less harshly and their self-evaluations were more based on actual performance (as assessed by observers); Second, self-compassionate people's self-evaluations are less dependent on outcomes, presumably because they respond in a kind and accepting manner toward themselves whether things go well or not; Third and finally, people with high self-compassion appear to think about negative events in ways that reduce their impact. Thus, self-compassion helps people to approach negative affect with kindness, understanding and within the context of shared humanity (Neff, 2003).

Self-compassion was also found to be positively associated with health behaviours, such as healthy diet, physical activity, adequate sleep and stress management (Sirois, Kitner & Hirsch, 2015). Self-compassion may help people move towards a positive self-appraisal and, thereby, may facilitate proactive behaviours aimed at promoting or maintaining well-being - such as healthy eating (Neff, 2003). Thererfore, physical activity interventions - as recommended by the National Institute for Health and Care Excellence guidelines for schizophrenia, psychosis and depression (NICE, 2014; 2016a) - may profit from being complemented by self-compassion interventions. As this research project has shown, people may initially feel worse when implementing lifestyle changes; this may increase dropout rates, risk to self, or negatively impact audit results. Since self-criticism has been independently linked to worse mental health (Andriopoulou, Doyle & Livanou, 2017), it may be that self-critical people struggle to profit from health interventions that would help others. Pairing physical activity programmes with self-compassion interventions may increase the effectiveness of these programmes and the clients' satisfaction with them.

5.4 Limitations

The current research project relied upon self-report measures, which may introduce reporting biases (Sirois, Kitner & Hirsch, 2015). The food frequency data has well-documented problems, including recall error (Shelton, 2005). A similar issue has previously been reported in relation to measuring levels of physical activity. For instance, Bassett, Cureton and Ainsworth (2000) found that most people are unable to accurately report how much they have walked over the last few days. The presence of a third party during data collection, may also have introduced a social desirability or social approval bias. The sheltered

work environment encourages and advocates a healthy lifestyle. Thus, participants could have felt unable to answer truthfully as a member of staff and a potential source of authority was present as they completed the measures. Furthermore, this research is cross-sectional and can, therefore, make no claims as to the causality of the relations of the variables (Field, 2012). This research project also did not address other possible confounding variables that may affect the relationship between health behaviours and mental health, such as perceived self-control. The positivist nature and quantitative methodology used in this research project may have contributed to the low participation rate in this population. As discussed previously, participants may have felt implicitly judged for their lifestyle choices, or the questionnaire format may have limited their answers in ways that made them feel that they could not provide the whole picture.

The findings of this research project cannot be generalised due to the population and small sample size. This is also reflected in the substantial difference between R^2 (.34) and the adjusted R^2 (.19), which indicates that this model does not generalise well (Field, 2012). Just over half of the participants (53.6%, or 45 participants) consented for their symptoms to be assessed by the psychologist on site. However, only data for 26 participants (30.9%) was available for data analysis. This is because, for many of the participants that had given consent, the psychologists on site were unable to rate their symptoms. This was the case for new starters, who had not yet worked with the psychologists or people whom psychologists had not seen recently. This left N=26 for the analysis comparing the self-reported versus psychologist reported scores and the moderation analysis relating to symptom awareness. Furthermore, the psychologists were only willing to assess symptoms specific to the participants' diagnosis, due to time constraints. For instance, for someone with a schizophrenia or psychosis diagnosis, only the ESI was completed by the psychologist. The initial idea of getting the participants supervisor to assess the symptoms would have circumvented the issues noted by the psychologists, as they would have daily contact with the participants. However, this idea was eventually rejected by the ATP on the day of data collection, to ensure a smoother running of their services. While the assessment of symptoms by a third-party was a novel way to triangulate symptoms, the practicalities of it proved more difficult than expected. While this is a small sample size for moderation, previous studies have used moderation with samples as small as N=13 (Deserno et al., 2015). Furthermore, Briggs

(2006), and Creedon and Hayes (2015), found that using bootstrapping with bias-corrected and accelerated confidence intervals work well - even with small samples. Creedon and Hayes explain that bootstrapping samples may be vulnerable to outliers, as they may appear multiple times in the resampled data. However, bias-corrected and accelerated confidence intervals are less influenced by outliers, even in a sample as small as N=20. Due to the small sample size and lack of generalisability, the findings of this research project should be considered exploratory.

Future studies should build up on this project and use a mixed-method design to circumvent some of its limitations. Supplementing the questionnaire with a semi-structured interview may encourage participants to feel that they have more of a voice and can explain their struggles better. Future research should also include a measure on stigma, as stigma may play a part in the engagement with health behaviours. An interview format could also address the perceived lack of agency participants may have felt and could investigate a multidimensional construct of insight as opposed to symptom awareness. A longitudinal design could also be considered to enable some causal inferences. Finally, further studies need to replicate the findings with a more generalisable and larger sample. Despite the identified limitations, this research project contributes to the field of counselling psychology by adding to the existing literature that concerns the relationship between health behaviours and mental health.

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7 Appendix A

Participant Information sheet

Hello,

My name is Diane and I am currently doing research for my doctoral degree. I am here today to ask you if you would like to help me by taking part in my study. In my study, I want to look at the relationship between different health behaviours such as exercising and eating healthy, and mental health issues. Some researchers think, for example, that exercising or eating healthy helps improve mental health symptoms while other researchers have found no relationship between the two. I believe it is important to find a clear answer to this question, since if there really were a relationship than this would mean that you could help yourself and manage your symptoms better if you were exercising or eating healthy, for example.

If you do decide to take part in my study, I would ask you to fill out a questionnaire. This questionnaire will ask you questions relating to whether you are a man or a woman, your age, your nationality, what diagnosis best describes your symptoms, and your eating, drinking and exercise habits. The reason I want to know these things is so that I can later split the data in groups, so that I can say for example that something might work for one group but not for another.

In order to find out whether health behaviours have an effect on your symptoms, I need to know what symptoms you currently have. Therefore, in the last part of the questionnaire you will be asked to assess your symptoms. I would also like, with your permission, to ask your ‘chef d’atelier’ or someone from your psychosocial team if you prefer to assess your symptoms. This is because some researchers believe that insight into your health also has an effect on how health behaviours affect mental health. I would also, with your permission, get your clinical diagnosis from your ATP file as clinical words can sometimes be confusing and this way I have the official term that best describes your symptoms.

You do not have to participate in this study and you do not have to answer all the questions. If you do fill in the questionnaire, but then decide that you do not want to participate you can withdraw up to the point of data analysis. Just let your 'chef d'atelier' or someone from your psychosocial team know and they can pass the message onto me. Your answers are anonymous, which means no one apart from me will see what you have answered. You will be allocated a number (see the next page). If at any point you have any questions please don't hesitate to ask me. If at any point you find any of the questions distressing, there's a psychologist/social worker present who can support you. This person can also signpost you to other institutions that will be able to support you, should you become worried about your alcohol or food intake, based on your answers in this questionnaire.

If you would like to take part in this study please sign here

Signature _____ Date _____

If I have your permission for your 'chef d'atelier' or someone from your psychosocial team to assess your symptoms using a separate questionnaire, please sign and print your name here (Your name will only be used to match this questionnaire to the one given to your 'chef d'atelier' or someone from your psychosocial team, afterwards this sheet will be detached and only the number code remains. Only I will know that you are this number)

Signature _____ Date _____

Print name

_____

If I have permission to access your diagnosis only from your ATP file please sign and print your name here (Your name will only be used so that I know whose diagnosis I can access. This sheet will be detached and only the number code remains. Only I will know that you are this number)

Signature _____ Date _____

Print name

_____

If you would like to get a copy of the results please tick the box below and a copy will be send to your atelier.

 Yes, send me a copy of the results

Thanks so much!

In case of any questions you can contact me via email:

Dik0278@my.londonmet.ac.uk

Code : 001

8 Appendix B

Questionnaire

Some information about you: (Code 001)	
Age	_____ years
Gender	❑ Female ❑ Male ❑ Transgender
Nationality	_____
Height (cm)	_____
Weight (kg)	_____
What is the highest degree that you have achieved?	❑ University BAC+4 or more ❑ College BAC+1 - BAC+3 or, IST, ISERP, IEES ❑ Secondary school BAC diploma ❑ CATP or Examen de passage, 5ième, 9ième, 10ième ❑ No degree ❑ Other: _____
What is your main source of income?	❑ Full-time or part-time contract ❑ ATI ❑ AVI ❑ RPGH-RTH ❑ RMG ❑ Chômage ❑ None ❑ Other: _____
Do you live:	❑ Alone ❑ With family ❑ With partner only ❑ With children only ❑ Assisted living ❑ Other: _____
Some information about your health:	

What diagnosis best describes your current symptoms?	❑ Depression ❑ Anxiety/ panic disorder ❑ Schizophrenia/ psychosis ❑ Other _____
Are you currently in therapy?	❑ Yes ❑ No
Are you currently taking any medication?	❑ Yes if yes, what: _____ ❑ No
The next few questions are related to smoking.	
Do you smoke?	❑ Yes ❑ Not anymore ❑ Never
If yes, how many cigarettes do you smoke?	❑ Less than one per day ❑ Between 1-10 per day ❑ Between 10-20 per day ❑ More than 20 per day
Could you explain why you smoke, or don't smoke (for example: pleasure, relaxation, social aspect, health concerns)? _____ _____ _____	
The next few questions are related to your food intake. In the last seven days:	
I ate a variety of foods.	1 2 3 4 5 6 7 Very rarely Some days Everday
I monitored the portions of my snacks and meals.	1 2 3 4 5 6 7 Very rarely Some days Everday
I ate fresh fruits.	1 2 3 4 5 6 7 Very rarely Some days Everday

I ate fried foods.	7 6 5 4 3 2 1 Very rarely Some days Everday
I drank high calorie beverages.	7 6 5 4 3 2 1 Very rarely Some days Everday
I ate foods high in sugar.	7 6 5 4 3 2 1 Very rarely Some days Everday
I ate processed foods (e.g. chips, ready meals, fast food).	7 6 5 4 3 2 1 Very rarely Some days Everday
I ate foods with a high amount of fat.	7 6 5 4 3 2 1 Very rarely Some days Everday
I ate fresh vegetables.	1 2 3 4 5 6 7 Very rarely Some days Everday
Could you explain why you eat what you eat (for example: economic reasons, pleasure, health concerns)? _____ _____ _____ _____	
I drank alcohol.	7 6 5 4 3 2 1 Very rarely Some days Everday
How many alcoholic drinks? _____	
Could you explain why you drink alcohol or why you don't drink alcohol (for example: pleasure, social aspect, economic reasons, health concerns)? _____ _____ _____ _____	

I drank more than 2 cups of coffee or 4 cups of black tea per day.	7 6 5 4 3 2 1 Very rarely Some days Everday
How many cups of coffee or tea? _____	
Could you explain why you drink coffee or tea or why you don't drink coffee or tea (for example: pleasure, social aspect, economic reasons, health concerns)? _____ _____ _____ _____	
The next few questions are related to your level of exercise.	
During the past seven days, on how many days did you: ...engage in vigorous activity that caused you to breathe much harder than normal and sweat (e.g. jogging, football, aerobic)? _____ days ...engage in moderate activity that caused you to breathe somewhat harder than normal (e.g. cycling, dancing, walking fast)? _____ days	
On average how many minutes did those activities last? _____ minutes	
Could you explain why you engage in physical activity or why you don't engage in physical activity (for example: pleasure, relaxation, health concerns, weight loss?) _____ _____ _____ _____	
The next few questions are related to the symptoms your experience everyday. A variety of symptoms will be listed and not all need necessarily apply to you. In the last seven days how often have you experiences the following symptoms:	
Being a very nervous person	1 2 3 4 5 All of the time None of the time
Felt tense or high-strung	1 2 3 4 5 All of the time None of the time

Anxious, worried	1 2 3 4 5 All of the time None of the time
Difficulty trying to calm down	1 2 3 4 5 All of the time None of the time
Nervous or jumpy	1 2 3 4 5 All of the time None of the time
Rattled, upset, flustered	1 2 3 4 5 All of the time None of the time
Hands shake when doing things	1 2 3 4 5 All of the time None of the time
Relax without difficulty	1 2 3 4 5 None of the time All of the time
So sad nothing could cheer you up	1 2 3 4 5 None of the time All of the time
Nervous	1 2 3 4 5 None of the time All of the time
Restless or fidgety	1 2 3 4 5 None of the time All of the time

Hopeless	1 None of the time	2	3	4 5 All of the time
That everything was an effort	1 None of the time	2	3	4 5 All of the time
Worthless	1 None of the time	2	3	4 5 All of the time
In the last four weeks, have you experienced any of the following:				
I can't apprehend what is around me clear and distinct enough.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true true at all
Sometimes my hearing is extremely fine, then I hear normal sounds extraordinarily loud and shrill.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true true at all
Sometimes I see with my eyes things that are invisible for other people.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true true at all
Now and then events, broadcasts etc. seem to be related to me although it is actually impossible.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true true at all
If someone speaks with long sentences, I have difficulties to grasp the meaning correctly.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true true at all

Even if I hear something very clear sometimes I am not sure if I just imagined it.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
When I look at normal objects like tables or chairs, they sometimes seem strange to me.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Sometimes I have the feeling that there is a conspiracy against me	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
I sometimes have made ugly remarks about other people.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
I often have to reflect over the meaning of very common words.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
I suppose that occasionally my thoughts, feelings, or behavior are directed by other beings.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Now and then I don't feel my limbs properly when I move.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
I feel as if my thoughts are watched over.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all

When I watch television, it is difficult for me to follow the pictures and words and to catch the story simultaneously.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Often I inadvertently hold certain sounds for voices.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Sometimes a part of my body seems to be smaller than it really is.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Sometimes it seems to me as if things around me are arranged in a peculiar meaningful way.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Now and then I am a little malicious.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Common words sometimes seem to have a peculiar strange meaning.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Sometimes I hear within me the voices of persons or spiritual beings (god, angel, devil), which are not present.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
When I look often details are much more striking to me than the whole thing (e.g., a finger from a hand).	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all

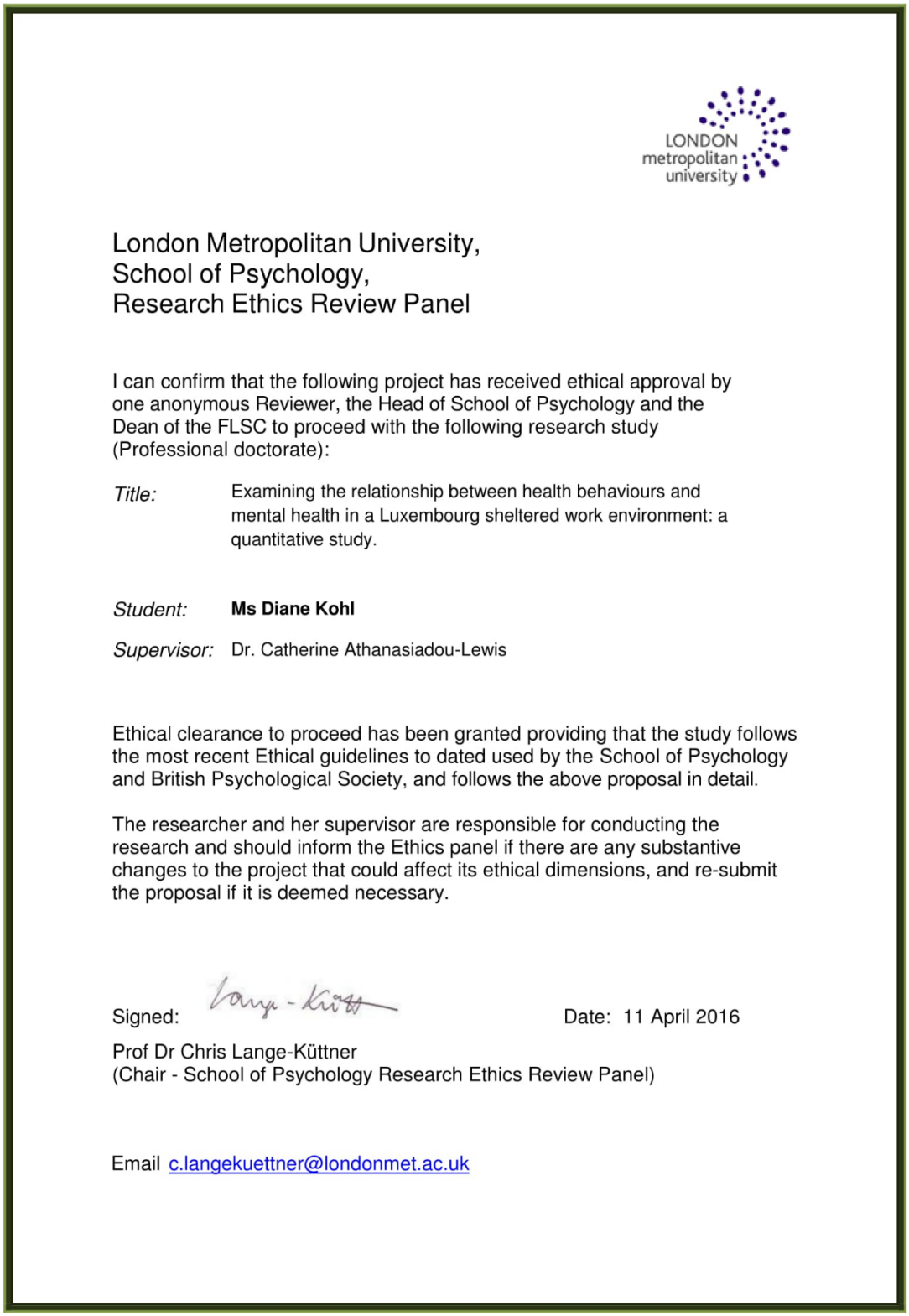
Sometimes I think that certain signs are given personally to me, which no one else can recognise.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
From time to time it does happen that I lie.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
I simply forgot many of my habits.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Sometimes I hear my 'inner voice' as distinctly as if someone actually is talking to me.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
For moments I got the feeling that my body is deformed.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Often I have a feeling that something strange and unusual is happening around me.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Sometimes I delay something, which I should do at once.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Sometimes I meet persons and only realize later that I know them well.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all

Now and then it seems to me as if my thoughts are withdrawn by someone.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
I often already loose my inner balance when someone around me is busy or talking.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Some people can read my thoughts in an unusual way.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Sometimes I am offended if things do not go my way.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
It is strenuous for me to participate actively in conversations and to add my own ideas.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Sometimes common, well-kwown noises sound to me changed in a curious way	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Under certain conditions I can read the thoughts of other people (e.g., by telepathy).	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
I have already felt being at the threshold of a significant revelation.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all

If someone speaks to me, I often have trouble grasping the meaning of the words correctly.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
Sometimes I have "black-outs" and don't know what happened around me at that moment.	4 Absolutely	3 Mainly true	2 Somewhat true	1 Not true at all
I have answered all questions as exactly as possible.	1 Absolutely	2 Mainly true	3 Somewhat true	4 Not true at all
Thank you for your participation in this study.				

9 Appendix C

Ethics Clearance



LONDON metropolitan university

London Metropolitan University,
School of Psychology,
Research Ethics Review Panel

I can confirm that the following project has received ethical approval by one anonymous Reviewer, the Head of School of Psychology and the Dean of the FLSC to proceed with the following research study (Professional doctorate):

Title: Examining the relationship between health behaviours and mental health in a Luxembourg sheltered work environment: a quantitative study.

Student: **Ms Diane Kohl**

Supervisor: Dr. Catherine Athanasiadou-Lewis

Ethical clearance to proceed has been granted providing that the study follows the most recent Ethical guidelines to dated used by the School of Psychology and British Psychological Society, and follows the above proposal in detail.

The researcher and her supervisor are responsible for conducting the research and should inform the Ethics panel if there are any substantive changes to the project that could affect its ethical dimensions, and re-submit the proposal if it is deemed necessary.

Signed: Date: 11 April 2016

Prof Dr Chris Lange-Küttner
(Chair - School of Psychology Research Ethics Review Panel)

Email c.langekuettner@londonmet.ac.uk