Professional interpreters as a subgroup of highly proficient bilinguals: a Dynamic Systems Theory (DST) approach

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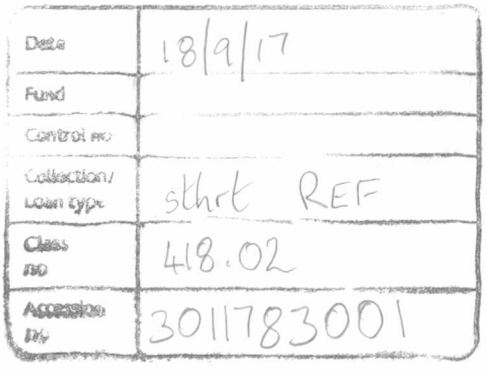
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Abstract

Professional interpreters are often described as "exceptional" bilinguals, however, there is very little information in the literature about the particulars of this kind of bilingual proficiency, or the conditions and life experiences resulting in its development (Valdés and Angelelli, 2003). Information about the bilingual proficiency of interpreters tends to be based on the guidelines and definitions of professional organisations, such as the AIIC A and B language classifications used in conference interpreting. However, with the exception of Thiéry's (1975) inquiry into "true bilingualism", the implications of these classifications have not been investigated in terms of what they correspond to in practice with respect to interpreters' bilingualism. Furthermore, the bilingualism of interpreters who specialise in other professional domains, such as the public services, has not yet been studied or described. At the same time, it is maintained that the contribution of studies looking to describe the bilingualism of interpreters and its development is not limited to the discipline of interpreting only, and may provide important insights into aspects of individual bilingualism more generally (Valdés and Angelelli, 2003).

The present project contrasts three populations of professional interpreters, AIIC AA and AB conference interpreters, and public service interpreters (PSIs) on the UK National Register. The comparison takes into consideration biographical and perceptional factors pertaining to bilingualism, and the interrelationships between biographies and perceptions. The three populations of interpreters were considered as a group of highly proficient bilinguals characterised by a set of additional properties, such as strong language maintenance motivation and intensive use of both languages. Data on linguistic biographies, attitudes and perceptions were collected from the three groups by means of a large-scale questionnaire (N = 400). Applying the principles of Dynamic Systems Theory (DST), the data were analysed in terms of the relationships between components of the bilinguals' external and internal environment.

An analysis of the findings for the three groups together provided evidence in support of the DST view of bilingualism with respect to the development of the bilingual language system over a lifetime. A comparison of the AIIC AA and AB interpreters revealed differences between the groups with respect to both biographical factors and perceptions, which were discussed in terms of their implications for bilingualism. In particular, the findings appeared to be in line with the literature on age and context of SLA and ultimate L2 attainment. At the same time, individual variation was observed within both the AA and AB groups, which may be considered evidence against a critical period for SLA. In addition, childhood linguistic factors were found to be important in shaping notions of identity and attachment to the languages among the two groups. The PSI and AIIC AB groups were found to be similar in terms of linguistic biographies, but with the present dominant linguistic environment of the PSI group skewed significantly towards the L2.

A comparison of PSI and AB groups in terms of perceptional factors pointed to the influence of the contextual factor of linguistic environment on bilinguals' internal perceptions. In particular, the linguistic environment was found to have an effect on perceptions of cross-linguistic interference, as well as language confidence.

Several directions for further research at the intersection of interpreting and bilingualism were identified on the basis of the results of the study. More generally, it is proposed that professional interpreters represent a valuable population for research into aspects of individual bilingualism, in particular in the context of a DST approach, and that the inclusion of interpreters of different types (e.g. conference, PSI) in such studies would only serve to enrich and broaden the scope of the research.

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1. Introduction

1.1 Introduction

The present project focuses on a group of bilinguals who are often referred to in the literature as "unique" or "exceptional" (e.g. Babcock and Vallesi, 2017; Valdés and Angelelli, 2003) – that of professional interpreters. While interest in this group within the field of bilingualism appears to be on the rise, as evidenced by the recent dedication of a special issue of the *International Journal of Bilingualism* (16:2, June 2012) to the topic of simultaneous interpreting, research at the intersection of the two disciplines has mostly focused on the cognitive processes involved in interpreting, or the psycholinguistic characteristics of interpreters. What has received far less attention is the nature of interpreters' bilingualism more generally – their lived experiences, biographical and personal characteristics. Indeed, as pointed of by Valdés and Angelelli (2003), literature on interpreters and interpreting has tended to assume a "perfect grasp" or "mastery" of the working languages, yet very little is known about the particulars of this assumed language proficiency, or the conditions that have led to its development. Furthermore, it must be noted that research on the bilingualism of interpreters has focused almost exclusively on conference interpreters, and the bilingualism of interpreters who work in other settings, such as the public services, has not yet been studied or described in a systematic way.

Information about the bilingual proficiency of interpreters tends to be based on the guidelines and definitions of professional organisations. In particular, within the field of conference interpreting, the International Association of Conference Interpreters (AIIC) classifies interpreters' active working languages as either A or B, where an A language is the "mother tongue or its strict equivalent", whereas a B language is taken to be a foreign language in which the interpreter is "perfectly fluent" (AIIC, 2017; see Chapter 4 for details). However, there has only been one detailed inquiry to date into the implications of these language classifications in terms of bilingualism: the work of Christopher Thiéry (1975) on AIIC interpreters with two A languages (i.e. two "mother tongues"). In his unpublished 1975 doctoral thesis on the topic Thiéry, himself an AIIC AA interpreter, described the bilingualism of a sample of this population in terms of biographical, personal and attitudinal factors (see Thiéry, 1978; 1982 for summary). Thiéry's aim was to understand what the AIIC AA classification corresponds to in terms of bilingualism and the characteristics and life experiences of this group, defined by him as "true bilinguals" (see Thiéry, 1978). Thiéry's pioneering study is unique not only because it represents the first attempt to probe assumptions about interpreters' bilingual proficiency, but it remains the only detailed description of the bilingualism of professional interpreters with respect to both biographical and attitudinal factors.

It is considered that the limited amount of research into interpreters' bilingualism and its development is an important gap in the literature at the interface of bilingualism and interpreting, and such studies have the potential to make a contribution to both disciplines. According to Valdés and Angelelli (2003), investigations of this kind can provide important information on such aspects of individual bilingualism as the contexts of language acquisition that affect ultimate second language attainment and, in particular, contribute to debates on the critical period in second language acquisition. As regards interpreting studies, inquiries into the linguistic backgrounds of different groups of interpreters may offer insights into questions such as who interprets in which situations, and what the characteristics of these interpreters are (*ibid*). In addition to these potential contributions, it is argued here that descriptive studies of the bilingualism of interpreters may provide other insights into the bilingualism of groups who are considered to be highly proficient in both languages, including into the relationships between external and internal (personal) contextual factors, and the dynamics between self-ascribed identity in the two languages and that ascribed by others.

1.2 Thesis aims and outline

The present dissertation aims to investigate some of the above questions by describing and comparing three populations of professional interpreters as bilinguals in terms of biographical factors, attitudes and perceptions. The specific populations included in the study are AIIC AA and AB conference interpreters, and public service interpreters (PSIs) on the UK National Register (NRPSI). By extending the scope beyond the domain of conference interpreting, the project aims to investigate the general question of what the characteristics of professional interpreters are as a group of highly proficient bilinguals, regardless of professional setting. At the same time, the division of the populations of interpreters into the above three groups makes it possible to explore several specific questions identified on the basis of the review of the literature, including questions raised by Thiéry's (1975) inquiry into the AIIC AA language classification, as well a number of the questions identified by Valdés and Angelelli (2003) (see Chapter 5, Section 5.1.1 for full list of research questions). In addition, the findings are examined in terms of their implications for bilingualism, with reference to recent theoretical developments in the field, in particular, the dynamic systems theory (DST) approach to second language development.

The thesis is divided into two main sections: a theoretical part (Chapters 2-4), which reviews the relevant literature, and an experimental part (Chapters 5-8), which sets out the research questions and study design, presents the findings and their analysis. **Chapter 2** focuses on individual bilingualism, explaining how the term is defined in the context of the present dissertation and introducing some fundamental issues and concepts. In particular, the multidimensional nature of bilingualism is discussed, and the dimensions that are relevant for the description of individual

bilingualism are identified. The Chapter also covers issues related to the bilingual person, including the unique nature of bilingual competence (e.g. Grosjean, 1989) and the relationship between bilingualism and biculturalism. Finally, the complex issue of degree of bilingualism is discussed, and it is explained in what sense bilingualism can be "measured"; in light of this, it is clarified what is meant by a high level of bilingual proficiency in the context of the present study. **Chapter 3** builds on the theory of bilingualism set out in the preceding Chapter, by introducing the theoretical framework of DST, which makes it possible to take into account the external and internal contextual factors that are relevant for the description of individual bilingualism, as well as their interaction over time. This Chapter is structured so at to, first of all, explain the origins of DST, which has its roots in mathematics, and how this approach has been applied in a more general way in the sphere of cognition and development. It is next explained what DST means when it is applied to the study of bilingualism, and why it is considered a relevant and useful set of principles in this context. Some specific examples of DST studies looking at aspects of individual bilingualism are considered, before explaining the implications of adopting this approach for the present project. **Chapter 4** concerns interpreting and bilingualism. First of all, interpreting is defined and the key domains are outlined, with a focus on the distinction between the settings of conference and public service interpreting. Next, an overview of the literature at the intersection of interpreting and bilingualism is presented, identifying the main trends and the areas that remain unexplored. In particular, it is observed that limited research has been conducted into the nature of interpreters' "exceptional" bilingualism and its development (Valdés and Angelelli, 2003). As a unique example of such a study, Thiéry's (1975) inquiry into "true bilingualism" is discussed in detail, and the questions raised by this study are identified. The Chapter concludes with an analysis of what is known about interpreters as a group of bilinguals, and a bilingual profile of this population is proposed on the basis of the theory set out in the preceding chapters.

Chapter 5 formulates the research questions to be investigated as part of the present project, and sets out the hypotheses on the basis of the literature covered in the theoretical part of the thesis. The study design is explained and described, as are the participants involved in the study. Details are provided on technical aspects of data processing and analysis, including the software and statistical methods used. **Chapter 6** sets out the results for all three groups of interpreters. This Chapter is intended to be a presentation of the findings only, and does not include any analysis of the results on the basis of the literature. **Chapter 7** discusses the implications of the findings in light of the research questions and hypotheses set out in Chapter 5, with reference to the literature. The structure of the discussion follows the order in which the research questions are presented. **Chapter 8** summarises the key findings and their implications, identifying the main conclusions drawn from the study. A number of directions for further research are identified, with reference to some specific methodological recommendations. Finally, some of the strengths and limitations of the present study are discussed.

1.3 Terminology

The following is a list of some of the key terms and abbreviations that are used frequently throughout the present dissertation.

AIIC - International Association of Conference Interpreters (see Chapter 4).

Attrition – defined here as the "non-pathological decrease in proficiency in a language that had previously been acquired by an individual" (Schmid and Köpke, 2004) (see Chapter 2, Section 2.2).

Bilingualism (bilingual) – in the context of the present dissertation, the term "bilingualism" is taken to mean individual bilingualism. Bilinguals are defined here as "those who use two or more languages (or dialects) in their everyday lives" (Grosjean, 2010: 4) (see Chapter 2, Section 2.1.2).

Code-switching - defined here as the alternate use of two languages by a bilingual, i.e. when a speaker changes to another language for a word or phrase, and then reverts back to the original language (Grosjean, 2010) (see Chapter 2, Section 2.2).

DMM – Dynamic Model of Multilingualism (Herdina and Jessner, 2002). A model of multilingualism developed on the basis of DST principles (see Chapter 3, Section 3.3.2).

DST – dynamic systems theory. A theory concerned with the study of change over time, which has its origins in mathematics. In the context of applied linguistics, DST refers not to a single theory, but to a set of general principles, including continuous temporal evolution, complete interconnectedness and sensitive dependence on initial conditions (see Chapter 3).

Highly proficient bilingual – bilingual proficiency is taken to be a relative concept, and hence where the bar is set for 'high' proficiency is also relative (e.g. Goto Butler, 2013). Within the context of the present dissertation, the term is defined as a function of language use and refers, in particular, to bilinguals who use both languages regularly in both formal (social, family) and informal (professional, educational) settings (see Chapter 2, Section 2.4.2 for full characterisation).

Interference – refers to cross-linguistic interference between a bilingual's languages. Here, interference is taken to mean the involuntary influence of one language on the other (after Grosjean, 1982) (see Chapter 2, Section 2.3.1).

Interpreting (interpreter) – interpreting is defined broadly as "interlingual, intercultural oral or signed mediation, enabling communication between individuals or groups who do not share, or do not choose to share, the same language(s)" (Pöchhacker and Shlesinger, 2002: 2-3). However, in the context of the present dissertation, the term "interpreter" is used to refer to professional spoken language interpreters specifically (see Chapter 4).

Interpreter's A and B languages – used in the context of conference interpreting to refer to the interpreter's active working languages. According to the AIIC, an A language is the interpreter's "mother tongue or its strict equivalent", while the B language is a foreign language in which the interpreter is "perfectly fluent" (see Chapter 4). The terms "AA interpreter" and "AB interpreter" are used to refer to AIIC interpreters with these language combinations.

L1 – a bilingual's first language.

L2 – a bilingual's second language.

Mother tongue – defined broadly as an individual's "first linguistic experience during the formative years of language development" (Hamers and Blanc, 2000: 2). As used here, the term "mother tongue" is taken to refer to an individual's first language. However, it is recognised that this term carries certain emotional connotations and, in particular, associations with childhood (see Chapter 2, Section 2.1.1).

Native language – as used here, the term "native language" is taken to refer to an individual's first language. No assumptions are made regarding proficiency in this language, or the individual's cultural identity. It is also not assumed that individuals can have only one native language (see Chapter 2, Section 2.1.1).

Native-like – in a general sense, the term native-like competence is taken to refer to speakers who are distinguishable from native speakers in small ways (Gass and Glew, 2013) (see Chapter 2, Section 2.1.1 for more technical definition and discussion).

NRPSI – UK National Register of Public Service Interpreters (see Chapter 4).

SLA – second language acquisition.

SLD – second language development. A general term used to refer to changes in the bilingual language system over time, which include the acquisition, attrition and maintenance of the languages (see Chapter 3, Section 3.3).

PSI – public service interpreter or public service interpreting (see Chapter 4).

True bilingualism – definition proposed by Thiéry (1975) as a more formal equivalent of the AIIC AA language. A true bilingual is defined as "someone who is taken to be one of themselves by the members of two different linguistic communities, at roughly the same social and cultural level" (Thiéry, 1978: 146) (see Chapter 4, Section 4.2.2).

2. Bilingualism

What is bilingualism? At first glance, the concept appears fairly straightforward. The Oxford English Dictionary, for example, defines bilingualism simply as "fluency in or use of two languages". This initially seems intuitive; however, even a little probing reveals that this apparent simplicity is, in fact, deceptive. Indeed, such are the complexities involved in defining bilingualism that, currently, no universally agreed-upon definition exists, with the concept interpreted differently in different fields, such as second language acquisition (SLA), psychology or education (Gass and Glew, 2013: 270).

What is it that makes bilingualism so problematic to define, and where do the issues arise? To illustrate the challenges involved, consider the two popular definitions below:

"Bilingualism (noun): the ability to speak two languages equally well" (Collins English Dictionary online, 2017);

"Bilingualism (noun):
1. the ability to speak two languages
2. the frequent use (as by a community) of two languages
3. the political or institutional recognition of two languages"

(Merriam Webster Dictionary online, 2017)

Immediately, questions begin to arise as to what, exactly, is covered by the term "bilingualism". Does it refer to individuals, or to communities? Is speech an inherent part of bilingualism and, if so, where does that leave nonverbal language, such as sign language? Does bilingualism require equal proficiency in two languages, or is habitual use of two languages sufficient? Finally, what exactly is meant by speaking a language "well"? If bilingualism is to be defined as a function of competence or fluency, it is not clear where one draws the line – in other words, where bilingualism 'starts' (Edwards, 2013: 5).

In fact, bilingualism can refer to both spoken language and nonverbal language: people who are able to use a sign language in addition to spoken language are bilingual, as are deaf people who use two different types of sign language (e.g. Gianico and Altarriba, 2013). Bilingualism can be approached from both social and individual perspectives. Hamers and Blanc (2000) even propose a terminological distinction to differentiate between the two, with the term "bilingualism" used to refer to the study of languages in contact at the societal level, and "bilinguality" – the individual level. Since the term "bilingualism", in its most general sense, can refer to all of these things – the individual language system, interpersonal relations and intergroup relations - the study of bilingualism is vast, encompassing numerous disciplines, such as sociology, psychology,

linguistics, cultural studies, neurolinguistics and education. Indeed, a multidisciplinary approach is often required to understand the complex, mutlidimensional (Hamers and Blanc, 2000) phenomenon that is bilingualism.

Even though the focus of the present thesis is individual, spoken language bilingualism, the social and cultural context cannot be ignored. The group and individual levels are inextricably linked and influence each other at all levels. For example, individual attitudes towards a language can shape the linguistic landscape at a community level (e.g. "English-only" movements in America, see Peréa and García Coll, 2013). On the other hand, individual pragmatic competence is shaped by implicit cultural pragmatic conventions (e.g. Paradis, 2004: 18), while government policies on bilingual education, for example, have a direct impact on individuals' linguistic environment (e.g. Garcia, 2013), affecting how and in what setting languages are used. Furthermore, individual bilingualism is about much more than the ability to speak or write in two (or more) languages – rather, it is a "socially based communication system" (Vega, 2013: 186), and as such cannot be understood outside the social and cultural context in which communication takes place (e.g. Larsen-Freeman, 2012).

The aim of this Chapter is to introduce some fundamental definitions and concepts related to individual bilingualism, which will form the basis of the subsequent theoretical and methodological chapters. First of all, bilingualism is defined and the key dimensions of bilingualism are outlined. In particular, the idea of a bilingual profile – a way of describing bilingualism – is introduced. Next, attention is turned to the bilingual person and the unique nature of bilingual competence, and it is argued, with reference to recent findings pointing to the interconnected nature of the bilingual language system, that bilinguals are not two monolinguals in one person (Grosjean, 1989). Finally, the complex issue of degree of bilingualism is discussed, in terms of what it means to say that a bilingual is "advanced" or "highly proficient". The debate on measuring or defining bilingual proficiency is still ongoing in applied linguistics; indeed, a recent special issue of the *International Journal of Bilingualism* (15(2), 2011) has been dedicated to this topic (see Daller, 2011 for introduction and overview). There are no simple answers, and an in-depth inquiry into this topic is beyond the scope of the present dissertation. Therefore, the last part of the present Chapter limits itself to a clarification of what is meant by highly proficient bilingualism in the context of the present dissertation, on the basis of the literature surveyed, and is not intended as a general definition of advanced bilingual proficiency.

2.1 Defining individual bilingualism

Definitions of bilingualism can essentially be divided into two types – those based on competence and those based on language use. The former correspond to earlier attempts to define bilingualism,

whereas the latter are in line with a more functional view of language, concerned instead with the purpose bilingualism serves and the context it functions in. Such an approach is the one that currently prevails in the field and, as explained in this Section, this is the view adopted in the present dissertation.

However, since the earliest definitions of bilingualism focused on competence in the two languages and, in particular, used the native as a standard against which this competence is to be measured, some attention needs to be given, first of all, to the fundamental concept of the native speaker.

2.1.1 The problem of defining the native

The idea of the native speaker is another concept the apparent simplicity of which is deceptive. The term is widely used in applied linguistics, yet no single, universally-accepted definition exists (see Faez, 2011 for an overview of different approaches to defining the native speaker concept). Part of the problem is down to the fact that the term "native speaker" actually encompasses not one, but several concepts, as well as numerous underlying assumptions. For example, the idea of language inheritance is implicit in the concept of the native speaker, that is, a native speaker is often defined as someone who has acquired the language in question from birth (Gass and Glew, 2013: 266). On the other hand, the term native speaker presupposes language expertise – it is often taken to refer to a group of people who "have a special control over a language, insider knowledge about 'their' language" (Davies, 2003: 1). Furthermore, the idea of the native speaker includes the notion of belonging to a linguistic community, being part of a culture or social group, both in terms of the individual's own opinion about what his/her native language is, as well as external validation – acceptance/ascription by others (e.g. Davies, 2003).

Problems arise when either the concept of the native speaker is reduced to only one of the dimensions, or when assumptions are made about what the various dimensions imply. For example, it cannot be assumed that language inheritance implies expertise. This is clearly not always the case: being born into a group does not automatically imply being able to speak the language well (e.g. Rampton, 1990). Moreover, some people acquire a language from birth and subsequently forget it – it is unlikely that such individuals would be considered native speakers of that language. Therefore, the concept of the native speaker cannot be defined as a function of language inheritance alone. Language acquisition and use is far removed from the theoretical "ideal speaker-listener in a completely homogeneous speech-community" (Chomsky, 1969: 3). It is much more complex, with most individuals acquiring different languages to varying degrees over a lifetime. In situations where individuals find themselves in different linguistic environments over a lifetime, where the use of their native language is limited and accompanied by the acquisition and intensive use of a different language, it is not always clear what the native language is, or even who a native speaker

is (Gass and Glew, 2013). Add to this the different varieties of a given language, as well as the cultural aspects of language use, and the situation becomes more complex still (Faez, 2011).

Possibly the most problematic aspect of the native speaker concept is the idea of native competence. If it were possible to define native competence, then a native speaker could be defined as someone who meets this standard in the language in question. The problem is, however, that native competence cannot be defined in practice. Theoretically, native competence is taken to mean "whatever it is that native speakers possess", implying that any native speaker can be taken to stand for all native speakers (see, for example, Cook, 2013 for discussion). However, in practice, competence varies greatly even within a monolingual population, thus making native competence impossible to define (e.g. Hamers and Blanc, 2000) and entirely relative. In other words, due to this individual variation, it is not possible to set a global standard that all monolingual native speakers meet, which can be used as an operational definition of native competence. Even if a single parameter were taken as a measure, such as grammar or vocabulary size, competence would still vary greatly in a monolingual population, depending on a variety of factors, such as education or aptitude (see DeKeyser, 2013 for discussion on variability among native speakers). The issue is so complex, that there does not currently exist an operational definition of even minimal native-level competence, or what it is that differentiates the native from the non-native (Faez, 2011). However, despite the fact that native competence evades definition in a general sense, the idea of the native speaker as an ideal or standard-setter prevails nonetheless, both in real life situations and applied linguistics (Aneja, 2016).

Thus, as no definition of native competence exists, a native speaker can't be defined on the basis of linguistic competence alone. What is more, any definition on this basis would essentially reduce the native speaker to a theoretical, abstract entity, entirely detached from the social context in which s/he functions. Such an approach is problematic, as illustrated by the following example. In an analysis of several case studies of international speakers of English, Brutt-Griffler and Samimy (2001) found that native speaker identity is determined by others on the basis of social factors - "preconceived notions of what a 'native speaker' should look like or sound like", and not within a linguistic construct of the native speaker. In other words, while linguistic factors such as accent may be used by members of a community to make judgements about whether someone is a native speaker of their particular language (or dialect) or not, social and cultural factors are at least of equal importance. Furthermore, in the same study it was found that self-ascribed native speaker identities do not necessarily correspond to external validations by the community (*ibid*). This suggests that neither self-ascription nor ascription by others can be used alone to define native speaker identity.

Taken together, the foregoing implies that the concept of the native speaker is too complex to be defined as a function of a single variable. It is also too complex to be considered a static concept. The most satisfactory approach to thinking about the native speaker, therefore, appears to be as a function of several key overlapping components, such as (relative) language expertise, language inheritance and language affiliation (Rampton, 1990), or proficiency, self-ascription and ascription by others (Davies, 2003). That is, the idea of the native speaker does not make sense outside of a particular context. It is a function of a set of internal (affiliation) and external (proficiency as perceived by others; acceptance by others) factors. Furthermore, defined as such, the idea of the native speaker is dynamic, as the various components, with the exception of language inheritance, can change over time.

Finally, before proceeding to discuss the topic of bilingualism, some terminological issues need to be addressed. As the present thesis concerns bilinguals – those who know and use more than one language - it is often necessary to distinguish between the individual's first and second language, for the purpose of discussion and comparison. Thus a certain degree of simplification is required. For this reason, the term "native language" as used in the context of the present thesis will be taken to mean an individual's first language, or L1. No assumptions will be made regarding proficiency in this language, relative or otherwise, or the individual's social or cultural identity (self-ascribed or ascribed by others). It is also not assumed that individuals can have only one first language, but such cases will be mentioned separately to avoid confusion. A separate mention is needed for the related term "mother tongue", which has been widely recognised as somewhat problematic (Hamers and Blanc, 2000: 2). At the psychological level, it can be defined as an individual's "first linguistic experience during the formative years of language development" (*ibid*), and it is often taken to be synonymous with the native language. The problem with using the term "mother tongue" in this way is that it is a less neutral and much more emotionally loaded term, invoking images of childhood, mothers, and the associated emotional response (e.g. Hoffmann, 1991). For this reason, throughout the present thesis, the term "mother tongue" shall be taken to also refer to an individual's first language, however, in light of the stronger emotional/cultural connotations it implies, the term will not be used unless it is specifically intended to invoke these associations, or unless it forms part of another definition (for example, the AIIC language classifications discussed in Chapter 4).

2.1.2 Competence vs. language use

As previously stated, the earliest definitions of bilingualism tended to focus on competence in the two languages. One of the most famous early examples of such a definition is that proposed by Bloomfield, who defines bilingualism as the "native-like control of two languages" (1935: 56). The term "native-like" or "near-native" competence is used to refer to speakers who are distinguishable

from native speakers in small ways (Gass and Glew, 2013: 266). In a more technical, experimental sense, native-like (near-native) competence is defined in terms of a control group of native speakers, i.e. performance in the language in question must fall within the range of monolingual control subjects in order to be considered native-like (Birdsong, 2005). Therefore, the idea of native-like control of two languages is something that, like native competence itself, is entirely relative, depending on what it is being compared to, which parameters are included in the comparison, and where the cut-off point for "native-like control" is set by the researcher. Furthermore, setting the bar at "native-like control" seems arbitrary and excludes a vast group of people - those who fall short of the prescribed (ambiguous) standard in their two languages, yet are not monolingual. Setting such a standard also raises the question of whether one can cease to be bilingual: if the prescribed standard is attained, and then subsequently lost in either language, due to reduced use of that language, can the individual then still be considered bilingual? Finally, implicit in Bloomfield's definition is the idea that using the native monolingual standard as a benchmark against which to measure bilingualism is appropriate. In other words, it is assumed that bilingual competence is not a unique phenomenon, but that bilinguals effectively function as two monolinguals in one person. However, this does not appear to be the case, with evidence from studies on cross-linguistic influence in bilinguals seeming to support Grosjean's (1989) famous claim that bilinguals are not the sum of two monolinguals in one person (see Section 2.3.1 below for details and discussion).

Bloomfield's (1935) definition is an example of a maximalist viewpoint, and later competence-based definitions of bilingualism became much broader and more inclusive. For example, Haugen (1953) defined bilinguals as individuals who can produce complete meaningful utterances in a second language (cited in Goto Butler, 2013), while Macnamara defined bilinguals as "persons who possess at least one of the language skills [speaking, writing, listening, reading] even to a minimal degree in their second language" (Macnamara, 1967: 59-60). Yet, even with this more inclusive approach, definitions based on competence are not generally considered operational by most researchers (Hamers and Blanc, 2000). Firstly, this is because the definitions remain ambiguous, since the "minimal degree" of skill required is not specified, and it is not entirely clear what is meant by a complete meaningful utterance. Secondly, and perhaps most crucially, all competence-based definitions of bilingualism effectively reduce bilingualism to the linguistic dimension only, and isolate language and the bilingual person from the context in which they function, viewing both as abstract entities (Hoffmann, 1991). What the bilingual uses his or her languages for - a key consideration in the study of bilingualism (e.g. Mackey, 2000) - is entirely neglected when the focus is on competence alone.

The alternative approach is to focus not on what a bilingual individual can do (competence), but on what s/he uses her/his languages for, and in what setting. In other words, to define bilingualism as

the use of two languages (e.g. Grosjean, 2010). Such a viewpoint immediately situates the individual in his/her cultural and social context, thereby avoiding the problem of reducing the bilingual person to the purely linguistic dimension. Moreover, defining bilingualism on the basis of language use eliminates the requirement to define competence in an absolute way. For these reasons, this is the approach currently adopted by many researchers in the fields of bilingualism and SLA. The definition of bilingualism that shall be adopted in the present thesis is that proposed by Grosjean:

"Bilinguals are those who use two or more languages (or dialects) in their everyday lives" (Grosjean, 2010: 4).

What are the implications of defining bilingualism in this much more general way? An immediate corollary of the above definition is what Grosjean has called the "complementarity principle", namely: "Bilinguals usually acquire and use their languages for different purposes, in different domains of life, with different people. Different aspects of life often require different languages" (Grosjean, 2010: 29). This highlights the complexity of bilingualism – the great number of possibilities, combinations of "diverse individual and linguistic conditions … nested in larger societal contexts which cause varying degrees and types of language contact" (Goto Butler, 2013: 112). Furthermore, defining bilingualism in this way – as the use of two or more languages in different contexts and for different purposes – emphasises the fluid nature of bilingualism. Instead of being viewed as a static phenomenon, it is conceived as something that is undergoing constant change over time, due to the continuous interaction of sets of external and internal environmental factors (see Section 2.2 below for details; also, Chapter 3). This recognition of the dynamic nature of bilingualism and the importance of contextual factors in SLA is in line with recent developments in the field of applied linguistics, calling for a dynamic systems or complexity theory approach to bilingualism (see, for example, Larsen-Freeman, 2012). This idea of viewing bilingualism as a (complex) dynamic system is discussed in detail in Chapter 3. However, first of all, the key contextual factors that shape bilingualism over time need to be identified, in order to narrow down and make operational the very broad definition of bilingualism set out above.

2.2 Describing individual bilingualism

It has long been recognised that bilingualism is "multidimensional" (e.g. Hamers and Blanc, 2000: 25). In other words, that there are a number of key contextual and individual factors that contribute to and shape bilingualism. These include aspects such as the age and context of language acquisition, (relative) competence in the two languages, the bilingual's linguistic environment and cultural identity (see Hamers and Blanc, 2000; Goto Butler, 2013, for a summary of the dimensions historically considered relevant by researchers). Over the years, researchers have attempted to

classify bilinguals on the basis of one or a combination of these dimensions, resulting in classifications such as early/late bilinguals (age of acquisition); balanced/dominant bilinguals (relative competence) and simultaneous/sequential bilinguals (order in which the languages were acquired) to name but a few (e.g. Goto Butler, 2013). The problem with such an approach is that the multidimensional phenomenon of bilingualism is reduced to only a couple of its key dimensions, resulting in an oversimplification and subsequent failure to capture its complexity.

Acknowledging that bilingualism is multidimensional implies that it can only be understood by taking into account all of the significant factors simultaneously, including both contextual, personal and linguistic dimensions (Hamers and Blanc, 2000: 25). At the same time, some degree of simplification is needed, otherwise the number of interacting factors would be overwhelming. A solution is to identify the key factors – those that are widely recognised as relevant by scholars in the field – and describe the specific bilingual situation in question on the basis of these factors, thus producing a bilingual profile of the individual or group. While some details and terminology may vary, there is a general consensus as to which dimensions are considered relevant for such a description, in other words, which factors are key in shaping individual bilingualism. These can be broken down into the following broad and overlapping categories: (1) age and context of language acquisition; (2) (relative) competence in the two languages; (3) state of the language system, that is, whether each language is being acquired, maintained or forgotten; (4) domains and context of language use; (5) the bilingual's external environment (linguistic, cultural, social); (6) the bilingual's internal environment (e.g. motivation, attitude towards the languages, identity, education, aptitude, personality) (see, for example, Goto Butler, 2013; Grosjean, 2010; Hamers and Blanc, 2000; Hoffmann, 1991).

The bilingual profile therefore represents a way of describing bilingualism at a specific moment in time. The various components are not separate – they interact and influence each other, shaping the individual's bilingualism over time. Examples of some the ways in which the various contextual, personal and psychological factors identified interact are given below, with an emphasis on the global effects of these factors on the development of bilingualism over time that have been identified in the literature.

(1) Age and context of language acquisition

The effect of age on L2 acquisition has received much attention in SLA and applied linguistics more generally, yet many questions remain unanswered. The age factor has been approached from various perspectives, in particular in terms of its effect on the route of acquisition, the rate of acquisition and the ultimate attainment of L2 proficiency, with the latter accounting for the majority of the research (see Goto Butler, 2013 for summary of main findings). Perhaps the most

contentious issue in terms of the influence of age of SLA on ultimate L2 attainment is whether there exists a "critical period" for L2 acquisition – defined as a limited developmental window during which the attainment of native-like[1] proficiency in the language is possible (e.g. Goto Butler, 2013: 123). The concept of a critical period, if it exists, implies a specific age range during which the capacity to learn a second language declines, and a biological reason for this decline (see, for example, DeKeyser, 2013, for historical discussion and summary of core issues). However, currently, there is no consensus as to the start and end points of the critical period, nor any biological evidence of its existence, and both of these facts are cited as arguments against the critical period hypothesis by some researchers (e.g. Birdsong, 2005). Therefore, the more neutral and general term "age effects" is preferred, as it does not carry the same theoretical implications as the idea of a critical period (DeKeyser, 2013: 443).

What researchers do agree on are two main things: firstly, that there is a strong negative correlation between the age of L2 acquisition and many aspects of grammar and pronunciation, and secondly that some individuals do pass for native speakers in everyday interaction, despite learning the language in adulthood (DeKeyser, 2013: 445). In particular, some studies have shown that late learners of an L2 are able to attain native-like proficiency, even when it comes to accent (e.g. Bongaerts et al., 2000). Taken together, what do these findings imply in terms of the effect of age of SLA on the development of the bilingual language system over time and, in particular, what predictions can be made on the basis of the age factor? First of all, the strong negative correlation between age of acquisition and ultimate attainment throughout the lifespan is undeniable according to the literature. Thus, at a global level, the probability of attaining native-like proficiency in the L2 does decrease with age. However, the fact that some individuals do seem to attain this level of proficiency despite learning the language later in life suggests that there is always the potential to attain native-like proficiency, in other words, one is not forever constrained by age effects. Furthermore, the importance of the effect of individual and contextual factors on L2 attainment cannot be underestimated (e.g. Birdsong, 2006). Indeed, some studies suggest that, in certain cases at least, some of these factors play a greater role than age in terms of learners' ultimate L2 attainment. For example, Pfenninger and Singleton (2016) found that motivation had a greater effect than age of onset in a study of 200 Swiss learners of English as a foreign language. Therefore, while the age of SLA can be used to make predictions about individual bilingualism at a global (population) level, it is important not to make assumptions about individuals on the basis of general trends.

The context of acquisition - in particular, the type of input and interaction the learner is exposed to - has also been found to be a significant factor in second language learning (e.g. Mackey, Abbuhl

[1] While it is the view of the author that bilinguals cannot be reduced to two monolinguals in one person, comparing bilinguals with monolingual natives can be useful in some contexts (e.g. Birdsong, 2005).

and Gass, 2012; see also Hummel, 2014 for an overview of language learning contexts). Research on this topic has ranged from the very specific, such as the effect of particular classroom or study techniques on L2 acquisition (see, for example, Williams, 2012 for an overview of classroom research in SLA), to the influence of broader categories of learning contexts on aspects of second language acquisition. For example it has been found that study abroad contexts tend to favour the acquisition of L2 pragmatics, compared with contexts where learners do not spend time in their L2 environment (e.g. Bardovi-Harlig, 2012). While a discussion of the impact of different learning contexts on SLA is beyond the scope of the present dissertation, it can generally be surmised that naturalistic learning contexts (i.e. learning by immersion) provide not only more opportunities to use the language in question (better quality and quantity of input), but also put the learner in contact with the L2 culture (e.g. Hummel, 2014). For these reasons, learning by immersion in the target country is generally considered to be the ideal language learning setting (e.g. Sieloff Magnan and Lafford, 2012).

However, the age and context of L2 acquisition do not only influence the dimension of competence. How and in what setting the bilingual's languages are acquired, and the bilingual's childhood linguistic environment more generally, have a profound impact on the individual's identity, as well as emotional response and attitude towards his/her languages. For example, key considerations include whether the speech communities of both languages were present in the bilingual's linguistic environment in childhood (Hamers and Blanc, 2000), as well as whether the languages in question were acquired in the home, or in a formal, educational and emotionally neutral setting (e.g. Martinovic and Altarriba, 2013; Dewaele, 2010). The former is important because it shapes the individual's cultural identity, and the shared childhood cultural references with other members of that culture. The latter is significant because the context of SLA, as well as whether the L2 was acquired early or late in life, can play a key role in the way an individual's emotions are represented, with the native language often used to code childhood experiences, which shape future thoughts and feelings (Martinovic and Altarriba, 2013: 294). In support of this, studies have shown that bilinguals tend to prefer to answer questions in their native language when discussing emotional topics, and they also tend to demonstrate greater affect when speaking in their native language, (*ibid*). In particular, Dewaele found that bilinguals typically experience swear/taboo words with greater force in their L1, and tend to perceive the phrase *I love you* as having more emotional weight in their L1 compared with other languages (2004 and 2008 respectively). However, other variables were also found to be important in both studies, such as the age and context of L2 acquisition, (self-perceived) language dominance and L2 proficiency (*ibid*). For example, in the 2004 study, Dewaele observed that those who acquired the L2 in a formal instructed setting gave lower ratings on emotional force to swear/taboo words in the L2 compared with those who acquired the language in question in a naturalistic setting. The emotional force of such words in the L1 was also found to weaken when the L1 was no longer the dominant language

of the speaker, whereas the scores on emotional force for L2 were higher among participants who acquired the L2 at a younger age, or were more proficient in the language. These findings suggest that, while the childhood linguistic environment plays a key role in shaping bilinguals' emotional response to their languages, this relationship between language and emotions continues to evolve over the lifespan, under the influence of a variety of contextual factors.

What is more, research on bilingual memory has shown that aspects of bilinguals' experience seem to be language-specific in terms of how these experiences are retrieved (Javier, 2007: 34). Further, if the events in question were emotionally distressing, it appears that this emotional response is also associated with the language in which this situation was experienced by the individual. For example, Javier (2007) discusses several such cases, including the case of a patient who refused to speak her native language, Spanish, choosing instead to speak English and adopt an identity that reflects her idea of a successful woman in an English-speaking community. In her mind, Spanish was associated with negative events in her past, when she was emotionally neglected and abandoned by her mother (*ibid).* This highlights the strong link between language, culture and identity. Along similar lines, Javier (2007) mentions cases of adopted children who report not to remember their native language, or anything of their experience associated with that language. Such cases show that the context in which a language was acquired – in particular, if acquisition took place in early life – forms profound emotional associations with the language in question. This, in turn, has an indirect impact on proficiency in the languages, as negative associations with one language can result in its subsequent disuse, as well as on the bilingual's choice of identity.

(2) Competence in the two languages

Attention has already been drawn to the fact that defining and measuring competence in a language is highly problematic, even in the simpler case of monolingual speakers (see Section 2.1.1 above). Bilingualism, of course, involves two linguistic (and pragmatic) competences and the relationship between them, introducing further levels of complexity. The problematic topic of measuring bilingualism, and in what sense this is possible, is discussed in Section 2.4 of this Chapter. The aim of this Section is to introduce some general ideas and terminology, and emphasise the importance of taking contextual factors into account when approaching the issue of bilingual competence.

The idea of bilingual competence can be approached from two related perspectives. First of all, in terms of the relationship between the two languages, i.e. which of the bilingual's languages is stronger and which is weaker, or if they can be taken to be more or less equal. Historically, researchers have been interested in classifying this relationship between the two languages in terms of language 'balance' and 'dominance' (e.g. Hamers and Blanc, 2000: 27). As pointed out by Hamers and Blanc, a balance between the two languages does not imply a high level of proficiency

in the languages in question – merely that the level of proficiency attained is more or less equal in both (*ibid*). Secondly, bilingual competence can be approached from the point of view of degree of bilingualism, i.e. how proficient the bilingual is in relation to other bilinguals. As argued in Section 2.4 below, the notion of degree of bilingualism is entirely relative and, in particular, where the bar is set for 'high proficiency' is often arbitrary (e.g. Goto Butler, 2013: 115).

Both relative competence and degree of bilingualism only make sense in context, when it is taken into account what the bilingual uses his/her languages for, and in what setting. For example, relative competence in the languages is highly domain-specific, and it has been found that bilinguals can be balanced in some domains, but not in others, which is known as 'domain specificity' (e.g. Grosjean, 2010; 1989). Similarly, a bilingual who only uses one of his/her languages in informal contexts may be considered highly proficient in informal social settings, but not necessarily in settings where a more formal register is required. Thus, bilingual competence is entirely relative, depending not only on which aspects of competence are taken into account (e.g. pragmatic, linguistic, grammar, vocabulary), but also in terms of the domains of language use considered. What is more, since bilingual proficiency is shaped by the dynamic factors of domains and context of language use, proficiency in each language and the balance/dominance relationship between them also fluctuate over time (see Section 2.4 below; also, Chapter 3).

(3) The state of the language system

This refers to whether each of the bilingual's languages is being acquired, maintained or forgotten. A combination of these things is usually taking place at any given moment in time, depending on the influence of the bilingual's external and internal environment (see (5) and (6) below for details). For example, a bilingual who has moved to a country where the dominant linguistic environment is his/her L2 and contact with the L1 is limited is likely to be experiencing both L2 acquisition and L1 attrition, at least with respect to some aspects of each language system.

A key related concept is that of the 'stability' of the language system, in other words, whether the system has reached a (temporary) state of equilibrium, or if it is undergoing drastic change and restructuring. This idea of changes of state over time, and why it is conceptually important for the study of bilingualism, is covered in Chapter 3. However, to illustrate what is meant, a good example to consider is a learner's interlanguage (IL). Here, the IL is defined as "a linguistic system situated at some point between the native language and the target language" (Schrauf, 2013: 111). While the language in question is being actively acquired, the IL can generally be considered a very unstable system, as reflected in the high degree of variability in the learner's performance (e.g. Larsen-Freeman, 1997). On the other hand, it has been observed that a learner's IL does not continue developing indefinitely and, at some stage, a plateau is reached, known in SLA as the

phenomenon of 'fossilization' (Selinker, 1972). This concept was originally defined by Selinker, based on his observation that the majority of second language learners do not achieve "native-like" competence in their second language, as follows: "fossilization, a mechanism which ... underlies surface linguistic material which speakers will tend to keep in their IL productive performance, no matter what the age of the learner or the amount of instruction he receives in the TL" (*ibid*: 229). Fossilization in SLA is characterised as a "permanent lack of mastery of a target language", despite a favourable learning environment and adequate motivation to improve (Han and Singleton, 2004: 4; see also Han, 2012 for an overview of the historical perspective and summary of core issues). While the permanence of this cessation of learning has not been conclusively demonstrated (Ortega, 2013: 135) and, indeed, it is argued in Chapter 3 of the present dissertation that there are no permanent states in language development, a fossilized IL is certainly very resistant to change, and as such is an example of a highly stable state reached by the language system (e.g. Larsen-Freeman, 1997).

(4) Domains and context of language use

By virtue of the definition of bilingualism as the use of two (or more) languages, what the bilingual uses his/her languages for, with whom and in what setting defines bilingualism and shapes its development over the lifespan. We have already seen how the domains of language use impact relative competence in each language, resulting in domain specificity. In (5) below, it is explained how external contextual factors, such as the bilingual's linguistic and cultural environment, affect various aspects of the bilingual language system. To avoid repetition, this section is used to draw attention to several important aspects of language use which are not covered expressly in section (5) on contextual factors.

First of all, the frequency of language use is a key consideration, due to what is known as the activation threshold hypothesis (e.g. Paradis, 2004). According to the activation threshold hypothesis, bilinguals' ability to retrieve both lexical items and grammatical structures is affected by how frequently the particular item is used (activated) in each language. The 'activation threshold' of an item is therefore considered to be a function of frequency: the less often an item is called upon, the more resources are subsequently required to retrieve it (*ibid*: 28). It has been shown that disuse of a language system tends to affect lexical items in the first instance, but over time grammatical knowledge is also affected (e.g. Köpke, 2007; Paradis, 2004). For this reason, frequency of language is considered to be an important predictor of L1 attrition (e.g. Paradis, 2007; Schmid, 2007), where attrition is defined as the "non-pathological decrease in proficiency in a language that had previously been acquired by an individual" (Schmid and Köpke, 2004). However, as explained below, language use itself is a complex factor, and the type of language

contact – not just frequency – needs to be taken into account when looking at the effect of this factor on bilingual language development.

Another important aspect of the context of bilingual language use is the idea of the bilingual's 'language mode' proposed by Grosjean (2008). Grosjean argues that language mode is a continuum, ranging from monolingual mode, in which bilingual speakers communicate in one of their languages only, avoiding conscious transfer of elements from the other language, to bilingual mode, in which elements of both languages are used and bilinguals are free to 'code-switch' between languages and blend aspects of the two languages (*ibid*). Code-switching is defined here as the alternate use of two languages by a bilingual, i.e. when a speaker changes to another language for a word or phrase, and then reverts back to the original language (Grosjean, 2010: 51-2). Between these two ends of the continuum various intermediary points exist, depending on such factors as the interlocutor, context, subject of discourse and function of the interaction (Grosjean, 2010). The idea of language mode refers to the various degrees of activation of the two languages, from both being activated (bilingual mode) and one being activated to a greater extent than the other (monolingual mode) (Grosjean, 2008). This idea of activation/suppression of the languages is referred to again in Section 2.3.1. However, the key point made here is that whether the bilingual tends to use a language in bilingual mode or monolingual mode is likely to have an impact on some aspects of competence in the language in question. For example, if a bilingual usually uses a language with other bilinguals with the same language combination in an informal setting, s/he can borrow words from the other language if they are more readily available. Over time, this may lead to slower lexical retrieval or reduced vocabulary size in the language, as predicted by the activation threshold hypothesis (see also Grosjean and Py, 1991; Schmid, 2007 for discussion). On the other hand, bilinguals who have to use a language in the monolingual mode will need to search for lexical equivalents in that language in order to communicate, resulting in better lexical retrieval in the language in question. Furthermore, who the bilingual uses his/her languages with does not only impact proficiency or language maintenance, but may have an effect on the bilingual's attitude and emotional response to the languages in question. For example, in his study exploring the emotional weight of the phrase *I love you* in bilinguals' different languages, Dewaele (2008) found that the nature of the network of interlocutors in the L2, as well as frequency of use, had a significant effect on the emotional weight attributed to the phrase by participants.

Finally, it needs to be taken into account whether the bilingual has an active or passive command of the languages in question, and what the bilingual is able to do in each language. Not only is this an important classification of bilingualism in itself (e.g. receptive/productive bilingualism; see, for example, Goto Butler, 2013), but the level of education attained in each language and, in particular, literacy plays a key role in determining how the language system will behave in certain contexts. For example, in L1 attrition research, literacy has been identified as an important predictor of L1

attrition, as being literate in the L1 provides more opportunities to use the language, and may have a positive impact on motivation to maintain it (e.g. Cherciov, 2011, Köpke, 2007).

(5) The bilingual's external environment

As has already been mentioned in the examples discussed above, external contextual factors – linguistic, cultural, social – influence the development of the bilingual language system, in terms of both acquisition and attrition. The importance of contextual factors in both SLA and attrition research is becoming more and more apparent, and interest in these contextual factors and their influence on language development is increasing (e.g. Larsen-Freeman, 2012; de Bot, 2007; see also Chapter 3). Several examples of the effect of contextual factors on the development of bilingualism over time have been discussed in this Chapter. This Section addresses some the ways in which changes in the bilingual's external environment shape language development over time, either directly (e.g. by affecting exposure to one or both of the languages) or indirectly (e.g. by influencing one of the internal factors, such as motivation or attitude towards one of the languages; see (6) below on the bilingual's internal environment). Given the interconnectedness of internal and external contextual factors, it is impossible to keep the two discussions entirely separate. For this reason, aspects of the bilingual's internal environment will also be mentioned here, but from the point of view of how they have been shaped by the external environment. Additionally, to avoid repetition, some examples of the interplay between environmental and personal factors are not mentioned here, but instead discussed in (6) below.

What must be borne in mind from the outset is the complexity of individual patterns of external contextual factors that influence language development. Firstly, the external environment can be split into three major interrelated components: the bilingual's linguistic, cultural and social environment. Some of the effects of external contextual factors on language development are direct. For example, the dominant linguistic environment of the bilingual's country of residence directly affects access and exposure to the bilingual's languages. Individual pragmatic capacity is shaped by cultural and social pragmatic conventions (e.g. Paradis, 2004: 18), and hence the sociocultural environment exerts a direct influence on pragmatic competence in the languages. Other external contextual factors may have an indirect effect on language development. For example, social attitudes to a language can have a significant impact on the degree of attainment of that language by individuals, due to their effect on individuals' motivation to acquire the language in question (e.g. Paradis, 2004: 26-7; see (6) below for details). Furthermore, the factors of time and age need to be taken into account when considering the bilingual's external environment, in other words, how long the bilingual has spent in a given linguistic environment, and at what age s/he was first exposed to this environment. These considerations are especially important in studies of L1-speaking migrants living in their L2 environment, where the length of residence (LOR) and

age of arrival (AOA) need to be taken into account. In particular, a recurrent finding in the literature is that migrants' proficiency in the L1 is strongly influenced by whether their arrival in the new linguistic environment took place before or after the onset of puberty (e.g. Schmid, Köpke and de Bot, 2013).

What is more, external contextual factors that shape the bilingual's linguistic and sociocultural context cannot be reduced only to the language(s) and culture(s) of the bilingual's country of residence at a given time, although these are important considerations. We have already seen that frequency and context of language use are key in shaping the development of bilingualism over time. For this reason, any changes in the external environment that have an impact on the frequency of use of the bilingual's languages have to be taken into account as part of the context. As pointed out by de Bot, *specific language-related major life events* are relevant for the study of language development over time (2007: 57). These events may be unequivocally important, such as migration, but may also appear fairly minor on the larger scale of life, yet may be highly significant for the development of the language system, such as having a pen friend abroad, attending a bilingual kindergarten or going on an international school exchange (*ibid*). These events may also influence language development by both increasing frequency of use, as well as by affecting internal attitudinal factors. For example, Paradis refers to anecdotal evidence, which supports the "strong facilitating effect of learning a language for a significant other" (2004: 27). The situation is complicated further by the relationship between language and memory, and emotion (see Javier, 2007 and (1) above). Thus, some events that could be significant for the development of bilingualism may not be directly language-related in the sense that they do not have an immediate impact on the frequency or context of language use at all. However, the events may be highly emotional and experienced in a particular language, possibly forming negative or positive associations with the language, which may have an effect on subsequent language use or disuse. In particular, the childhood linguistic environment and associated memories may strongly influence the bilingual's attitude to the languages in question, and subsequent desire to maintain a language or cultural identity (see (1) above; see also Schmid, Köpke and de Bot, 2013).

The foregoing illustrates the complexity of external contextual factors that may have an impact – either directly or indirectly – on the development of bilingualism over time. This complexity, combined with the influence of other factors, such as biographies (e.g. childhood linguistic environment, age of acquisition; see, for example, Birdsong, 2014 on the effect of age of acquisition on language dominance patterns over the lifespan) and internal factors (e.g. attitudes, motivation, identity – see (6) below) means that the predictive power of external environmental factors taken in isolation is somewhat limited. Even factors that could reasonably be expected to exert a strong influence on language development, such as the length of residence in the L2 environment, or amount of contact with the L1 in emigration contexts, have not been found to be

conclusive predictors of L1 attrition and maintenance (see, for example, Schmid, 2007 for overview of findings on the role of L1 contact in L1 attrition; Cherciov, 2011 for impact of LOR on L1 attrition). This having been said, there is some evidence to suggest that the dominant linguistic environment of the bilingual's country of residence exerts such a strong influence on language development, that its effects manifest themselves despite attempts to counteract them. For example, in a study of L1 attrition among Russian-English bilinguals – graduate students teaching Russian as a foreign language at a US university – Isurin (2007) found that changes to the L1 occurred at the lexical and grammatical levels, despite extensive exposure to the L1 and high levels of professional motivation to maintain the L1 intact. Additionally, Laufer (2003) found that LOR in the L2 environment had a strong negative influence on both retention of L1 collocational knowledge and lexical diversity in the L1. These effects were observed despite a good initial level of L1 knowledge and continued (daily) contact with the L1. The age of arrival in the L2 country was not found to play a significant role (*ibid*). Thus, while the effect of external factors on the development of bilingualism is highly individual and context-specific, it can tentatively be expected that, at a global level, the factor of dominant linguistic environment of the country of residence, as well as whether the change in linguistic environment occurred before or after puberty, are likely to have the greatest influence, even in the presence of mitigating factors.

Finally, it is worth mentioning that, in emigration contexts, the effect of the culture of the country of residence and, in particular, the factor of length of residence in the country in question, on individual identity is also highly variable and not always in line with intuitive expectations. For example, it is reasonable to suppose that the longer an L1-speaking migrant spends living in his/her L2 country, the more s/he will feel part of the L2 culture, perhaps identifying to a greater extent with the L2 culture over time. However, findings of studies investigating, among other factors, the effect of LOR in the L2 environment on identity are often contradictory, highlighting the individual and unpredictable nature of the relationship between contextual factors and bilingual identity. For example, as previously mentioned, Dewaele (2008) found that length of residence in the L2-speaking country was found to increase the emotional weight of the phrase *I love you* in the L2 as perceived by bilingual migrants. Dewaele argues that the increased emotional weight assigned to the phrase in the L2 could be seen as a conceptual shift towards the L2 for this particular emotional script, and this shift occurred only after a long period of socialisation in the L2 (*ibid*). On the other hand, in a study of first language attrition in German migrants living in the Netherlands, Prescher (2007) found that, as the duration of immigration increased, the more the migrants tried to return to their original identity and language. Also, as time went on, the participants became "more confident about their origin, culture and mother tongue and more critical about the culture, language and mentality of the guest country" (*ibid*: 201). Taken together, the results of the two studies demonstrate that the development of bilingual identity, just like language development, is not easily predicted on the basis of isolated factors.

(6) The bilingual's internal environment

A number of internal contextual factors have been identified as important in terms of their impact on bilingual language development over time, with respect to language acquisition, maintenance and attrition. The factors that are considered key include cognitive ability (intelligence, language aptitude), educational level and attitudinal factors (motivation, attitude towards the languages and cultures in question, identity) (see, for example, Köpke, 2007; Schmid and Dusseldorp, 2010, for extralinguistic factors considered important for language attrition and maintenance; Larsen-Freeman and Cameron, 2008; Herdina and Jessner, 2002 for bilingual language development more generally). The factor of education has already been discussed briefly, in terms of its indirect impact on language development over the lifespan (see (4) above). Language aptitude has been studied extensively in SLA (see Skehan, 2012 for historical context and current perspective), but has received less attention in research on attrition and language maintenance. Indeed, while aptitude is considered an important predictor of foreign language attainment, its impact on language maintenance and attrition remains unclear. For example, Cherciov (2011) argues that greater language aptitude will lead not only to higher foreign language proficiency, but also prevent first language attrition. On the other hand, she notes that such a prediction contradicts other theories, such as the 'trade-off hypothesis', which predicts a greater degree of L1 attrition among highly proficient L2 speakers (Cherciov, 2011; see also Köpke, 2007).

Attitudinal factors have received a great deal of attention in SLA research, and it is generally recognised that these sets of factors are among the most important predictors of foreign language attainment (e.g. Ben-Rafael and Schmid, 2007). In recent years, there has been a growing interest in the role of attitudinal factors in L1 attrition and language maintenance, and it has been found that such factors are strong predictors of language attrition and maintenance in emigration contexts (e.g. Cherciov, 2013; Ben-Rafael and Schmid, 2007). Of these attitudinal factors, which can roughly be divided into the categories of motivation (to acquire or maintain a language), attitude towards the languages/linguistic communities, and identity (cultural, linguistic, social), it is motivation that is generally considered the most important, and which has received the most attention in SLA (see, for example, Ushioda and Dörnyei, 2012, for historical context and overview of current issues). Indeed, as pointed out by Paradis, it is the motor that drives the learning and use of both the first and second language; without some motivation, no speech event would take place (2004: 223). As argued by Herdina and Jessner (2002) (see also Chapter 3) in their Dynamic Model of Multilingualism (DMM), language maintenance requires a degree of conscious effort. Thus, there needs to be some motivation present in order to expend this effort. Indeed, the impact of other attitudinal factors on language learning and maintenance could perhaps be down to their influence on motivation. For example, a positive attitude towards a language or linguistic community increases motivation to learn or maintain the language in question, and seek out contact with

members of the group. Attitudinal factors are not only interconnected, but, as previously mentioned, are shaped by the external environment. Paradis (2004) cites some powerful examples of the role of motivation (and counter-motivation) in foreign language learning, and how this is influenced by attitudes, which in turn are shaped by social and political factors. For instance, Paradis (2004) describes the case of English-speaking students of French in Montreal in the late 1950s and 1960s. Despite learning the language since Grade 1 (age 6), by Grade 11 (age 16) the vast majority of students could hardly understand a word of French, and certainly not a full sentence in a normal conversation. On the other hand, it was noticed that students who arrived from Poland or Pakistan in Grade 7 with no prior knowledge of French were doing much better than their classmates, who had studied French since Grade 1. The difference was down to how the language was perceived by the two groups, with the English-speaking residents of Montreal perceiving French as a low-status language, whereas French was considered a prestigious language by the immigrants. This had an impact on their motivation to acquire the language (*ibid*: 26-7). Another case (originally reported by Kecskés and Papp, 2002; referred to in Paradis, 2007) describes the situation of students of Russian as a foreign language in Hungary during the time of Soviet occupation. It was found that these students had a significantly poorer command of Russian compared than those who studied English as a foreign language had of English, even though the students of Russian had been exposed to their L2 for longer than the students of English had been to theirs (*ibid*: 123). These examples illustrate how sociocultural and socioeconomic, or political factors influence individual attitudes towards a language/linguistic community, which in turn has a strong effect on motivation to acquire the language (or not).

Finally, while motivation is considered to be the best predictor of success in the acquisition of a foreign language (e.g. Paradis, 2007: 123), and attitudinal factors are recognised as strong predictors of L1 attrition in emigration contexts (e.g. Cherciov, 2013), in terms of predicting the effect these factors may have on the development of bilingualism, the context needs to be taken into account. In other words, it is not enough to think of motivation only in terms of degree; the reasons behind this motivation also play an important role. As a reflection of this complexity and the importance of context, in the sphere of SLA different kinds of motivation have been identified, such as instrumental motivation, which is the desire to learn a language for practical advantages (e.g. professional), and integrative motivation – the desire to acquire a language because of a genuine interest in the people and culture associated with the language (classifications proposed by Gardner and Lambert, 1972; see Paradis, 2004: 27; Ushioda and Dörnyei, 2012: 396-7). Integrative motivation has been found to be particularly important in foreign language acquisition (e.g. Paradis, 2004). However, these distinctions are not only important in terms of the degree to which they propel an individual to acquire/maintain a language. We have already seen that who the language(s) are used with, and in what 'mode' (see (4) above), shapes competence in the language(s). Thus, with respect to motivation, the purpose of learning/maintaining the language is

key to understanding the potential effect of this factor. For example, professional demands may require that a language be maintained in its 'pure' form, avoiding code-switching, borrowing and other forms of language mixing, such as in the case of spoken language interpreters, or language teachers. On the other hand, if a bilingual's motivation is to be part of a linguistic community, maintaining the 'purity' of the language may not be such an important consideration. For instance, in emigration contexts, a bilingual may feel a strong attachment towards the L1 and want to maintain ties with the language and community. However, s/he may maintain contact with the bilingual L1 community in the L2 country, using the L1 in bilingual mode. Furthermore, the bilingual's identity may also have an impact on his/her desire, or lack thereof, to assimilate with the native speakers of the country, and the language may be used to assert his/her identity – either as an L1 speaker, or L1/L2 bilingual. For example, in a study of South Korean bilinguals of English and Korean, Choi (2015) found that participants did not want to acquire native-like competence in English, preferring instead to assert their bilingual identity through their use of the language. This demonstrates how the bilingual's sense of identity, and the image s/he wishes to project, influences language use, as well as motivation to acquire the L2 to a native-like standard.

2.3 The bilingual person

The foregoing has served to illustrate that bilingualism is a complex phenomenon, which is shaped over the lifespan by sets of interacting linguistic and extralinguistic factors. Predicting the effect of a single factor on the development of individual bilingualism is difficult, because of the principles of individual variation (see Chapter 3 for details) and the contributions of the other significant factors. What is more, as argued below, it is not just the different external and internal environmental factors that interact and influence each other: the bilingual's languages and cultures are also not separate. The implication of this is that bilingual competence is a unique phenomenon, which is not reducible to two separate linguistic competences, or two separate cultures. This idea is particularly important when it comes to assessing bilingual proficiency, as explained in Section 2.4.

2.3.1 Bilinguals as unique speaker-hearers

The view of the bilingual person adopted in the present dissertation is in line with that proposed by Grosjean, that the bilingual cannot be reduced to the sum of two complete or incomplete monolinguals, but rather is an integrated whole, with a unique and specific linguistic configuration (e.g. Grosjean, 1989). Similar views have been expressed by other researchers, such as Baetens Beardsmore, who notes the "specificity of bilingual behaviour" (1986: 86), and Cook, who defines the concept of "multi-competence" (e.g. Cook, 2003). The first argument for adopting such a position stems from the function of the bilingual's languages. As previously mentioned, the bilingual person usually needs and uses the two languages for different purposes, in different

domains of life and with different interlocutors. The level of competence developed in each language is therefore likely be different and highly domain-specific. Thus, as pointed out by Grosjean (1989), the bilingual's communicative competence cannot be assessed by considering only one of the languages, but must be studied through the bilingual's total language repertoire, reflecting the use of the languages in everyday life.

The second argument is based on the observation that the bilingual's languages are not separate systems: they interact and influence each other, thus the bilingual's language system is inherently different to that of a monolingual speaker. Evidence for this comes from studies of cross-linguistic activation in bilinguals. In other words, if we take the example of the concept of language mode (see (4) above), even if a bilingual is functioning in monolingual mode, s/he does not "become" a monolingual. This is because the other language can never be deactivated fully, which results in the observable bilingual phenomenon of interference. There are numerous types and sub-categories of interference/transfer (see, for example, Grosjean, 2012). Throughout the present thesis, interference is taken to mean the involuntary influence of one language on the other (after Grosjean, 1982; Hoffmann, 1991), to distinguish it from contact phenomena such as code-switching, borrowing etc., which are assumed to be more conscious. An overview of the literature of cross-linguistic influence and activation in bilinguals is given by Goto Butler (2013), providing evidence in support of the interconnectedness of the bilingual language system, but several examples are discussed below to illustrate the key points. In particular, the bilingual mental lexicon and bilingual language processing have received much attention, and several models have been proposed, such as the BIA/BIA+ (see Djikstra and van Heuven, 2002), the Revised Hierarchical Model (see Kroll et al., 2010 for a critical overview; also, Brysbaert & Duyck, 2010) and the Three-Store Hypothesis (Paradis, 2004). While there is currently no model that can account for all aspects of bilingual language processing, research so far has produced overwhelming evidence in favour of an integrated bilingual lexicon and non-selective access (see, for example, Djikstra and van Heuven, 2002; Brysbaert and Duyck, 2010 for an overview; also Meuter, 2009 for neurolinguistic evidence). There is also evidence for shared bilingual syntactic representations, as shown by structural priming tasks (e.g. Kantola and van Gompel, 2011). Further, studies suggest that interference occurs regardless of proficiency (e.g. Degani, Prior and Tokowicz, 2011; Sunderman and Kroll, 2006; see also Cook, 2003 for a selection of studies on the influence of the L2 on the L1). Additionally, evidence from fMRI studies suggests that the bilingual brain cannot avoid language conflict, even when the task requires only target language knowledge (van Heuven, Schriefers, Dijkstra and Hagoort, 2008). Interestingly, it has also been shown that language activation in bilinguals is affected by extra-linguistic factors. For example, a recent study conducted by Molnar et al. (2015), appears to support the view that bilingual language processing is highly context-specific. The study focused on a single factor, interlocutor identity, and it was found that interlocutor identity affects language activation in bilinguals.

Furthermore, it has been demonstrated that the two languages influence each other not only at the level of lexis, grammar and phonology, but also in terms of pragmatic competence, and it is generally recognised that L1 pragmatics affects L2 pragmatics (see, for example, Bardovi-Harlig, 2012). Recent studies have also found that this influence does not only go in one direction, but both of the bilingual's languages influence each other. For example, a study conducted by Su (2010) examining the requesting behaviour of Chinese learners of English as a foreign language showed that the participants' requesting behaviour was affected in their two languages, indicating that bi-directional transfer can occur at the level of pragmatics in foreign language learners. In addition, it has been shown that L1 speech perception, and not just speech production, can be affected by the presence of an L2. For instance, a study of sentence parsing among fluent Spanish-English bilinguals showed a difference in parsing preferences between the bilingual group and the monolingual control (Dussias, 2001). Further, Dussias and Sagarra (2007) found that linguistic environment is a significant factor affecting speech perception, demonstrating that L2 exposure influences sentence parsing in Spanish-English bilinguals.

Taken together, the foregoing implies that the very presence of a second language has altered the language system as a whole. This cross-linguistic influence occurs across all levels of language (lexical, syntactic, phonological, pragmatic) and affects both speech production and perception. Bilinguals are not able to deactivate either one of their languages, even when the task demands the use of one language only (i.e. when they are operating in monolingual mode). Thus, the nature of the bilingual language system is essentially different to the monolingual one, and the presence of this involuntary bidirectional influence means that bilingual performance will always differ from monolingual performance, regardless of the level of proficiency achieved (see also Herdina and Jessner, 2002; Chapter 3).

That said, it is important to note that the above does not imply that the bilingual language system is qualitatively different from that of a monolingual in the sense that there is any kind of physical change, or additional 'mechanism' that is present in bilinguals, but absent in monolinguals. This argument is presented concisely by Runnqvist et al. who, having reviewed the evidence, conclude that there are no qualitative differences between bi- and monolinguals, in particular, there is no "system dedicated to language control" (2013: 244) that is unique to bilinguals. Along similar lines, Paradis argues that there is no need for any kind of "input/output switch" that enables bilinguals to switch between languages (2004: 206). Indeed, Paradis (2004) contends that any bilingual process has a monolingual equivalent, and thus does not require any kind of separate mechanism. For example, switching between languages can be likened to switching between different registers in monolinguals, or the skill of translation is akin to paraphrasing. However, despite this absence of qualitative differences, it cannot be said that a bilingual is 'two monolinguals in one person',

because the presence of a second language has affected the bilingual's performance in, and perception of, both languages, as evidenced by the studies cited above. As argued below, the same can be said for the bilingual's two (or more) cultures.

2.3.2 Biculturalism and bilingualism

A concept that is closely related to bilingualism is that of biculturalism, although one does not necessarily imply the other (e.g. Grosjean, 2015). As in the case of bilingualism, there is no single definition of a bicultural person and, also similarly to bilingualism, existing definitions tend to focus either on cultural knowledge/competence or use (interacting in two or more cultures) (see Grosjean, 2015 for an overview). For reasons that are analogous to those cited in the case of bilingualism (see Section 2.1.3 above; also, Grosjean, 2015), biculturalism here shall be defined as a function of use, or interaction in two (or more) cultures. After Grosjean, bicultural individuals are taken to be those who are characterised by the following three traits: "1. They take part, to varying degrees, in the life of two or more culture. 2. They adapt, at least in part, their attitudes, behaviours, values, languages etc. to these cultures. 3. They combine and blend aspects of the cultures involved" (2008: 214).

Defined in this way, the concept of biculturalism has several implications, most of which have equivalents in bilingualism. In particular, biculturalism is a dynamic phenomenon, which changes over the lifespan, shaped by life events and personal choices (e.g. moving country, being part of different social networks, changing jobs etc.) A bicultural individual need not feel equally a part of both cultures, or have equivalent cultural knowledge of each – one of the cultures can be dominant, and this relationship between the different cultures can fluctuate over time. Along similar lines to the bilingual's language modes, Grosjean (2008) points out that bicultural individuals also adapt to the specific situation and context they find themselves in, such as the interlocutor or country. However, this does not mean that a bicultural person can function as a 'monocultural', because it is impossible to deactivate all traits of the other culture, even when in a monocultural environment (*ibid*: 215). Thus, bicultural individuals are not 'two monoculturals in one person'. Further evidence for this claim comes from studies looking at the effect of biculturalism – and, more generally, multiculturalism – on personality and identity. For example, in a study examining the impact of multiculturalism/multilingualism on personality among Third Culture Kids[2] (TCKs) living in London, Dewaele and van Oudenhoven (2009) found evidence to suggest that personality is shaped by cultural and social factors. In particular, the group of TCKs were found to score higher

[2] The definition adopted here is that proposed by Pollock and Van Reken (2009: 13): "A Third Culture Kid (TCK) is a person who has spent a significant part of his or her developmental years outside the parents' culture. The TCK frequently builds relationships to all of the cultures, while not having full ownership in any. Although elements from each culture may be assimilated into the TCK's life experience, the sense of belonging is in relationship to others of similar background."

on the dimensions of open-mindedness and cultural empathy, but lower on emotional stability, compared to the control.

Finally, a key aspect of biculturalism that needs to be considered is identity, in particular, the conflict that can sometimes arise between self-ascribed identity and acceptance by others. This is similar to the discussion of native speaker identity (see Section 2.1.1 above), where self-ascribed identity and the identity ascribed to an individual by others do not necessarily match. Furthermore, because two cultures are involved, there is a double categorisation - by members of both cultural communities. These categorisations can sometimes be contradictory, for example, an individual can be categorised as a member of culture A by members of culture B, and as a member of culture B by members of culture A (Grosjean, 2015). Grosjean also points out that such categorisations are often absolute, that is, cultures do not tend to readily accept that a person can be part of their culture as well as another (*ibid*). What is more, these categorisations are not based solely on linguistic competence or cultural knowledge, but also on factors such as physical appearance or attitudes (Grosjean, 2008: 2015). This is again similar to the idea of native speaker identity, which is often determined by others on the basis of extralinguistic factors, such as what a native speaker of a given language should look like (see Section 2.1.1). In other words, some factors on which acceptance is based are entirely outside the individual's control. It can therefore be difficult for the individual to reach a decision regarding their cultural identity, and accepting one's biculturalism can be "a long and arduous process" for some (Grosjean, 2015: 583). On the other hand, some individuals embrace their multicultural and multilingual identity, and in fact emphasise it, for example through language use (see, for example, Choi, 2015, discussed above). In particular, research on identity among TCKs, and indeed the very definition of this population proposed by Pollock and Van Reken (2009), often concludes that this population views multiculturalism and multilingualism as their identity (e.g. Tannenbaum and Tseng, 2015). This idea of belonging, acceptance/rejection and cultural identity, both in terms of the individual's own sense of identity and the identity attributed to the individual by others, is a key consideration in the next section on degree of bilingualism.

2.4 Degree of bilingualism and advanced bilingual proficiency

It has been argued that bilinguals form a highly heterogeneous group, and bilingualism itself is a complex and multidimensional phenomenon, encompassing linguistic, socio-cultural and psychological dimensions. This is what makes bilingual competence so difficult to define and measure. On the one hand, there are degrees of language proficiency, which can be considered to lie on a continuum between zero proficiency and "native-like" attainment (Schrauf, 2013). Thus, if we accept that there are different degrees of bilingual competence, we must also accept that bilingualism is, in some sense at least, measurable (Hoffmann, 1991: 22). On the other hand, the

multidimensional and context-dependent nature of bilingualism means that conceptualising and measuring bilingual language proficiency (and language proficiency more generally) is, and remains, one of the central issues in SLA (see Daller, 2011; Goto Butler, 2013: 116-122 for summary of core issues). What does it mean to say that someone is "more bilingual" than someone else? Clearly, there is a difference between, for example, someone who has just started learning a second language, and a person who uses two languages professionally on a daily basis, such as a spoken language interpreter (see Chapter 4). But how one might define and measure this difference in proficiency is entirely relative, depending on the dimensions taken into consideration (e.g. linguistic, pragmatic, cultural, identity etc.) Furthermore, we have seen that bilingual competence cannot be reduced to dual (complete or incomplete) monolingualism, which further complicates attempts to measure bilingualism. The aim of this final section is to, first of all, give a brief overview of how the problem of measuring bilingualism has been approached in the past, noting the shortcomings of some of these approaches. Against this background, focus will shift to the specific population of interest in the present project, that of highly proficient bilinguals, and it will be explained how this group is defined in the context of the present dissertation.

2.4.1 Measuring bilingualism

Historically, there have been various approaches and tests that have been designed for the purpose of measuring bilingualism. For example, Hamers and Blanc (2000) provide a succinct overview of the different measures of bilingualism used. These can be roughly divided into the following types: (1) tests of competence in a second language (i.e. foreign language testing); (2) tests of competence in the native language; (3) tests designed to compare the two languages, i.e. tests aimed at measuring language dominance or balance; (4) language biographies and self-evaluation; (5) tests of bilingual specificity (i.e. bilingual phenomena such as code-switching and transfer; bilingual production); (6) measures of affective correlates of bilingualism (i.e. the bilingual's attitude to the two languages) and cultural identity. Tests vary greatly in terms of construction, with some measuring only one factor, such as size of vocabulary or grammar, whereas others focus on how the language is used (e.g. verbal description tasks); some language dominance tests have also focused on measuring reaction speeds and comparing these in the two languages.

Of the above-mentioned, tests of competence are particularly problematic, as they tend to over-simplify bilingual competence, reducing it both in terms of the dimensions measured and domains taken into consideration (e.g. Hamers and Blanc, 2000). As previously discussed, neglecting to take into account the domains and context of language use can lead to incorrect interpretation of results, such as in the case of tests of bilingual balance/dominance. Another issue with tests of competence in a language is that many tests take monolingual standards as the norm against which bilingualism is measured. This is known in SLA is the "monolingual bias" (e.g. Goto Butler, 2013: 119).

However, comparisons with monolingual native controls can be useful in some contexts (e.g. Birdsong, 2005). Furthermore, testing can often be artificial, removing language from the context in which it is used, and as a consequence disregarding the social, cultural and pragmatic aspects of language use. That said, the various tests are useful tools in the right context. For example, testing specific aspects of what a language learner knows, such as grammar or vocabulary, and comparing these to a set standard is a useful approach in certain contexts. Measures of lexical richness, in particular appear to be useful tests of language dominance (see, for example, Treffers-Daller, 2011). When studying L1 attrition, for instance, it makes sense to take monolingual native language use as a benchmark against which to measure the extent to which the L1 has changed. What must be borne in mind is that no single test can measure bilingual proficiency in its entirety, only some set aspects of it. This means that bilingualism cannot be measured in a way that is absolute. This paradox – the existence of degrees of bilingualism, but no absolute way of distinguishing between these degrees – means that it is not at all evident how to distinguish between populations of bilinguals in terms of their relative proficiency, i.e. who can and cannot be considered a "highly proficient" bilingual. The way in which this concept is approached in the present dissertation is outlined below.

2.4.2 Highly proficient bilinguals

Given that there is no single approach to conceptualising and measuring the degree of bilingualism, and that the concept itself is relative, depending on which dimension(s) are considered relevant, it follows that where the bar is set for 'high' proficiency is also relative. For example, depending on the study, highly proficient or advanced bilinguals can be taken to be individuals who have achieved a certain score on a specific test, studied a language for a certain number of years, or completed a degree in their second language. High proficiency in the native language is often taken for granted in such cases. Therefore, like bilingualism itself, the concept of a population of highly proficient bilinguals only makes sense in context, and when accompanied by the specific bilingual profile of the group in question.

On the basis of the literature reviewed, it can be surmised that any definition or description of highly proficient bilinguals cannot be based on fixed standards of competence, as this is not definable in practice, and is entirely relative (see Section 2.1 above). Thus, highly proficient bilinguals are most appropriately characterised in terms of what they use their languages for. In particular, it is contended that there needs to be some reference to the broadness of the domains covered by each language, and what is considered sufficient for the purposes of the definition. For example, whether it is enough to use one of the languages regularly and fluently, but in the context of the home/family only, or other limited settings. A related consideration is whether the languages are used mostly in bilingual or monolingual mode, and if high proficiency implies, or should imply,

the ability to use the languages without code-switching if necessary (i.e. there needs to be sufficient vocabulary in each language to be able to function in monolingual mode, in a wide range of domains). Note that this does not suggest that bilingual speech must (or, indeed, can) be free from interference, or that bilinguals alternately function as monolinguals.

Furthermore, it seems reasonable to require some degree of external validation, of recognition by others that the individual is a member of this particular group – the group of highly proficient bilinguals. To illustrate this point, it is worth considering the "true bilingualism" definition proposed by Christopher Thiéry (1975). Originally developed in order to define a very specific group of highly proficient bilinguals – professional conference interpreters with two native languages, Thiéry defined a true bilingual as "someone who is taken to be one of themselves by the members of two different linguistic communities, at roughly the same social and cultural level" (1978: 146). This definition is discussed in detail in Chapter 4, but it is relevant to mention it here briefly as it addresses a similar kind of problem, that of defining a group of highly proficient bilinguals in a way that is operational, without reference to fixed standards of competence. The definition hinges on the identity ascribed to bilinguals by others, i.e. whether they are perceived as members of the linguistic community or not. This in itself can be problematic, for instance because, as pointed out earlier in the discussion on native speaker identity, judgements of identity are often made on the basis of non-linguistic factors such as appearance (see Section 2.1 above). Additionally, it is implicit in the definition that such high level bilinguals *want* to pass for native speakers in both of their languages, which may be the case in the specific context examined by Thiéry (see Chapter 4), but is not necessarily the case in general (e.g. Choi, 2015). While Thiéry's definition refers to a very specific group of "extreme" bilinguals, the idea of external validation without reference to competence benchmarks, or explicit comparisons with monolinguals, is important for characterising highly proficient bilinguals more generally. The other component of identity, which is not covered by the true bilingualism definition is self-ascribed identity. In the context of finding some way of distinguishing between highly proficient bilinguals and bilinguals in general, a key consideration is whether the bilinguals consider themselves highly proficient, or fluent, in their languages (i.e. identify as highly proficient bilinguals). This is considered relevant because it has generally been found that self-ratings of fluency tend to correspond to more objective, external ratings (e.g. Hamers and Blanc, 2000).

In light of the foregoing considerations and the literature reviewed earlier in this Chapter, the following characterisation of highly proficient bilinguals is proposed as compatible with the aims of the present dissertation. As indicated at the outset, the proposed characterisation not intended to be an all-encompassing or absolute definition of highly proficient bilinguals, but rather as an explanation of what the term is understood to mean within the context of the present study. Indeed, it describes a specific subgroup of highly proficient bilinguals – those who use their languages in a

professional or educational setting in addition to social/informal language use. The rationale for this restriction is as follows. First of all, as argued above, it is not possible to define high bilingual proficiency in an absolute way, and thus some additional constraints are needed. The condition of language use in a professional setting is a means of ensuring that the languages are used in a variety of contexts, and implies that a certain standard of proficiency is met, without reference to competence and, crucially, without imposing monolingual standards on bilinguals. Secondly, the group of bilinguals that forms the basis of the present inquiry – professional spoken language interpreters – satisfies this condition by definition.

Thus, within the context of the present thesis, a highly proficient bilingual is taken to be someone who:
(i) uses two (or more) languages on a regular basis and in a variety of contexts, including in both informal (social or family) and formal (professional or educational) settings;
(ii) is perceived by interlocutors as being fluent in the language(s) in question;
(iii) identifies him/herself as a highly proficient bilingual, i.e. would describe him/herself as fluent in the two languages.

Criterion (i) is intended to imply that the bilingual is able to function in monolingual mode in both languages and in a variety of domains, without needing to borrow lexical items from the other language, as well as the ability to use both formal and informal registers as appropriate. Furthermore, the regular use in varied settings supposes a degree of cultural and pragmatic competence in both languages. Criterion (ii) is essentially a weaker version of the condition imposed by Thiéry (1975), and (iii) concerns self-ascribed identity. Professional spoken language interpreters, as a population, satisfy several additional conditions, and these are discussed in Chapter 4, where a specific bilingual profile for this group is drawn up. Before attention is turned to this specific group, however, additional theoretical considerations concerning individual bilingualism more generally need to be introduced.

3. Bilingualism as a Dynamic System

The term "dynamic systems theory" (DST) essentially refers to the study of the change of systems over time and has its origins in mathematics. Within the context of applied linguistics, DST refers to the view that language behaves like a complex (chaotic) dynamic system, in the sense that it exhibits the key properties of such a system, including continuous change over time and individual variation (see Section 3.3 below for details). It must be noted that there is a lack of terminological clarity in the literature on DST in applied linguistics, with a variety of terms, such as dynamic systems, complex (adaptive) systems, complexity theory, chaos, nonlinear systems, used almost interchangeably to refer to the same basic set of principles. In line with de Bot, the term DST will be used as a standard term taken to encompass this entire set of notions (de Bot, 2008). As we shall see, in the field of applied linguistics, DST refers not to a single theory, but rather to "a set of tools and approaches" (de Bot et. al., 2007: 167). Thus, adopting a DST view of bilingualism, or language development more generally, does not mean that one is rejecting all previous theories of language development, but instead accepting all theories that are compatible with DST principles, and viewing them as part of a coherent framework. The rationale for adopting such an approach and its advantages are discussed in Section 3.3 of this Chapter.

The main objective of this Chapter is to explain what DST means in the context of applied linguistics, and what its implications are for the study and description of individual bilingualism. To this end, the Chapter is structured as follows. First of all, the mathematical origins of DST are outlined, in order to explain where these principles have come from. Building on this, it is explained how these principles have been applied in the more general context of cognition and development, before focusing on DST in applied linguistics. The rationale for adopting a DST approach to the study of second language development is explained. This is followed by an outline of three key DST models of second language development and an overview of recent DST studies in this field, in order to demonstrate the varied applications of the theory. To conclude, the general principles of DST are applied to the specific aims of the present project. The view of individual bilingualism outlined in Chapter 2 is consolidated in light of DST principles, the concept of the bilingual profile introduced in Chapter 2 is extended on the basis of these principles and Van Geert's (1995) growth model in particular, and the methodological implications of adopting a DST approach are discussed.

3.1 Dynamic systems theory (DST): mathematical origins

The term "dynamic system" as used in the cognitive and developmental sciences in fact refers to a complex dynamic system which exhibits chaotic behaviour, and these three related mathematical

concepts are outlined separately below. Their combined implications for the study of cognition and development are subsequently discussed in Section 3.2.

3.1.1 Dynamical systems theory

Dynamical systems theory is a purely mathematical construct, which concerns the study of the temporal evolution of systems, or sets of interconnected components. A dynamical system essentially consists of three components: a state (or phase) space, which represents the set of all possible states of the system, a set of times, and a rule that describes the evolution of the system over time (e.g. Giunti, 1995). Put simply, a dynamical system is therefore a system in which states evolve from earlier ones according to a fixed law (Lorenz, 1993).

Dynamical systems can either be discrete or continuous, depending on whether time is taken to be discrete (e.g. the integers) or continuous (e.g. the reals). In mathematics, discrete dynamical systems are known as mappings and are modelled using difference equations, whereas continuous dynamical systems are technically called flows, and are modelled using differential equations. Actual physical examples of such systems include a swinging pendulum, a rolling rock or a wave (e.g. Lorenz, 1993).

Dynamical systems have their origins in Newtonian mechanics and the mathematics of differential equations, which have been used to model various physical systems. The difficulty is that most differential equations have no exact solutions, and it was not until 1881, when Henri Poincaré introduced the idea of the *qualitative* study of differential equations, that modern dynamical systems theory was born. Instead of seeking a formula for each solution, he proposed to study the set of all solutions all time and all initial conditions simultaneously (e.g. Norton, 1995). This signified an important change in viewpoint, an interest in the global behaviour of a system over long periods of time and the emergence of new themes, such as stability, recurrence of states and periodicity. Instead of seeking precise solutions, qualitative questions were being posed, including questions pertaining to the stability of the system and effects of perturbations (e.g. Norton, 1995). Certain dynamical systems were found to exhibit an additional property, resulting in so-called chaotic behaviour. Thus chaos theory was born.

3.1.2 Chaos theory

Chaos theory can also be traced back to Poincaré in the 1890s. Broadly speaking, a dynamical system is called chaotic if it exhibits *sensitive dependence on initial conditions* (e.g. Lorenz, 1993). Chaotic, however, does not mean random. Chaotic systems are, in fact, deterministic (i.e. their evolution is determined by a fixed rule), but they do not appear to be. In other words, in chaotic

systems, "the present state completely or almost completely determines the future, but does not appear to do so" (Lorenz, 1993: 8). This is due to their sensitive dependence on initial conditions. It is worth noting that "initial conditions" does not necessarily refer to the conditions that existed when the system was created - they can be, but can also be the conditions at the start of any stretch of time that is of interest to the researcher (Lorenz, 1993). An immediate consequence of this sensitive dependence is a limited ability to predict the future development of the system. An often-cited example of this is weather prediction. However, chaos does not imply that prediction is impossible, but it does mean a great degree of variation, and also that simple systems are capable of producing very complicated outputs (e.g. Ottino, 2003).

An important related concept, which is rather difficult to define in general terms, is that of an attractor. One way of thinking of attractors is as the set of "states of any system that … occur again and again, or are approximated again and again, more and more closely" (Lorenz, 1993: 41). In other words, an attractor is a set of values towards which a system tends to evolve, for a wide variety of starting conditions. One frequently cited physical example is a swinging pendulum: each swing of the pendulum resembles the previous one, i.e. the pendulum does not suddenly swing wildly one moment and gently the next (Lorenz, 1993). Another is a marble rolling around in a bowl - in this case, the attractor is the fixed point corresponding to the marble's resting position at the bottom (Norton, 1995). Attractors are important because they represent the long-term states and evolution of the system. The emergence of such attractor states means that, despite the great degree of individual variation inherent in chaotic systems due to the sensitive dependence on initial conditions property, patterns also emerge in the course of development.

3.1.3 Complex systems

Complex systems theory has its roots in chaos theory, and complex systems are used to model processes in a diverse range of disciplines, from economics and meteorology to sociology and the cognitive sciences. Examples of complex systems include the human nervous system, a developing infant, the global economy and the internet. The applications of complex systems theory are therefore vast.

What exactly is a complex system? No single definition exists, however, the term is generally used to describe phenomena that share some common properties (Foote, 2007: 410). A rough descriptive definition of a complex system is as follows:

"A complex system is a system with a large number of elements, building blocks or agents, capable of exchanging stimuli with one another and with their environment. The interaction between elements may occur only with immediate neighbors or with distant ones; the agents can be all

identical or different; they may move in space or occupy fixed positions, and can be in one state or multiple states. The common characteristic of all complex systems is that they display organization without any external organizing principle being applied. In the most elaborate examples, the agents can learn from past history and modify their states accordingly. Adaptability and robustness are often the by-product. Part of the system may be altered, and the system may still be able to function." (Ottino, 2003: 293).

A more technical, but more or less equivalent definition is proposed by Foote (2007), who uses the term complex system to refer to phenomena, which exhibit the following characteristics: "(i) They are inherently complicated or intricate, in that they have factors such as the number of parameters affecting the system or the rules governing interactions of components of the system; (ii) they are rarely completely deterministic, and state parameters or measurement data may only be known in terms of probabilities; (iii) mathematical models of the system are usually complex and involve nonlinear, ill-posed, or chaotic behavior; and (iv) the systems are predisposed to unexpected outcomes (so-called "emergent behavior")." (Foote, 2007: 410).

Whichever definition is preferred, the implications are the same. A complex system cannot be understood by studying its components in isolation. "The very essence of the system lies in the interaction between parts and the overall behaviour that emerges from the interactions" (Ottino, 2003: 293). This emergent behaviour, i.e. behaviour that does not depend on the individual parts or agents, but on their interactions with one another, means that even systems made up of simple parts can behave in a complex way. Therefore, a reductionist approach cannot be applied to the study of complex systems. It is worth emphasising the distinction between the complex and the merely complicated. Many mechanical systems are highly complex due to the large number of parts involved. However, these systems are not complex, as they lack the ability to self-organise and adapt to solve problems (e.g. Ottino, 2003).

3.2 DST in the wider context of cognition and development

As previously stated, within the cognitive and developmental sciences, dynamic systems theory encompasses the three mathematical concepts of dynamical systems, chaos and complexity theory. In other words, in this context, the DST approach is based on the assumption that cognitive processes exhibit the broad properties of complex chaotic dynamic systems. Expressly, these are: continuous evolution over time, sensitive dependence on initial conditions (and hence nonlinearity and individual variation), complete interconnectedness of subsystems, self-organisation (resulting in adaptability and "emergent" behaviour), and the emergence of attractor states in the course of development (see, for example, de Bot, 2008; de Bot et al., 2013, 2007; Port and Van Gelder, 1995; and Thelen, 1995; Thelen and Smith, 1994 for an overview of the DST approach to cognition and

development). Therefore, it is argued that the DST framework is a biologically more appropriate approach for the description and exploration of cognitive systems, compared to the more traditional computational approaches.

DST emerged as an approach in the cognitive and developmental sciences a little over 20 years ago, with the first comprehensive overview of the dynamical approach to cognition, Mind as Motion, Port and Van Gelder (eds.), published in 1995. Since then, while it can be argued that DST is still in its infancy in this field (Spencer et al., 2011), its contributions and successes cannot be denied. For example, DST has revolutionised the field of motor development, largely due to the work of Thelen et al. (Spencer et al., 2011). It has had a significant impact on research in the field of cognitive development. Furthermore, aspects such as emotional, social and personality development, as well as creativity, are starting to be explored using DST principles (see Lewis, 2000; Spencer et al., 2011 and 2012; Howe and Lewis, 2005 for an overview of the major contributions of DST in the cognitive and developmental sciences; Gruber, 2012 for an example of DST principles applied to creativity; Lewis, 2005 for an example of the application of DST to emotion theory and neurobiology). Indeed, DST has recently been proposed as a general framework that can integrate the many different aspects of human development (Lewis, 2000).

Within the DST approach, cognition and development are modelled as unfolding in real time. They are perceived as processes that are "embodied" (in a physical body) and "embedded" (in context). The complete interconnectedness principle implies that it is not possible to separate mind from body or the individual from the environment, all must be viewed as continuously interacting subsystems of the whole system (see, for example, Thelen, 1995; Smith, 2005). Perception, action and cognition are not separated in a DST approach: they all form part of a single process (Thelen, 1995). This complete interconnectedness of interacting components, or subsystems, and continuous flow through time has led to the rejection of the notion of any kind of static representations or structures anywhere in the system. Instead, cognition and behaviour are thought of as being "assembled from multiple interacting components that can be freely combined from moment to moment on the basis of the context, task, and developmental history of the organism" (Spencer et al., 2012: 403). This is the concept of so-called "soft assembly", introduced by Thelen et al. (see Thelen, 1995; Thelen and Smith, 1994).

In this context, attractors as characterised as being the "preferred" states of a system. These can be more or less stable, depending on the strength of the attractor. Development is thus conceptualised as a series of shifts between periods of greater of lesser stability, with strong attractors characterising the more stable phases, and weak or changing attractors associated with the unstable phases (e.g. Howe and Lewis, 2005; Smith and Thelen, 2003: 344; Thelen, 1995). Self-organisation, that is, the ability of components of the system to organise themselves without any

guiding organising force, has several important implications for the conceptualisation of cognition and development. For instance, self-organisation implies multi-causality, i.e. that no single element has causal priority. (e.g. Smith, 2005; Smith and Thelen, 2003). This means that the brain is not seen as a "control" centre, guiding development. Instead, coherent behaviour emerges as a result of the interaction of the various components and the limitations and opportunities of the environment (Smith and Thelen, 2003). The self-organisation principle also means that there is no need to artificially build pattern into the system: dynamic systems are able to organise themselves around the preferred attractor states, thus forming cohesive pattern (see Spencer et al., 2012; Smith and Thelen, 2003). Finally, within the context of development, the sensitivity to initial conditions property means that even minor changes to one or several components of the system can have a significant effect on the system as a whole, leading to reorganisation and changes in behaviour (e.g. Smith and Thelen, 2003).

DST contrasts sharply with the computational models that have dominated the cognitive sciences since the 1950s, the fundamental assumption of which is that the human brain operates like a digital computer (see Port and Van Gelder, 1995 for a general historical perspective). In the 1980s, an alternative approach called connectionism, or "the modelling of cognitive processes using networks and neural units" (Port and Van Gelder, 1995: 3), was developed and started to gain popularity. However, while connectionism in a modified form is compatible with DST (see, for example, Elman, 2003, 1995; Thelen and Smith, 1994), it is essentially computational. With respect to the cognitive sciences, both connectionism and "traditional" AI are examples of what is called classic cognitivism (de Bruin and Kästner, 2012).

The need for an alternative approach was brought about by the fact that there are certain aspects of human cognition and development that computational models are unable to account for, due to their underlying assumptions. For example, within the computational approach, time is taken to be a discrete sequence of states, whereas cognitive processes unfold continuously in real time (Van Gelder and Port, 1995; Thelen, 1995). Moreover, the computational approach cannot account for the interaction of various timescales involved in development. Thelen and Smith (2003) argue that, since time is unified and coherent for the developing organism, any theory of development must concern itself with how timescales interact. DST, on the other hand, is well suited to modelling development in real time and is able to handle the interaction of nested timescales. In addition, the separation of mind from body and individual from environment, which is implicit in the computational approach, makes it impossible to study cognitive and developmental processes in context, and consider the impact of internal and external environmental factors (see, for example, Howe and Lewis, 2005). DST, by construction, views development as inseparable from the context in which it unfolds. Finally, a computational approach cannot explain how more complex systems emerge from simpler components, and it is also unable to account for the human ability to adapt

and solve problems. It is also unable to explain how development can both have globally similar outcomes, and yet display a high degree of variation at the individual level. This apparent paradox, however, can be explained from a DST perspective as being due to a combination of the self-organisation and sensitivity to initial conditions properties of the system (Smith and Thelen, 2003).

3.3 A DST approach to second language development

Within a DST perspective, language development is not seen as a separate process, but as a subsystem of general cognitive development (de Bot, 2008). Therefore, much of what has been said about human development also applies to language in general, and bilingualism in particular. A key consequence of adopting a DST framework for applied linguistics is the fact that language is seen as an integrated system, and language development a unified process. In other words, language acquisition and attrition are not separate: they are reverse aspects of the same process. Therefore, in line with de Bot et. al. (2013), the term "second language development" (SLD) shall be used in the present thesis to refer to the evolution of the bilingual language system as a whole, including both growth (acquisition) and decline (attrition). While this is already implicit in some definitions of SLA (e.g. Long, 1993), there are other important theoretical implications of this seemingly simple substitution of terms. Crucially, the term SLD not only highlights the "bidirectionality of change", but also emphasizes "a shift from seeing language as a product or thing" (de Bot et. al., 2013: 199). A similar viewpoint is expressed by Larsen-Freeman (2015), who argues for the term SLA to be replaced by SLD.

The first formal attempt to apply the principles of DST to SLD can be found in Diane Larsen-Freeman's pioneering 1997 article entitled "Chaos/Complexity Science and Second Language Acquisition", in which she demonstrates that language, and hence SLD, displays the core properties of a (complex) dynamic system (Larsen-Freeman, 1997). Subsequent key theoretical advances in this area include the publication of Herdina and Jessner's book "A Dynamic Model of Multilingualism: Perspectives of Change in Psycholinguistics" in 2002, and Larsen-Freeman and Cameron's "Complex Systems and Applied Linguistics" (2008), both of which formalise the theoretical implications of the DST approach to SLD and put them in the context of existing theories. While the DST approach cannot as yet be considered mainstream in the field of SLD research, it does appear to be steadily gaining popularity. In particular, the "Five Graces Group", which includes Larsen-Freeman, has adopted a DST view of language and SLD in a position paper ("The Five Graces Group", 2009), and SLD researchers have started to apply the principles in empirical work (see section 3.3.3 below for details). This is in line with the more general trend in SLA research to pay greater heed to social and contextual factors (e.g. Goto Butler, 2013); indeed, the first part of the most recent edition of *The Routledge Handbook of Second Language Acquisition* (Gass and Mackey, eds., 2012) is entitled "Language in context", and includes a

chapter by Larsen-Freeman on complexity theory in SLA. The study of attrition from a DST perspective is also gaining ground, with de Bot being the first to formally apply the principles to the study of L1 attrition over the lifespan (see de Bot, 2007). Other applications soon followed and, most recently, a special issue of the *International Journal of Bilingualism* has been dedicated to the study of L1 attrition from a DST perspective (2013, Volume 17, Issue 6). More generally, in an attempt to unify the various applications and incarnations of DST in the field of applied linguistics, including those theories that have applied the principles implicitly, there have been calls to adopt DST as a comprehensive framework for SLD research (de Bot et al., 2013). These developments point to the fact that researchers are recognising that, in order to understand the complex processes involved in language development over time, they must be studied in context and viewed as continuously evolving over time.

3.3.1 Rationale for adopting a DST framework

The argument for adopting a DST approach to the study of SLD is essentially the same as that for cognition and development. Specifically, that SLD does indeed behave like a (complex) dynamic system, in the sense that it exhibits the core characteristics of such a system as outlined above, which implies that DST is the most appropriate framework for studying SLD. Secondly, in an analogous fashion to the more general field of cognition and development, there is no other theory in applied linguistics that is capable of describing change over time, under the influence of sets of interacting contextual factors. DST is also the only existing theory in SLD that is able to account for both individual variation and the emergence of pattern. So, while the application of DST in the field of applied linguistics is still fairly new, requires further development, and is "not necessarily a convenient research paradigm" (de Bot et al., 2013: 216), to reject DST principles is "to pretend that language *acquisition* is a product of linear development with a clear end state" (*ibid*), despite mounting evidence to the contrary. An overview of this evidence, i.e. that SLD is in line with DST principles, can be found in, for example, Larsen-Freeman (1997), de Bot et al. (2013), de Bot (2008). The main points are summarised below, to illustrate in what sense SLD displays the core properties of a dynamic system

Continuous temporal evolution is clear, and follows directly from the fact that language is a cognitive process, which grows and evolves with time, both synchronically and diachronically (Larsen-Freeman, 1997). It has also been shown that timescales interact and influence each other in the context of language development. In particular, it has been demonstrated that language use at larger time scales impacts language processing at the millisecond level (see de Bot et al., 2013). Language is complex in the sense that it is **composed of a large number of different subsystems** (e.g. phonology, morphology, lexicon, syntax, semantics, pragmatics etc.), and these **subsystems are interdependent** (e.g. Larsen-Freeman, 1997). It has been shown that the L1 and L2 are

interconnected and influence each other, as evidenced by phenomena such as interference/transfer, both at the level of speech production and perception (see Chapter 2). Moreover, the bilingual (or multilingual) person can be considered as a subsystem of the wider language community (e.g. Larsen-Freeman and Cameron, 2014), and thus second language development is an embedded process. It has been demonstrated that the bilingual language system is affected by numerous external (e.g. linguistic environment) and internal (e.g. motivation and attitude) factors, both in general and at the subsystems level (Larsen-Freeman, 1997; see also Chapter 2 for details).

Both language acquisition and attrition are subject to a great degree of **individual variation** across different subsystems. For example, Lowie and Verspoor have found the presence of individual variation in the acquisition order of morphemes (2015; see also Verspoor et al., 2008, for a general discussion of variability in SLD). The development of the bilingual language system is a **nonlinear** process, characterised by progress and backsliding (e.g. Larsen-Freeman, 1997). It is also **sensitively dependent on initial condition**s, as evidenced by the impact of the age of acquisition on aspects of L2 proficiency, or the influence of the learner's L1 (initial condition) on L2 acquisition. For instance, the pronunciation of a learner of English whose L1 is Spanish will differ to that of a learner whose L1 is Chinese (Larsen-Freeman, 1997). With respect to attrition, dramatic differences have been observed in the L1 competence of pre- and post-puberty migrants (see, Schmid et al. 2013, for an overview of evidence), i.e. the initial condition for this particular investigation is the age of migration.

Despite variation at the individual level, language learning and forgetting are not random processes. It has been shown that, at the global level, there are stages that learners generally go through (see, for example, Lenzing, 2015). Thus, **pattern emerges in the system around attractor states**. In this sense, the phenomenon of fossilisation is an example of such an attractor state (e.g. Larsen-Freeman, 1997). The system is also able to **self-organise and adapt**. In this regard, Larsen-Freeman gives the example of the acquisition of the past tense in English, in terms of both regular and irregular verbs (Larsen-Freeman, 1997). She notes that, initially, the interlanguage system exhibits chaotic behaviour with respect to the past tense ending, which then subsides. In other words, a restructuring of this aspect of the interlanguage has occurred, i.e. the system has organised itself independently (Larsen-Freeman, 1997).

As previously stated, adopting a DST approach to SLD does not mean adopting a single theory, but rather a set of principles, tools and approaches (de Bot et. al., 2008). Indeed, van Geert points out that "dynamic systems is basically a very general approach to describing and explaining change" (van Geert, 2008: 184). Therefore, if one accepts DST principles, one is also accepting those theories of language development that are compatible with these principles, whether they have been applied directly or implicitly. For example, Larsen-Freeman and Cameron outline the theories and

conceptual tools that are compatible with, and have served to inform, their complexity theory view, which include the DST approach to human development (Thelen and Smith's embodied/embedded theory of development), emergentist approaches to language (see also Ellis and Larsen-Freeman, 2006), connectionism (see Elman, 2003), usage-based and emergent theories of grammar, probabilistic linguistics, Vygotskian sociocultural theory and ecological approaches (Larsen-Freeman and Cameron, 2008). Similarly, de Bot et al. give an almost identical list of SLA theories which are compatible with DST principles (de Bot et al., 2013). In this way, DST can serve as a unifying framework for all such theories, which encompass different levels of granularity and different timescales (de Bot et al., 2013). To illustrate the flexibility of DST, the next section considers different applications of the framework, starting with the theoretical by outlining three key general dynamic models of SLD, before discussing several examples of specific practical applications.

3.3.2 Dynamic models of second language development

The theoretical models surveyed below are distinct and exhibit some terminological differences, however, they share the same fundamental assumption: that language behaves like a complex dynamic system.

(1) Modelling language development as growth (van Geert)

Van Geert's growth model is a highly influential dynamic model of language development (e.g. 1995). The importance of this model in terms of the DST approach to SLD has been emphasised, in particular, by de Bot et al. (see de Bot et al., 2007; de Bot, 2008) and has served to inform the Dynamic Model of Multilingualism (Herdina and Jessner, 2002), discussed below. Essentially, van Geert models development - both in general and in terms of language development specifically - as growth, taking the iterative growth equation as his starting point (van Geert, 1995; see also de Bot et al., 2007 for an overview). In this context, growth is conceived as a bidirectional process, one that is "concerned with the increase or decrease (negative increase) of one or more properties" (van Geert, 1995). The key principles of the growth model are that (1) there needs to be something that can grow, known as the "minimal structural growth condition" (van Geert, 1995: 314), (2) growth is dependent on resources and (3) these resources are limited and interlinked in a dynamical system (van Geert, 1995). In terms of language learning, van Geert distinguishes between external and internal resources, which are divided further into several general classes, namely: spatial, time, informational, motivational/energetic and material. With regard to internal resources, an example of a spatial resource is available mental capacity. Time in this context is taken to mean how much time a learner must spend on the task, and hence classed as an internal temporal resource, while informational resources relate to knowledge possessed by the learner. Motivational/energetic

resources refer to the individual's effort, interest and motivation to learn. Finally, internal material resources relate to the learner's physical body, for instance, whether the senses are working correctly (van Geert, 1995). The various classes of external resources include: the physical environment (spatial), the learner's linguistic environment (informational), positive or negative reinforcement given by the environment (energetic/motivational), availability of learning materials, or even basic things such as food and shelter (material) (van Geert, 1995). Van Geert terms this interlinked structure of resources the "cognitive ecosystem" (van Geert, 1995: 315). The resources can be compensatory, in the sense that a lack of one resource (e.g. time) can be compensated, to a certain extent, by more of another (e.g. higher motivation) (see de Bot, 2008). The interconnectedness of resources means that they interact and affect each other over time, and specific resources play a different role at the various developmental stages (de Bot, 2008). An important implication that stems from the fact that growth is resource-dependent and resources are limited is that of "carrying capacity", which is the idea that the final attainable growth level is also limited (Van Geert, 1995: 316). Since the growth equation is iterative, the present growth level is determined by the previous growth level, subject to the resources available at that point (see de Bot et al., 2008).

Growth equations are useful for modelling first and second language development because they allow for the simplification of what are otherwise very complex developmental processes. The model can be used in two ways: either to deductively infer precise hypotheses about development, subsequently testing these against available data (see van Geert, 1995 for examples of this kind of application of the growth model). Alternatively, if no such data is available, then the dynamical growth model can serve as a guideline for further inquiry and a source of theoretical questions (van Geert, 1995).

(2) Complexity theory view of SLD (Larsen-Freeman and Cameron)

This approach is most closely related to Thelen and Smith's embedded/embodied theory of development (see above for discussion, and also Thelen and Smith, 1994) in the sense that no mathematical equations are used, but instead the key tenets of DST/complexity theory are applied in a qualitative way, to conceptualise SLD and thereby inform inquiry and methodology. Larsen-Freeman and Cameron's complexity theory approach is effectively a detailed analysis of the global and methodological implications that stem from viewing SLD as a complex dynamic system. At the heart of the approach is the focus on language *use* in context. Thus, it is argued that change, or processes and factors that result in change, should be the focus of research, as opposed to an attempt to look for static or unchanging entities (Larsen-Freeman and Cameron, 2008). Therefore, the aim is to study how the language system changes with time, what happens before and after relatively steady states, which factors lead to the destabilisation of the system. Consequently, "from

a dynamic systems point of view, what is studied are not single variables, but rather changes in systems" (Larsen-Freeman and Cameron, 2008: 122). These changes are conceptualised in terms of systems stability and attractors of varying strength (Larsen-Freeman and Cameron, 2008).

A further implication of viewing language as a complex system is that, as such, it cannot be understood by studying the various components in isolation. The impact of environmental factors, both internal and external, cannot be ignored, since "context is seen as an intrinsic part of a system, not as a background against which action takes place" (Larsen-Freeman and Cameron, 2008: 16). This interconnectedness applies not only to the subsystems and context-specific variables, but also to timescales. Therefore, Larsen-Freeman and Cameron warn against conflating timescales, but instead advise researchers to "seek linkages across levels and timescales" (Larsen-Freeman and Cameron, 2008: 242). In sum, the aim of the complexity theory approach is to offer a new way of thinking about language development and offer unique conceptual tools for further inquiry by providing a shift in focus and specific methodological recommendations (Larsen-Freeman and Cameron, 2008).

(3) Dynamic Model of Multilingualism (DMM) (Herdina and Jessner)

Since bilingualism is the simplest form of multilingualism, much of the DMM is directly applicable to the study of bilingualism and SLD. The DMM is concerned with the development of the multilingual language system in terms of what drives development, how far the system will (or can) develop, what leads to stabilisation and perturbations within the system. Within the DMM, development is modelled as a function of interacting finite resources and "efforts". The fundamental assumption of the DMM is that overall resources are limited, and the language system competes for these resources (Herdina and Jessner, 2002). It is postulated that both language acquisition and language maintenance require effort, and that these efforts themselves are functions of the speaker's internal and external environment, i.e. the limited resources available (Herdina and Jessner, 2002). Taking this together, the overall degree of multilingual proficiency achieved by an individual is modelled as a function of general language effort (GLE), which is taken to be the sum of the language acquisition and language maintenance efforts (Herdina and Jessner, 2002). The GLE is divided up between languages of a multilingual speaker and thus the GLE itself is a finite resource (Herdina and Jessner, 2002).

Within the DMM, the driver of development is taken to be the "communicative needs" of the speaker (Herdina and Jessner, 2002: 135). These communicative needs "refer to all situations in which language is used as a means to express oneself or as a tool for thought" (Herdina and Jessner, 2002: 135). A further distinction is made between "effective" and "perceived" communicative needs, with the former defined by the objective "recurrent communicative

requirements of the speaker" (Herdina and Jessner, 2002: 136), while the latter are subjective and include anticipation of possible other "states" where the (effective) communicative needs may be different (see Herdina and Jessner, 2002). This distinction between effective and perceived communicative needs carries important theoretical implications for the development of a speaker's language system. Specifically, while the effective (objective) communicative needs of the speaker certainly have a bearing on the perceived communicative needs, it is the perceived communicative needs that determine how much GLE a speaker is willing to expend, and thus how far the system will develop and where it will stabilise (Herdina and Jessner, 2002).

The theoretical constructs of GLE, which itself is a function of available resources, and communicative needs are applied in order to model and explain certain multilingual phenomena. For example, the domain specificity principle (see Grosjean, 2010 and also Chapter 2) is explained on the basis of the principle of economy of effort (Zipf's law) and the phenomenon of attractors, which are steady states assumed to require less effort to maintain (Herdina and Jessner, 2002). Since resources are limited and both language learning and maintenance require effort, it follows that the language system and its various subsystems will only be maintained at the minimum level required to meet the individual's perceived communicative needs. The development of domain-specific language skills result in a more stable system, and hence require less maintenance effort than a "fully-fledged all-purpose language system" (Herdina and Jessner, 2002: 105). This notion of stability is applied within the DMM to model other multilingual phenomena, such as, for instance, cross-linguistic interference and transfer. The DMM proposes that interference and transfer can be viewed as functions of the proximity (in terms of relative competence in the languages) and distance respectively between the languages involved. (Herdina and Jessner, 2002).

3.3.3 Examples of DST studies of second language development

The DST-based SLD studies conducted so far demonstrate the broad applications of the DST approach, both in terms of the kinds of multilingual phenomena investigated and the methodologies used. A review of the literature suggests that these studies can be divided into the following broad categories, subject to a certain degree of overlap: (1) studies focusing on individual variation in SLD at different subsystems levels; (2) investigations of state changes in SLD over time, either at a global or subsystems level, and attempts to model aspects of SLD as dynamic processes; (3) studies looking at the interaction of sets of linguistic and extralinguistic factors that are considered relevant for SLD, or attempts to isolate a specific factor and examine its influence.

Examples of (1) include a case study looking at intra-individual variability with respect to changes in L2 systems at a time of rapid development (Verspoor et al., 2008) and an investigation of variation in the acquisition order of English morphemes (Lowie and Verspoor, 2015). In particular,

it was found that, while the acquisition order of morphemes does behave in a stage-like way at a global group level, there is significant degree of variation at the individual learner level. The authors conclude that, such "grand sweep" effects that may be generalizable to large populations of learners may not be meaningful if one is interested in the progress of an individual learner in a specific context (Lowie and Verspoor, 2015).

There are numerous examples of (2), the broadest category of the three as defined here. Studies looking at changes in the states of the system and emergence of pattern at a global level include an investigation of phase transitions in the development of writing fluency (Baba and Nitta, 2014) and an exploration of regularities in L2 development from a DST perspective (Lenzing, 2015). Examples of type (2) studies focusing on modelling specific aspects of SLD as a dynamic process include a study investigating dynamic patterns in the development of complexity and accuracy in the acquisition of Finnish (Spoelman and Verspoor, 2010). The researchers found that the interaction of different complexity measures considered changes over time. In particular, it was observed that as word complexity increases, so do noun phrase and sentence complexity, on the other hand, no such relationship was found between noun phrase and sentence complexity. The results showed no meaningful relationship between accuracy and complexity measures over time and a high degree of individual variation was observed within different subsystems of accuracy and complexity (Spoelman and Verspoor, 2010). Other studies of the second type have focused on modelling L1 attrition as a dynamic process, either in general (Opitz, 2013) or at a subsystems level (de Leeuw et al., 2012 and 2013; Ecke and Hall, 2012). Furthermore, there have been attempts to apply DST principles to the development of grammars and, in particular, examine the compatibility of DST with Universal Grammar (see Plaza Pust, 2008; de Bot et al., 2013 for a discussion on UG within the context of DST).

The most relevant DST studies for the present project are type (3), as they consider the relationships between factors in the context of the development of bilingualism over the lifespan. Of particular interest is a study conducted by Schmid and Dusseldorp, which examines the impact of groups of extralinguistic and sociolinguistic factors on L1 attrition, applying quantitative methods of analysis (Schmid and Dusseldorp, 2010). The specific factor groups considered were exposure to the L1, identification and affiliation with the L1 and attitude towards the L1. The data were collected from two attriting populations with German as their first language, one in a Dutch language context (n = 53) and one in an English linguistic environment (n = 53). The results were compared to those of a control group of Germans in Germany (n = 53). Despite the comparatively large size of the population in the context of SLD research, the predictive power of the factor groups considered was found to be relatively weak (Schmid and Dusseldorp, 2010). Other studies within category (3) have focused on the influence of a single factor in SLD. For example, Cherciov (2012) looked at the impact of attitude on migrants' L1 attrition and L2 proficiency. The

participants were 50 post-puberty Romanian migrants who have spent at least 10 years in Canada. The study used a combination of approaches: attitude was measured by means of questionnaires and interviews, and proficiency through a C-test and verbal fluency task. The results showed that the effect of attitude on L1 attrition is non-linear and prone to fluctuations (see also Cherciov, 2011 for an exploration of the effect of attitude on L1 attrition).

3.4 A DST approach to bilingualism: implications for the present project

The final section of this Chapter aims to apply the DST theory discussed above in order to consolidate the view of individual bilingualism introduced in Chapter 2. In particular, the bilingual profile is discussed as a dynamic concept, as this will form the basis of the study design (see Chapter 5).

3.4.1 A dynamic view of bilingualism

Since DST in the field of applied linguistics is concerned with language use in context (Larsen-Freeman and Cameron, 2008), the approach is fully in line with the definition of bilingualism as language use proposed in Chapter 2. Furthermore, the approach supports the unique speaker-hearer view of the bilingual person; indeed, expressly postulates that "the multilingual system is not reducible to multiple monolingualism" (Herdina and Jessner, 2002: 19). This follows from the complete interconnectedness principle, whereby the bilingual's L1 and L2 are viewed as interconnected subsystems of the whole language system, which interact and influence each other. As a consequence, "the acquisition of several language systems results in a qualitative change in the speaker's psycholinguistic system, that is, as the whole psycholinguistic system adapts to meet new psychological and social requirements, it also changes in nature" (Herdina and Jessner, 2002: 92). The findings set out in Chapter 2, pointing to the interconnected nature of the bilingual lexicon and the inability of bilinguals to "switch off" one of their languages can be considered evidence in support of this DST principle. The complete interconnectedness principle also implies that there is no need for any additional mechanism within the bilingual language system that controls language selection (see Chapter 2 for details). The same principle applies to the cultural aspect of bilingualism, meaning that, from a DST perspective, a bicultural individual is a unique product of the two (or more) cultures to which s/he belongs, and not the sum of two monoculturals. In addition, the findings described in Chapter 2, which demonstrate that pragmatic aspects of language use influence linguistic aspects (e.g. sentence parsing, requesting behaviour) emphasise the fact that, within a DST approach, all subsystems are interconnected – linguistic, pragmatic etc.

At the heart of DST is the idea of continuous change over time. Applied to bilingualism, this means that the language system is in constant flux, and thus there can be no permanent states. This

continuous change is conceived as being bidirectional, encompassing both acquisition and attrition, and is influenced by external and internal environmental factors. This implies that there can be no permanent states in the system - states that appear permanent are conceptualised as steady states (attractors) of varying strength. In particular, fossilization is an example of such a steady state (e.g. Larsen-Freeman, 1997; see Chapter 2). In this way, DST does not impose a limit on development. At the same time, DST is able to account for the fact that the language system does not continue developing indefinitely, because language development is conceived as a function of limited available resources and the communicative needs of the individual (Herdina and Jessner, 2002; Van Geert, 1995; see above for details). Furthermore, DST postulates that language development is not forever restricted by the initial conditions (Larsen-Freeman and Cameron, 2008: 97), while being sensitively dependent on these conditions. Taking the example of the critical period for SLA (see Chapter 2 for details), DST is able to account for the seemingly conflicting findings that (1) there is a strong negative correlation between age of SLA and L2 attainment and (2) that some adult learners do appear to achieve native-like proficiency in their L2. These findings are also in line with the DST principle of individual variation, which implies that there can be no set "critical period" for SLA which would hold true for everyone.

Finally, the DST principles imply that bilingualism cannot be "measured" in a way that is absolute, but only in relative terms. It follows that high bilingual proficiency is a concept that is, in effect, arbitrary and depends on the criteria imposed by the researcher. The idea of relative competence in the two languages – and the notions of balance and language dominance – are continuously shifting states and, as postulated by the DMM, can be conceived in terms of the stability of the language system, and how close the two languages are two each other in terms of relative competence (proximity of the languages). We have already seen above that, according to the DMM, the phenomena of interference and transfer (involuntary interference, such as lexical borrowing due to insufficient vocabulary in one of the languages) can be viewed as a function of the proximity or distance (in terms of relative competence) of the languages in question. Specifically, "the closer the levels of both systems are to each other, the greater the degree of interference to be expected, as systems integrity is threatened by the degree of proximity. Transfer on the other hand is defined as a function of the distance between the two (or more) systems" (Herdina and Jessner, 2002: 133). This idea is closely related to the concept of systems stability in terms of looking at "the outcome of perturbing, or pushing, the system away from its stable behaviour" (Larsen Freeman and Cameron, 2008: 238). In other words, this measure of the stability of the language system considers how much input is required to move the system away from its current steady state: the more stable a system is, the greater input or degree of perturbation required to shift the system into a different behaviour (Larsen-Freeman and Cameron, 2008: 238-9). Applied to the above, this suggests that the closer the bilingual's languages are in terms of relative competence, the less stable the system is as a whole, meaning that less input – perhaps, simply reading more in one of the languages – is

required to alter the language dominance balance. It therefore also follows that, the closer a bilingual's languages are in terms of relative competence, the more interference is likely to be experienced by the individual, together with more frequent shifts in language dominance.

3.4.2 The bilingual profile as a dynamic concept

The idea of the bilingual profile introduced in Chapter 2 is important for the present study because it provides a way of describing the bilingualism of individuals or groups on the basis of the main relevant dimensions of bilingualism. In other words, it represents a necessary simplification, which makes it possible to compare groups of bilinguals with reference to these dimensions – sets of internal and external contextual factors. It has already been mentioned in Chapter 2 that the bilingual profile is not a static concept, but rather represents a description at a given moment in time, and the various contextual factors that make up the description interact and influence each other (see Chapter 2, Section 2.2). DST, by construction, provides a useful framework for viewing the bilingual profile as a dynamic concept. This application of the DST principles is similar to van Geert's (1995) growth model of language development, which views language development as unfolding over time, as a function of external and internal resources (see Section 3.3.2 above for details). These resources in effect correspond to the components of the bilingual profile identified in Chapter 2. Therefore, while DST does not alter the theory introduced in the preceding Chapter in terms of the dimensions that are considered relevant for the description of bilingualism, the DST framework represents a conceptual shift and has important methodological implications.

An important consequence of the DST principles applied to the study of bilingualism in the way described above is that the interrelationships between the various components of the bilingual profile are complex and not easily predicted. In particular, we have seen that DST studies looking at relationships between sets of linguistic and extralinguistic factors within the context of the development of bilingualism over time (studies labelled as type (3) in Section 3.3.3 above) have generally not found strong links between factors within the populations investigated. This can be attributed to two things: firstly, the contribution of other factors, which may be highly variable within the populations considered and, secondly, the principle of individual variation. The former suggests that, in order to successfully study the interrelationships between sets of factors in SLD, careful choice of population is needed in so as to isolate the factors of interest as far as possible. This means that the population of bilinguals involved in such a study needs to be fairly homogenous with respect to at least a number of the other significant factors. While there can be no constants from a DST perspective, the aim is to establish which factors behave more or less like constants, and can be taken to be effectively invariable for a given population, at least for a specific time interval (Herdina and Jessner, 2002). Secondly, the principle of individual variation, in turn, suggests that a study aiming to find differences at a group level would need to be fairly large-scale,

otherwise global trends would be obscured by individual differences. These general principles are applied in the design of the present study, the formulation of hypotheses and subsequent interpretation of the results (see Chapters 5, 7 and 8).

5. Research Questions and Methodology

This Chapter sets out the research questions and hypotheses formulated on the basis of the review of the literature. The study design is explained and described, as are the participants involved in the study. The Chapter concludes with some further details on the technical aspects of the processing and analysis of the data obtained in the course of the study.

5.1 Research questions and hypotheses

An overview of research at the intersection of bilingualism and interpreting set out in the preceding Chapter identified some important gaps in the literature, which include the following:

(1) Very little is known about the "exceptional" bilingualism of interpreters and the development of this type of bilingualism; the limited work that has been carried out in this area has tended to focus on conference interpreters. In particular, no studies aiming to describe the bilingualism of interpreters have been carried out with the participation of PSI interpreters.

(2) The only detailed inquiry seeking to describe the bilingualism of interpreters, including in terms of attitudes and perceptions as well as biographies, is that conducted by Thiéry (1975), which focused on AIIC AA interpreters only. The characteristics identified by Thiéry as pertaining exclusively to AIIC AA interpreters (defined by him as "true bilinguals") have not been investigated further; in particular, the question of whether the characteristics identified are indeed exclusive to AIIC AA interpreters, or are in fact typical of professional conference interpreters in general, remains unanswered. Other questions raised by the study, such as the reasons why some AIIC AA interpreters obtained their double A classification at a later date, and what the properties of this group are, have not subsequently been investigated further.

(3) The potential of the AIIC register of conference interpreters with corresponding language classifications as a resource for the study of individual bilingualism remains unexplored since Thiéry's pioneering 1975 dissertation. It is argued here that the AIIC A and B language classifications can be viewed as either (i) ratings of native-like competence in a language according to external reviewers, and/or (ii) externally-ascribed native (mother tongue) or non-native speaker identity in a language. Possible avenues for further investigation therefore include both questions pertaining to ultimate attainment in a second language, as well as self-ascribed and externally-ascribed native speaker identity in a language, and the conditions that are associated with this.

5.1.1 Research questions

On the basis of the foregoing, the present study aims to describe three populations of professional interpreters as bilinguals, in terms of both biographical and attitudinal factors, in order to further understanding of the nature of this type of bilingualism and its development. The specific populations investigated are AIIC AA and AB conference interpreters, and PSIs on the UK National Register (NRPSI). The research questions addressed as part of this inquiry are set out below. The first question takes a broad view, aiming to identify which properties, if any, are common to all three groups of interpreters surveyed, and thus what characterises professional interpreters as a group of bilinguals. Questions two and three aim to investigate properties of the AIIC AA and AB language classifications and their wider implications for the study of individual bilingualism, exploring in more depth the notions of true bilingualism (Thiéry, 1975) and mother tongue identity in two languages. Question four compares the UK PSI and AIIC AB groups, taken to represent the wider populations of public service and conference interpreters, in order to identify the main ways in which these groups differ as bilinguals. The implications of these differences for the study of individual bilingualism more generally are considered. The specific research questions investigated are as follows:

1. Are there any characteristics that broadly define professional interpreters as a group of highly proficient bilinguals, irrespective of language classification (AA/AB) and domain (PSI/conference), in terms of:

- biographical factors (including age of SLA, childhood linguistic environment, language(s) of education, current language use/exposure);
- attitudes and perceptions (including language maintenance motivation, metalinguistic awareness (language maintenance effort, fluctuations in language dominance, cross-linguistic interference), emotional attachment towards their languages, self-ratings of proficiency in their languages)?

2. (a) (i) Do AIIC AA interpreters, defined as "true bilinguals" by Thiéry (1975), possess special characteristics that set them apart from other comparable populations of highly proficient bilinguals, as argued by Thiéry? Specifically, do AIIC AA interpreters differ from AIIC AB interpreters as bilinguals in terms of:

- biographical factors (including age of SLA, childhood linguistic environment, language(s) of education, current language use/exposure);
- attitudes and perceptions (including language maintenance motivation, metalinguistic awareness (language maintenance effort, fluctuations in language dominance, cross-linguistic interference), emotional attachment towards their languages, self-ratings of proficiency in their languages)?

(ii) What do these findings imply for bilingualism more generally, in particular with respect to: ultimate attainment in a second language; the critical or sensitive period for second language acquisition; the predictions of the dynamic systems theory (DST) view of second language development over the lifespan?
(b) Do AIIC AA interpreters identify themselves as "true bilinguals", and what is the relationship between Thiéry's (1975) definition and: (i) the AIIC AA classification; (ii) mother tongue identity in the two languages; (iii) "true bilingualism" in writing?
(c) Is there a subgroup of AIIC AA interpreters who were awarded their double A classification at a later date (i.e. who were initially classed as AB upon joining AIIC)? If so, does this group differ from AIIC AA interpreters who obtained their AA classification upon joining in terms of biographical and/or attitudinal factors?

3. If the AIIC A and B language classifications are taken to be markers of externally-ascribed native and non-native identity in the respective languages, what does the description of the AIIC AA and AB groups imply in terms of the following questions:
(a) Does externally-ascribed mother tongue identity in two languages generally correspond to self-ascribed identity?
(b) Where this is not the case, are there any biographical or attitudinal factors that are associated with such anomalous groups?
(c) Which factors appear to be the most important in terms of shaping self-ascribed mother tongue identity?

4. (a) If PSI and conference interpreters, as represented by the NRPSI and AIIC AB groups, are found to differ with respect to:

- biographical factors (including age of SLA, childhood linguistic environment, language(s) of education, current language use/exposure);
- attitudes and perceptions (including language maintenance motivation, metalinguistic awareness (language maintenance effort, fluctuations in language dominance, cross-linguistic interference), emotional attachment towards their languages, self-ratings of proficiency in their languages)?

what are the main differences between these groups as bilinguals?
(b) What are the implications of these findings for bilingualism more generally, in particular, in terms of the relationships between biographical and attitudinal factors?

5.1.2 Hypotheses

The following hypotheses have been formulated on the basis of the literature surveyed in Chapters 2-4 of the dissertation.

Question 1:

- With respect to biographical factors, it is anticipated that, on average, respondents from all three groups will have acquired both of their strongest working languages before puberty. This is based on the fact that all interpreters, by virtue of their profession, need to have a high level of proficiency in their active working languages, and the strong negative correlation between age of SLA and L2 attainment (see Chapter 2). That having been said, on the basis of the DST principle of individual variation, it is expected that there will be respondents with a higher age of SLA. It is further expected that, in view of the training and qualifications required for entry into the interpreting profession, a substantial proportion of respondents from all groups will have been exposed to both of their strongest languages during higher education, or have been exposed to the active language that is not their first language as part of education.
- As regards attitudes and perceptions, on the basis of the DMM (Herdina & Jessner, 2002) hypothesis that language maintenance requires effort, as well as Thiéry's (1975) finding that his respondents felt that maintaining their working languages required a degree of conscious effort, it is expected that the majority of interpreters from all groups surveyed will demonstrate awareness of a language maintenance effort. On the basis of the literature on bilingualism discussed in Chapter 2, according to which emotional factors and attitudes are strongly influenced by the childhood linguistic environment (in particular, this appears to be the case with regard to perceptions of the emotional force of words; e.g. Dewaele, 2004), it is predicted that attitudinal factors within all three groups will be affected by the linguistic environment in childhood. In particular, it is hypothesised that all respondents will demonstrate greater levels of attachment/emotional response to their first language, or the language most strongly associated with childhood, irrespective of other factors, such as subsequent language use and exposure. Finally, given the link between age and context of SLA and ultimate attainment (see Chapter 2), it is expected that self-ratings of proficiency/confidence in the two strongest languages will again be most strongly influenced by childhood linguistic environment factors. Specifically, it is expected that respondents from all groups will tend to rate their first language, or the dominant language in childhood, as the stronger of their active working languages. In particular, it is expected that this will be the case in terms of active use of the language, based on Paradis' (2004) argument that processing in the first language, acquired by immersion, is more automatic than that in the second language, resulting in more stable performance.

Question 2:

Part (a) (i) If the AIIC AA group is defined as having two mother tongues in accordance with the AIIC language classifications, while the AB group is defined as having one mother tongue and one foreign language, then the following differences are expected between the AIIC AA and AB groups:

- The AA and AB groups are expected to differ in terms of childhood linguistic environment and average age of SLA. In particular, it is expected that the AA group will tend to have acquired their second language at an earlier age than the AB group, and that both languages will be represented more equally in childhood within the AA group compared with AB group. This hypothesis is based on the literature on bilingualism surveyed in Chapter 2 and Thiéry's (1975) description of the AIIC AA group. A similar pattern is expected in the languages of education for the two groups, with the AA group more likely to have been exposed to both languages than the AB group. At the same time, according to the DST principle of individual variation, individual differences are to be expected, even if the above-described trends are observed at a group level.
- It is expected that the AA interpreters will be characterised by an equal attachment/emotional response to their two strongest languages, while the AB group is expected to demonstrate a greater attachment/emotional response to language A over language B. This is based on the bilingualism literature surveyed in Chapter 2, according to which attitude/emotional response to the bilingual's languages is shaped, in particular, by the childhood linguistic environment and relative proficiency in the languages (e.g. Dewaele, 2004).
- With regard to awareness of language maintenance effort, it is proposed that this will be influenced, to some degree, by the age of acquisition and exposure to the language(s) in childhood. This is based on Paradis' (2004) argument that a language acquired earlier results in more automatic performance and hence a more stable language system. On the basis of the DMM, a more stable system requires less effort to maintain (see Chapter 3). Therefore, if the first hypothesis is correct and the age of acquisition among the AA group is indeed lower than that of the AB group, it can be expected that AA interpreters will tend to perceive language maintenance as a conscious effort to a lesser degree than AB interpreters.
- With respect to motivation to maintain the two languages, it is anticipated that the AA group will exhibit a higher level of non-professional motivation to maintain both languages at their present high standard than the AB group. This expectation is based on the earlier hypothesis that the AA group is likely to exhibit equal attachment towards both languages, and this may in turn influence the group's motivation to maintain both at a high standard, regardless of professional requirements (Chapter 2, Section 2.2 (6)).

- It is expected that a greater degree of awareness of fluctuations in language dominance will be observed among the AA group compared with the AB group, as a result of the closer proximity (in terms of relative competence) of the two languages of the AA group compared with the AB group. With regard to cross-linguistic interference, it is expected that this will be perceived as effectively bi-directional by AA respondents, whereas AB interpreters are more likely to report greater interference in the A→B direction. This prediction is again based on the argument that processing in the first language is more automatic, and therefore more stable/resistant to external influence than that in the second language (Paradis, 2004).
- According to the literature, self-evaluation scores of bilingual proficiency in their two languages are a reliable measure of actual relative competence in these languages (e.g. Hamers and Blanc, 2000). It is therefore expected that the self-reported proficiency scores for the two languages will be closer for the AA group than the AB group, with the latter tending to rate their A language as stronger than language B.

(ii) If differences are observed between the AIIC AA and AB groups with regard to biographical and/or attitudinal factors, then the findings may have implications in terms of the conditions that are necessary and/or sufficient for the attainment of native-like competence in two language, or which factors appear to contribute the most to the attainment of such high levels of competence in a second language. A comparison of the findings for the AA and AB groups may also have implications in terms of a critical/sensitive period for second language acquisition, the duration of this period and whether there are exceptions. With regard to the predictions of the DST approach to individual bilingualism, the findings for the AA and AB groups may reveal, in particular, whether there is evidence of individual variation in the context of trends at a global level; evidence of relationships between external and internal (personal) contextual factors and the interaction of timescales, such as, for example, the influence of linguistic environment in childhood on attitude to the languages in question in later life.

Part (b) On the basis of Thiéry's (1975) findings, it is expected that the majority of AIIC AA interpreters will identify as true bilinguals, and that Thiéry's definition will be taken by most to correspond to the AIIC AA classification. At the same time, as noted in Chapter 4, the true bilingualism definition concerns external perceptions only, and does not address the subjective component of mother tongue identity in two languages. On this basis, it is contended that mother tongue identity in two languages and true bilingualism are not the same concept, in particular, as the term "mother tongue" has additional emotional connotations (see Chapter 2). While, according to Thiéry's (1975) definition, true bilingualism does not necessarily imply true bilingualism in writing, it is nonetheless reasonable to suppose that the latter will tend to accompany the former.

Part (c) On the basis of Thiéry's (1975) findings, it is expected that a subgroup of AA respondents will be identified who obtained their AA classification after the date of joining AIIC. Very little is known about this, however, the following hypotheses are proposed as possible reasons for and consequences of the later acquisition of the AIIC AA classification:

- A later average age of acquisition of the language that was initially classed as a B language, compared with AIIC AA interpreters who obtained the AA classification immediately upon joining AIIC. Also, it is expected that differences will be observed with regard to the relative exposure to the two languages in childhood among this group of respondents compared with those AA respondents who were immediately classed as AA upon joining AIIC. Specifically, it is anticipated that the language that was initially classed as a B will be less prominent in childhood compared with the language that was initially classed as an A among those respondents who obtained their AA classification at a later date. The AA interpreters who were immediately classed as such upon joining AIIC are expected to have had both languages represented more equally in childhood. In addition, it is expected that a lower proportion of respondents who were awarded their AA classification at a later date will have had both A languages as the languages of higher education, compared with the rest of the AA group.
- It is further hypothesised that the subgroup of AA interpreters who were awarded their AA classification at a later date may exhibit differences in terms of attitude towards their A languages, identity and confidence (self-ratings of proficiency relative to a monolingual standard), compared with the rest of the AA interpreters. In particular, it is anticipated that the AA subgroup who were initially classed as AB will report a greater degree of attachment/emotional response to the language that was immediately classed as an A, compared with the language that was initially classed as a B; that this subgroup of AA interpreters will be less likely than the rest of the AA group to identify as having two mother tongues, and less likely to identify as true bilinguals; finally, that they will tend to rate the language initially classed as an A as stronger than the language initially classed as a B. These results are expected to differ from those observed for the rest of the AA group, with the main group of AA interpreters (those immediately classed as AA upon joining), exhibiting more equal attachment to their languages, being more likely to identify as having two mother tongues/being true bilinguals, and more likely to rate their languages as being equal, compared with those AA respondents who were initially classed as AB.

Question 3:

Part (a) On the basis of the literature surveyed in Chapter 2 on native speaker identity, it is expected that externally-ascribed and self-ascribed mother tongue identity in two languages will tend to match for the majority of respondents in both the AA and AB groups. However, as suggested by the literature, this is not always the case, and therefore it is anticipated that there will be subgroups of

respondents within both groups of AIIC interpreters whose self-ascribed identity does not match that which has been ascribed by others. In other words, it is predicted that there will be a minority of AA interpreters who do not feel that both of their A languages are mother tongues, and a minority of AB respondents who, on the contrary, do feel that both of their strongest working languages are mother tongues.

Part (b) The literature surveyed in Chapter 2 suggests that identity and attitude towards the languages are shaped, in particular, by the age of acquisition and childhood linguistic environment. On this basis, the following differences are expected among the subgroups of AA and AB interpreters whose self-ascribed identity does not match that which has been ascribed by others:

- It is expected that the subgroup of AA interpreters who do not feel that they have two mother tongues will be characterised by a higher average age of SLA and less equal exposure to both languages in childhood compared with the rest of the AIIC AA respondents. It is also hypothesised that this subgroup of AA interpreters will report a greater attachment to one of their languages over the other compared with those AA interpreters who do identify as having two mother tongues.
- As regards AB respondents who consider both languages to be mother tongues, it is anticipated that this group will have a lower average age of SLA and more equal exposure to both languages in childhood compared with the rest of the AB group. It is further expected that this subgroup of AB respondents will exhibit more equal attachment to both of their languages compared with the rest of the AB group who, in turn, are anticipated to report a greater attachment to language A over language B.

Part (c) On the basis of the previous hypotheses, it is expected that childhood linguistic environment factors (are of SLA and relative exposure to the languages in childhood) will be revealed as the most important in terms of shaping self-ascribed mother tongue identity in two languages.

Question 4:

As explained in Chapter 4, both PSI and conference interpreting require the ability use the active languages at a very high level, in a variety of contexts, as well as the ability to mediate across the corresponding cultures. Therefore, there are no grounds to suppose that significant differences will be observed between interpreters as bilinguals on the basis of the setting in which they work. However, it needs to be noted that, due to the nature of the PSI group as represented by interpreters on the UK National Register, it is expected that the dominant linguistic environment of this group will be the L2 (English in this case). No such information is available about the conference interpreters. According to the DST principle of interconnectedness, external contextual factors have a bearing on internal factors in second language development (see Chapter 3). Therefore,

differences in attitudinal factors between the PSI and conference groups may be observed due to the impact of the L2 as the dominant linguistic environment of the PSI group. If this is indeed found to be the case, it is possible that a comparison of the AB and PSI groups may reveal important information about the impact of the factor of dominant linguistic environment (language of the country of residence) on other aspects of individual bilingualism, in particular, on attitudinal factors and perceptions.

5.2 Design of the study

This section sets out the details of the study designed to address the research questions outlined above, and explains the theoretical frame work on which it is based. Further information is provided about the groups of interpreters approached to take part in the study, in particular, with respect to their working languages.

5.2.1 Theoretical framework

The aim of the study is to describe three populations of professional interpreters as bilinguals in terms of biographical factors, attitudes and perceptions. The theoretical framework for the study is based on the literature surveyed in Chapters 2 – 4 of the dissertation. Chapter 2 identified the main dimensions of bilingualism, which are relevant for the description of individual bilingualism, and outlined some of the ways in which these dimensions interact and influence each other. The specific dimensions identified were: (1) age and context of language acquisition; (2) competence in the two languages; (3) state of the language system, that is, whether each language is being acquired, maintained or forgotten; (4) domains and context of language use; (5) the bilingual's external environment (linguistic, cultural, social); (6) the bilingual's internal environment (e.g. motivation, attitude towards the languages, identity, education, aptitude, personality) (see Chapter 2, Section 2.2). Chapter 3 consolidated the view of this bilingual profile as a dynamic system, the components of which interact and influence each other over time. The implications of this dynamic view of bilingualism include the idea that second language development is an embedded process, that is, it is viewed as unfolding in context with external environmental factors influencing internal ones and vice versa. Of the dynamic models of second language development described in Chapter 3, it is Van Geert's model of language development as growth (see Section 3.3.2 (1)) that is most relevant in the present case, as it conceptualises the development of bilingualism over time as a function of interacting external and internal resources. As such, the growth model view of bilingualism can be considered as a dynamic bilingual profile. Chapter 4 identified what is known about interpreters as bilinguals and what remains to be discovered, and the specific research questions set out earlier in this Chapter were formulated on this basis.

Taking the findings of the literature together with the specific characteristics of interpreters and the research questions formulated at the beginning of this Chapter, the populations are described as bilinguals in terms of the following sets of interacting factors: (1) mother tongue identity and linguistic situation in childhood[1], including age of acquisition; (2) language(s) of education; (3) present linguistic environment and language use; (4) level of non-professional motivation to maintain the languages and awareness of language maintenance effort; (5) metalinguistic awareness (fluctuations in language dominance, cross-linguistic interference); (6) attachment and emotional response to the languages; (7) self-ratings of proficiency in the two strongest languages relative to each other; (8) self-ratings of proficiency in the two languages compared to a monolingual standard (this is intended to be a measure of confidence in the languages). Thus components (1) – (3) of the description correspond to the relevant biographical factors, whereas components (4) – (8) concern the respondents' attitudes and perceptions. The next section gives details of the data collection instrument used to obtain this information, as well as additional clarifications about the groups of professional interpreters and their working languages.

5.2.2 Data collection instrument: large-scale questionnaire

In order to investigate the research questions set, the information outlined above needed to be obtained from the three populations of interpreters. This could be done by means of either a questionnaire or interviews with the participants. It was considered that a large-scale questionnaire is the most appropriate data collection instrument in the present case, for the following reasons. First of all, the present study aims to identify trends at group level and compare three populations of interpreters in terms of these trends. As indicated in Chapter 3, the principle of individual variation suggests that, in order to global trends to be observed, a large number of participants is needed. In addition, the populations to be described – NRPSI and AIIC AA and AB interpreters – are themselves large, with over 2,000 members registered with the UK NRPSI and over 3,000 members of AIIC (see Chapter 4). Thus, conducting interviews with participants on this scale is not deemed to be practically feasible, and a questionnaire-based study is more appropriate on these grounds. Furthermore, a questionnaire makes it possible to standardise responses, which can then be more readily compared in terms of general trends, whereas an interview format is more suited to obtaining detailed information from individuals. Given the aims of the project, a questionnaire format is more appropriate in the present context.

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[1] Here, childhood is taken to be approximately the period between 0 - 12 years, in other words, before the onset of puberty. This is in line with literature on the critical or sensitive period for language acquisition (see, for example, DeKeyser, 2013).

(1) Design and structure of the questionnaire

Three distinct questionnaires were produced for each group of interpreters (see Appendix I). The AIIC AB and PSI questionnaires were identical in terms of content, but differed in the wording of some of the questions, due to the fact the A and B language classifications apply to conference interpreters only. The AIIC AA questionnaire included several additional questions pertaining to the AIIC AA language classification, the true bilingualism definition and the notion of mother tongue competence in childhood in the two languages (Q5-9 in Section 2; Q9-10 in Section 3; Q10 in Section 5). The term "mother tongue" was preserved in all questionnaires, as opposed to the more neutral term "native language", for the following reasons. Firstly, this is the wording used by the AIIC in its definitions of the A and B language classifications (see Chapter 4). Secondly, the additional emotional connotations implicit in the term "mother tongue" (see Chapter 2) are invoked intentionally, in order to explore notions of identity and emotional attachment to the languages in question.

All three questionnaires were divided into the same themed sections: (1) personal details; (2) bilingualism (working languages and mother tongues); (3) linguistic background; (4) present linguistic and professional situation; (5) attitudes and perceptions, to give the questionnaires a logical structure (Dörnyei & Taguchi, 2010). The intended aims of sections 1 and 2 were to establish some general points of reference, such as age and working languages (additionally, to check that only two strongest working languages were entered). Section 2 also aimed to explore the relationship between working languages and mother tongue competence, as well as assist with subsequent data interpretation and coding. Section 3 was designed to obtain information about respondents' linguistic environment in childhood and their languages of education. Section 4 was intended to establish the relative degree of language use and exposure at present, both in a professional context and otherwise. Additionally, section 4 contains questions pertaining to language maintenance effort and respondents' motivation to maintain their two languages (Q10-14/AA, Q11-15/AB/PSI). Section 5 was given the general heading of "attitudes and perceptions", but the questions were divided into several distinct themes within the section. The first two questions addressed awareness of fluctuations in language dominance; Q5.4-6 were intended to investigate attachment/emotional response to the languages; Q5.7-9 concern relative self-ratings of proficiency in the two languages, with Q5.11-13/AA, Q5.10-12/AB/PSI investigating self-ratings of proficiency relative to a monolingual standard, intended to be a measure of confidence in the languages; Q5.14/AA, Q5.13/AB/PSI pertains to awareness of cross-linguistic interference between the two strongest languages.

The questionnaires were designed in such a way as to ensure anonymity: respondents were not asked to give their names or other biographical details that would make identification possible,

unless they chose to do so at the end of the questionnaire. The questionnaires were designed to be sufficiently detailed so as to provide enough information to address the research questions set, but short enough for respondents to complete in their entirety. Thus, there had to be a degree of compromise between detail and brevity; for example, with respect to childhood linguistic environment, it was not possible to enter into the level of detail covered by Thiéry in his survey of AIIC AA interpreters. As pointed out in Chapter 4, Thiéry was able to obtain a high response rate from his participants as they were his colleagues, and it is likely that he would have known at least some of them personally. Thus, in the present study, the childhood linguistic environment is simplified to its key components of languages of the home, street (country) and (primary) school (Thiéry, 1975). Similarly, other sections of the questionnaire were subject to a necessary degree of simplification, so as to cover the information required for the comparison of the populations without compromising response rate.

(2) Administration of the questionnaire

The three questionnaires were set up online using the online survey software SurveyMonkey. Contact details of AIIC AA and AB interpreters were obtained from the AIIC website, and the public service interpreters' details were obtained from the NRPSI website. All of this information was freely available to the public at the time. A database of interpreters to contact was created using this information.

An initial pilot version of the questionnaire was tested on a small sample of the NRPSI interpreters (135 pilot questionnaires were sent by email). The response rate for the pilot survey was just over 8% (11 completed questionnaires received). The results were analysed and feedback obtained from several respondents with regard to (1) the clarity of the wording of the questions and (2) the length of the questionnaire. On the basis of the feedback and responses received, the wording of several of the questions was altered to dispel any ambiguity, and some questions were omitted as they were not found to be relevant.

The final version of the online questionnaire was sent to each interpreter in each group individually, by means of embedding the link to the online survey in a covering letter. Three different covering letters were used for the three groups of interpreters, to highlight the most relevant aspects of the research project for that particular group. In total, 3094 questionnaires were sent to the three groups of interpreters (200 AA, 1326 AB, 1568 PSI). Responses were then collected via the SurveyMonkey site.

5.2.3 Participants: AIIC AA, AB and UK PSI interpreters

In accordance with the aims and research questions, the populations of interest in the present study are AIIC AA and AB conference interpreters and UK-based public service interpreters registered with the NRPSI. The following additional selection criteria were imposed on the prospective respondents to ensure methodological integrity.

(1) Of the AIIC conference interpreters, only those with English as an A or B language were considered. This is because the questionnaire and all correspondence was in English, and it was important that all elements of the questionnaire were understood as intended.

(2) As stated in Chapter 4, interpreters are often multilingual. The present project is concerned with bilingualism as defined in Chapter 2. Thus, while respondents may have additional weaker or passive working languages, there are two distinct languages that can be considered to be the strongest languages. Therefore, in order to minimise the influence of any other languages known by the respondents, only those AB respondents with one B language were selected to take part in the project (of the AA respondents, all had only two A languages). Of the PSI group, only those with two distinct strongest working languages were approached.

Therefore, throughout this and the subsequent chapters of the present thesis, the term "AIIC AB interpreter" (or "AB interpreter") is used to refer to those AIIC AB interpreters who have one "A" and one "B" language only, according to the AIIC language classifications, unless otherwise specified. The term "public service interpreter" (PSI) is used to refer only to those public service interpreters who are (1) registered with the NRPSI and (2) have two languages which they identify as their strongest working languages, unless otherwise specified.

5.3 Data processing and analysis

This section gives further information on how the raw data obtained from respondents were subsequently processed and analysed.

5.3.1 Initial data processing and software used

Once all responses were received via the SurveyMonkey portal, the online surveys were closed and results collected. The responses for each group were downloaded from SurveyMonkey in Excel format. The spreadsheets with raw data were formatted for ease of interpretation and divided into the corresponding questionnaire sections. An initial data clean-up was conducted by checking individual responses and deleting any incomplete and/or ambiguous responses.

The raw responses received were language-specific, as respondents were asked to state their working languages and, in the case of the AIIC interpreters, indicate the corresponding language classifications. It was only in section 5 of the questionnaire that respondents were asked to give abstract labels to each of their two strongest languages (Q5.3/AA/AB/PSI). The next stage in the initial data processing was therefore to assign labels to respondents' two strongest working languages, and re-code the data where necessary to ensure that these labels were consistent with those in Q5.3. Thus, for the AA group, the two A languages were labelled A1 and A2; A and B for the AB group; L1 and L2 for the PSI group. The remaining questions were then re-interpreted and coded in terms of these language labels. For example, where respondents were asked to state their languages of education (Q3.8/AA/AB/PSI), the responses were entered in terms of the language labels, i.e. for the AA group, for instance, the choices were "A1", "A2", "both A1 and A2", or "other". Similarly for the AB and PSI groups. In the case of respondents' country of residence (Q1.2/AA/AB/PSI) and country of birth (Q1.3/AA/AB/PSI), the responses were coded in terms of the official language(s) of that country and respondents' language labels.

Following the initial data clean-up and re-coding in terms of language labels, all of the responses were prepared for subsequent entry into a statistics software package by assigning numerical values to each response (Brace et al., 2009). For example, questions requiring Yes/No/Unsure answers were coded by means of assigning the numerical values 2/1/0 to each response. Once all responses had been coded numerically, the data was entered into IBM SPSS Statistics (Version 22), a statistical software package widely used in the social sciences for questionnaire analysis among other applications (Brace et al., 2009). SPSS was considered to be the most appropriate statistical software package for the present project, as it combines ease of use with the analytical tools necessary for the present analysis.

Initial checks were then carried out by producing frequency bar charts for each question for each group of interpreters, to ensure that there were no coding errors. Further data clean-up was carried out by removing any empty categories, and grouping together similar categories (Brace et al., 2009; Dörnyei and Taguchi, 2010).

5.3.2 Coding of respondents' working languages

In the AA group the two A languages are labelled A1 and A2. The languages are coded so that A1 is always the first language (with the exception of cases where neither A1 nor A2 is the first language), either acquired on its own or simultaneously with A2, in cases where both languages were learnt from birth. A2 is never the first language on its own: it is either acquired from birth together with A1, or acquired after A1. The AB respondents all have one A language and one B

language only, as per the AIIC A and B language classifications. These two languages are labelled A and B accordingly. Thus, the labels in this case refer only to the current state of the two strongest working languages, and not the age at which these were acquired. The languages for the PSI group are labelled L1 and L2. L1 is always the first language, with the exception of cases where neither L1 nor L2 is the first language. L2 is always the second language, with the exception of cases where both L1 and L2 were acquired simultaneously from birth.

5.3.3 Statistical methods used and presentation of results

The majority of the questions give responses in the form of nominal data, and these are reported as frequencies and percentages. Descriptive statistics are used for the most part, on the basis of which the three populations of interest are described and compared in order to investigate the research questions set. The entire populations were sampled, and the responses obtained can therefore be considered to be representative of the three groups of interpreters.

Inferential statistics are used only in the case of means age of SLA, where the independent samples t-test is applied to compare the mean ages of SLA for pairs of groups of respondents. The aim of this is to determine whether the means ages of SLA of two groups are statistically different from each other, taking the variability into account (see, for example, Field, 2013). In all cases, the two-tailed value of p is given. All t-statistics were calculated in IBM SPSS. In addition, the corresponding effect size r was also calculated manually using the formula: $r = \sqrt{t^2 / (t^2 + Df)}$, where Df is the number of degrees of freedom (see Field, 2013).

The results are presented for groups of interpreters in turn, starting with the additional questions pertaining to the AIIC AA group, followed by a full description and comparison of the AIIC AA and AB groups, concluding with a description of the PSI group and comparison with the AIIC AB group. In the final section, the results for the AB group are repeated so that they can be more readily compared with the findings for the PSI group. For comparison of subgroups of the AA and AB groups with the main populations, the full findings are presented in Appendices II, III and IV, with only the main trends outlined in the text of the dissertation. The discussion of the findings in Chapter 7 reverts to the format of the research questions set out in Section 5.1.1 of the present Chapter.

6. Results

This Chapter reports the responses to the questionnaire obtained from the three groups of interpreters. The first section presents an overview of the questionnaire response rate for the three groups, as well as a general description of the populations (mean age, working languages, mean interpreting experience). The next section deals with questions pertaining to the AIIC AA group, while section three compares the responses given by the AIIC AA and AB groups. The final part of this Chapter sets out the findings for the PSI group and compared this population with the AIIC AB interpreters. The aim of this Chapter is to present and describe the findings; a discussion of their implications in view of the literature and research questions can be found in Chapter 7.

6.1 Data collection results

This section is divided into two parts. The first is an evaluation of the data collection methods with reference to the response rate. The second presents some general information about the three populations of interpreters.

6.1.1 Response rate

As explained in Chapter 5, a pilot version of the questionnaire was initially sent out to a group of UK-based PSI interpreters, with a response rate of 8%. One of the aims was to increase the response rate for the final questionnaire. In order to do this, three separate covering letters were drafted for the individual groups of interpreters, highlighting the aspects of the present project that are of most interest to that particular group. The questionnaires were sent out to respondents individually via email, so as to establish a feeling of personal connection. Table 6.1/1 below shows the overall response rate for each population, as well as the number of the completed questionnaires that were actually used in the final analysis.

Table 6.1/1. Response rate and total responses received for each group of interpreters

	AA	**AB**	**PSI**	**Total**
Questionnaires sent	200	1326	1568	**3094**
Completed questionnaires	49	232	224	**505**
Overall response rate	24.5%	17.5%	14.3%	**16.3%**
Questionnaires used in analysis	48	212	180	**440**
Adjusted response rate	24.0%	16.0%	11.5%	**14.2%**

The overall response rate was 16.3%, a substantial improvement compared with the response rate for the pilot questionnaire (even within the PSI group only, which was the group used for the pilot, the response rate increased; see Table 6.1/1 above). Note that the number of actual questionnaires used in the subsequent analysis is lower than the total number of completed questionnaires received. This is due to the fact that some of the questionnaires received were either incomplete or ambiguous. The adjusted response rate, which corresponds to the number of useable questionnaires received, is therefore 14.2% (see Table 6.1/1). Even with the adjustment for usability, the number of responses received is sufficient for the purposes of the present study. Therefore, the data collection methods used can be considered successful.

It is noted that a particularly high response rate was observed among the AA group (24%; see Table 6.1/1). This may be indicative of this group's particular interest in bilingualism research, in view of their special status as bilinguals with two native languages, according to the AIIC classification. The responses took around 8 months to collect, as they were sent individually and the researcher personally responded to any questions the interpreters had about the project. The researcher also individually thanked respondents who had completed the questionnaire.

6.1.2 General description of the populations

As shown in Table 6.1/1 above, the final population sizes are as follows: AA – 48; AB – 212; PSI – 180. A general comparison of the groups is set out below, with respect to (1) working languages; (2) age and number of years of interpreting experience.

(1) Working languages

Table 6.1/2 below gives the main categories of working languages for the three groups, split into the two strongest working languages (see Chapter 5 for details on the coding and labelling of respondents' working languages). The categories with more than 10% are emphasised in bold.

Table 6.1/2. Main categories of working languages for the three groups of interpreters

Language category	AA Group		AB Group		PSI Group	
	A1	**A2**	**A**	**B**	**L1**	**L2**
English	**64.6%**	**25.0%**	**25.5%**	**69.8%**	**16.7%**	**83.3%**
French	**14.6%**	**14.6%**	**22.2%**	**15.6%**	4.7%	3.6%
Spanish	6.3%	**31.3%**	9.0%	2.4%	7.3%	3.1%
German	2.1%	4.2%	**14.2%**	7.5%	1.0%	1.0%
East European	8.3%	4.2%	9.0%	1.4%	**43.2%**	2.6%
Scandinavian	2.1%	0%	3.3%	0.5%	0%	0%
Other European	0%	**14.6%**	9.0%	1.9%	7.3%	3.1%
Non-European	2.1%	6.3%	8.0%	0.9%	**19.8%**	3.1%

Similar language distribution patterns are observed for the AA and AB groups, with English and French together dominating across all working languages. English was found to dominate as the main language category for language A1 among the AA group (64.6%) and B among the AB group (69.8%). Other European languages also feature prominently, with Spanish particularly prevalent in within the A2 language category among the AA group (31.3%), and German in the A language category among the AB group (14.2%). In general, non-European languages do not form a significant proportion of the working languages for either group of conference interpreters (see Table 6.1/2 above).

The working language distribution pattern is rather different for the PSI group, with East European languages dominating in the L1 language category (43.2%), followed by non-European languages (19.8%) and English (16.7%), as shown in Table 6.1/2 above. English dominates as the L2 language for the majority of PSI respondents (83.3%), with no other language category making a significant contribution (see Table 6.1/2). The working languages of the PSI group are coded so that language L1 is always the first language spoken (unless L1 and L2 are acquired simultaneously at birth; see Chapter 5 for details). Therefore the L1 can be thought of as the first language, and L2 the second. The results therefore suggest that, based on this sample of UK-based (NRPSI) public service interpreters, the majority of professional public service interpreters working in the UK have English as their second language. This finding is in line with the expectations set out in Chapter 4.

(2) Age and interpreting experience

In addition to the spread of working language for the three groups, the mean age and interpreting experience (in years) were compared for each population. The average (mean) age in years for each group of interpreters, together with the range, is presented in Table 6.1/3 below.

Table 6.1/3. Average (mean) age in years and age range for each group of interpreters

	Group of interpreters		
	AA	**AB**	**PSI**
Mean age (years)	56.5	53.9	47.8
Min. age (years)	29.0	27.0	25.0
Max. age (years)	81.0	84.0	78.0
Range (years)	52.0	57.0	53.0

We see that the average age in years of the PSI population is lower than that of the two groups of conference interpreters. The AA group has the highest mean age and largest age range (see Table 6.1/3).

The average length of interpreting experience (in years), together with the range for each group, is presented in Table 6.1/4 below.

Table 6.1/4. Average (mean) interpreting experience in years and range for each group of interpreters

	Group of interpreters		
	AA	**AB**	**PSI**
Mean interpreting experience (years)	29.1	25.1	12.6
Min. (years)	7.0	4.0	1.0
Max. (years)	50.0	55.0	50.0
Range (years)	43.0	51.0	49.0

The results presented in Table 6.1/4 show that the AA group has the longest interpreting experience on average (29 years), followed by the AB group (25 years). The PSI group has the shortest average interpreting experience of just over 12 and a half years, which is less than half of that of the AA and AB groups. We also observe that the minimum interpreting experience is highest among the AA group, followed by AB and then PSI. However, all three groups exhibit a large range between the minimum and maximum number of years of experience.

6.2 Questions pertaining to the AIIC AA group

This section sets out the responses to the additional questions included in the AIIC AA questionnaire. The presentation of the findings is divided into three main sections: questions on the notion of two mother tongue and the AIIC AA classification, questions concerning perceptions of the true bilingualism definition, and further investigation of the characteristics of anomalous groups of respondents.

6.2.1 Two mother tongues and the AIIC AA classification

Interpreters from the AIIC AA group were asked whether they consider both of their A languages to be mother tongues. The responses to this question are presented in Table 6.2/1 below.

Table 6.2/1. AIIC AA interpreters' responses to the question of whether they consider both A languages to be mother tongues

Would you agree that both of your A languages are mother tongues?	
Response	**Frequency and % of total respondents**
Yes	41 (85.4%)
No	2 (4.2%)
Unsure	5 (10.4%)

It was found that the overwhelming majority of AA respondents agreed that they do have two mother tongues (85.4%; see Table 6.2/1). This indicates that, on the whole, respondents' own perceptions of mother tongue competence/identity in their A languages are in line with external perceptions, as represented by the AIIC language classifications. However, as can be seen from Table 6.2/1 above, 14.6% of respondents did not answer Yes to this question, suggesting that self-ascribed mother tongue identity does not necessarily correspond neatly to the linguistic identity ascribed by others. If the AIIC AA classification is assumed to correspond to mother tongue competence and/or identity in two languages as perceived by others, then the above findings suggest that internal perceptions of this are stronger than external ones. The characteristics of the subgroup of AA respondents who do not feel that both of their A languages are mother tongues (i.e. those who answered No or Unsure to Q2/6/AA) are investigated further in Section 6.2.3 (1) below.

Respondents from the AA group were also asked whether they felt that both of their A languages were mother tongues in childhood. The responses are presented in Table 6.2/2 below.

Table 6.2/2. AIIC AA interpreters' responses to the question of whether both of their A languages were mother tongues in childhood

Would you say that both of your A languages were mother tongues in childhood?	
Response	Frequency and % of total respondents
Yes	33 (68.8%)
No	15 (31.3%)
Unsure	0

It was found that a little over two thirds (68.8%) of AA respondents believe that both of their A languages were mother tongues in childhood, while the remaining respondents (31.3%) did not consider this to be the case (see Table 6.2/2 above). Those respondents who did not agree that their two languages were mother tongues in childhood were asked to specify at what age they attained this level of competence in both languages and what led to it. Table 6.2/3 below shows the mean age and range at which mother tongue competence was achieved in both A languages if not in childhood.

Table 6.2/3. Average (mean), min. and max. age (years) at which AA interpreters achieved mother tongue competence in both A languages, if not in childhood

	Age (years)
Mean age mother tongue competence achieved in both A languages	19.7
Min. age mother tongue competence achieved in both A languages	12
Max. age mother tongue competence achieved in both A languages	30

It was found that, for those respondents who did not feel that both languages were mother tongues in childhood, the mean age at which this level of competence was attained in both languages is 19.7 years, with a range from 12 to 30 years (see Table 6.2/3 above). The reasons that led to mother tongue competence in both languages were reported as either change in language of education (secondary school or university) or change in dominant linguistic environment (moving country), or both. Only one participant gave a different reason, namely "extensive reading, the practice of translation". It is notable that no respondents cited interpreting as the reason for attaining mother tongue competence in both A languages.

Another factor considered was the date the AA classification was attained relative to date of joining AIIC. Table 6.2/4 below gives the breakdown of respondents according to whether the AA classification was attained upon joining AIIC or at a later date.

Table 6.2/4. Breakdown of AIIC AA respondents according to whether they obtained their AA classification upon joining AIIC or at a later date

	No. of respondents and % of total
AA classification awarded upon joining	41 (85.4%)
AA classification awarded later	7 (14.6%)

It was found that 14.6% of AA respondents attained their AA classification at a later date, i.e. they were initially classed as AB upon joining AIIC, and subsequently "upgraded" to AA status (see Table 6.2/4 above). This means that, for this particular subgroup of respondents, their A languages were not both considered to be mother tongues by external reviewers (peers). For those AA respondents who were not classed as AA upon joining AIIC, the time taken to achieve double A classification was calculated. The results are presented in Table 6.2/5 below.

Table 6.2/5. Average (mean), min. and max. time taken (in years) to achieve the AIIC AA classification for those AA respondents who did not obtain this classification upon joining AIIC

	Time (years)
Average (mean) time taken to achieve AA classification	5.6
Min. time taken to achieve AA classification	2
Max. time taken to achieve AA classification	10

It was found that the time taken to achieve the AA classification if it was not awarded upon joining AIIC ranged from 2 to 10 years, with just over 5 and a half years being the average time taken (see Table 6.2/5). The characteristics of this subgroup of the AA population are examined in more detail in Section 6.2.3 (2) below.

6.2.2 Perceptions of the true bilingualism definition

The AA respondents' perceptions of the true bilingualism definition proposed by Thiéry (1975) were investigated, as well as the relationship between true bilingualism and true bilingualism in writing (i.e. being indistinguishable in writing from a monolingual in both A languages). Respondents were first asked whether they consider themselves true bilinguals according to Thiéry's definition. The responses to this question are given in Table 6.2/6 below.

Table 6.2/6. AIIC AA interpreters' responses to the question of whether they consider themselves to be true bilinguals in accordance with the definition

Do you feel that you are a true bilingual as defined by Thiéry (1975)?	
Response	**Frequency and % of total respondents**
Yes	44 (91.7%)
No	1 (2.1%)
Unsure	3 (6.3%)

It was found that an overwhelming majority of the AA respondents (91.7%) consider themselves to be true bilinguals as defined by Thiéry (see Table 6.2/6 above). Three of the four respondents who did not answer Yes to this question gave the following additional clarifications: (1) "I have greater difficulty as concerns speed and concordance in one of the two languages", (2) "I have a very slightly detectable accent [in one of my A languages]" and (3) "Both [members of the A1 linguistic community] and [members of the A2 linguistic community] invariably assume I am a compatriot, an impression strengthened not weakened by non-job related conversation. The same is true re friends and family from both countries. Usually, people tend to doubt my abilities in "the other" language and cultural environment, the "foreign" one". Note that comment (1) essentially refers to an imbalance between the two languages although, as pointed out in Chapter 4, true bilingualism does not imply bilingual balance. Thus, the author of comment (1) may in fact be a true bilingual. Comment (3) is particularly interesting, and it also does not prevent its author from being considered a true bilingual under Thiéry's definition, as s/he is certainly taken to be "one of them" by members of both the A1 and A2 linguistic community. The fact that members of each community doubt his/her belonging to the "other" linguistic community may in fact be taken as a sign of the strength of this acceptance. It is therefore only comment (2) that may prevent its author from being considered a true bilingual within the meaning of Thiéry's definition, if the presence of a slight accent prevents him/her from being accepted as one of them by the members of the corresponding linguistic community. Therefore, given that the fourth respondent who did not consider him or herself to be a true bilingual did not provide additional clarifications, and comments (1) and (3) do not in themselves prevent their authors from being defined as true bilinguals, it can be considered that 46 out of the 48 respondents are (or would define themselves to be) true bilinguals, amounting to 95.8% of the total.

Next, respondents were asked whether they believe that the AIIC AA classification is equivalent to the true bilingualism definition, as intended by Thiéry (1975). The table below gives the responses to this question.

Table 6.2/7. AIIC AA interpreters' responses to the question of whether they believe that the true bilingualism definition is equivalent to the AIIC AA classification

Do you think that the true bilingualism definition corresponds to the AIIC AA classification?	
Response	**Frequency and % of total respondents**
Yes	34 (70.8%)
No	6 (12.5%)
Unsure	7 (14.6%)

Table 6.2/7 above shows that almost three quarters of AA respondents (72.3%) agreed that the true bilingualism definition corresponds to the AIIC AA classification. One respondent who did not agree that this was the case clarified in the space for additional comments provided at the end of the questionnaire that s/he believes that the AA classification is stronger than the true bilingualism definition, suggesting that the AA classification refers to "someone who is taken to be one of them by the members of two different linguistic communities, *at exactly the same* social and cultural level". This is interesting because, since all of the respondents in this group are in possession of the AIIC AA classification, yet not all would describe themselves as true bilinguals with certainty, the results imply the opposite: that true bilingualism is a stronger concept than the AA classification.

Finally, it was explored whether true bilingualism as originally defined by Thiéry as pertaining to spoken language only, is accompanied by true bilingualism in both languages in writing. Respondents were asked whether they consider themselves to be indistinguishable from a monolingual in writing in both of their A languages (which is equivalent to the idea of being a true bilingual in writing). The results of this inquiry are presented in Table 6.2/8 below.

Table 6.2/8. AIIC AA interpreters' responses to the question of whether they consider themselves to be true bilinguals in writing

Are you a true bilingual in writing?	
Response	**Frequency and % of total respondents**
Yes	35 (72.9%)
No	6 (12.5%)
Unsure	7 (14.6%)

It was found that almost three quarters of AA respondents consider themselves to be true bilinguals in writing, in other words, they believe that they are indistinguishable from a monolingual in writing in each of their A languages (see Table 6.2/8 above). The relationship between the concepts of "true bilingualism" and "true bilingualism in writing" was explored further by considering whether AA respondents who believed themselves to be true bilinguals also felt that they are true bilinguals in writing. It was found that the majority of AA respondents (77.3%) who agreed that they are "true bilinguals" according to Thiéry's definition also considered themselves to be "true bilinguals in writing". Thus, while being indistinguishable from a monolingual in both languages in writing is not a requirement for true bilingualism, the findings suggest that it tends to accompany true bilingualism, at least according to respondents' own perceptions.

6.2.3 Further investigation of results: a closer look at anomalous groups

Two important anomalous groups have been identified during the examination of the findings, namely: (1) respondents who do not feel that both of their A languages are mother tongues (i.e. those who answered No or Unsure when asked whether they consider both A languages to be mother tongues) and (2) respondents who obtained their AA classification at a later date, and not immediately upon joining AIIC. The specific properties of these groups in terms of biographical factors, attitudes and perceptions are investigated below, and compared with the rest of the AA group in each case.

(1) Respondents who do not consider both of their A languages to be mother tongues

This investigation concerns the subgroup of AA respondents who answered either No or Unsure to the questions of whether they feel that both of their A languages are mother tongues (7 respondents in total, 14.6% of total group; see Section 6.2.1 above). For convenience, this group shall be referred to as the "Not Two MTs" group. The responses of this group are compared with the rest of the AA group, i.e. those who answered Yes to the question of whether both of their A languages are mother tongues ("Two MTs" group). The full comparison of responses for the two groups is presented in Appendix II, with the main trends outlined below.

It was first investigated whether this subgroup of respondents felt that both of their A languages were mother tongues in childhood, as well as whether they consider themselves to be true bilinguals. The responses to these questions are presented in the table below.

Table 6.2/9. Responses of the Not Two MTs and Two MTs groups to the questions of whether both A languages were mother tongues in childhood and whether respondents consider themselves to be true bilinguals

Group	Questions and responses (freq and %)		
	Were both of your A languages mother tongues in childhood?		
	Yes	No	Unsure
Two MTs	31 (75.6%)	10 (24.4%)	0
Not Two MTs	2 (28.6%)	5 (71.4%)	0
	Are you a true bilingual in accordance with the definition?		
	Yes	No	Unsure
Two MTs	41 (100.0%)	0	0
Not Two MTs	3 (42.9%)	1 (14.3%)	3 (42.9%)

We see from Table 6.2/9 above that, while the majority of respondents (71.4%) who do not consider both A languages to be mother tongues currently also did not feel that both of these languages were mother tongues in childhood, two respondents (28.6%) from the did "Not Two MTs" group stated that their A languages were mother tongues in childhood, but have since ceased to be. This suggests several things, depending on the viewpoint taken on what the idea of "mother tongue" stands for - competence, or identity. If the findings are interpreted as native competence in the two languages, then the implication is that: (1) native competence in two languages in childhood does not necessarily result in this level of competence in adulthood (as perceived by the individual), despite intensive use of both languages as demanded by the interpreting profession and (2) respondents in the AA group are aware of shifts in language competence over the lifespan. If the identity angle is taken, then the findings imply that identifying as having two mother tongues in childhood does not mean that this identity will be preserved in later life, thus perceptions of identity also shift over the lifespan.

With regard to the question on true bilingualism, it was found that respondents in the "Not Two MTs" group were split equally between those who agreed that they are true bilinguals and those who were unsure (42.9% in each case; see Table 6.2/9), with one respondent indicating that s/he is not a true bilingual. On the other hand, 100% of the rest of the AA group ("Two MTs") agreed that they are true bilinguals (see Table 6.2/9). These findings suggest, first of all, that the concept of having two mother tongues is stronger than that of true bilingualism, as the results indicate that it is possible for a respondent to consider him/herself a true bilingual without necessarily feeling that both languages are mother tongues. At the same time, we see that the percentage of AA respondents in the "Not Two MTs" who consider themselves true bilinguals is lower than the same figure among the rest of the AA respondents, which implies that there is a relationship between the two concepts, i.e. those who identify as having two mother tongues are more likely to identify as true bilinguals, compared with those who do not think that they have two mother tongues.

Next, the general characteristics of the "Not two MTs" group were compared with the rest of the AA group in terms of biographical and attitudinal factors (see Appendix II for full results tables). With respect to differences in biographical factors between the two groups, some important observations can be made about the differences in childhood linguistic environment for the two groups. First of all, it was found that the mean age of SLA was higher among the "Not two MTs" group compared with the rest of the AA respondents, with 8 years and 3.7 years as the mean ages of SLA respectively (see Appendix II (1)). While these results are not statistically significant, they do represent a fairly large effect (see Appendix II (1) for full results and independent t-statistics). The range of SLA for the "Not two MTs group was found to be 0 – 18 years. These findings suggest

that those AA respondents who identify as having two mother tongues also tended to acquire both languages at an earlier age, compared with those who do not feel that they have two mother tongues. At the same time, given the range of the age of SLA for the "Not two MTs" group, mother tongue identity in two languages in later life is not an immediate consequence of the acquisition of both languages at a very early age.

With regard to other components that are taken to make up the respondents' childhood linguistic environment it was also found that, in terms of relative exposure to the two A languages in childhood, the "Not two MTs" group behaved as expected on the basis of the literature (see Appendix II (3) for full comparison of responses). As a general trend, it was found that language A1 dominated as the language that the respondents from the "Not two MTs" group were exposed to across almost all childhood linguistic environment categories considered, including "home", "country" and "school", whereas A1 was less dominant among the AA respondents who did feel that they have two mother tongues in the same categories. This latter group can be characterised instead by a greater exposure to both languages A1 and A2 simultaneously across the various childhood linguistic environment categories considered, compared with the "Not two MTs" group. Specifically, it can be seen that the majority of respondents from the "Not two MTs" group indicated A1 as the first language spoken (71.4%), with the remaining respondents selecting the "other language" category (28.6%) (see Appendix II (3), Table II.3). No respondents from this group had A2 or both languages as the first language spoken. Comparing this with the responses given by the rest of the AA group, it was observed that a lower number indicated A1 as the first language spoken (65.9%), with just under a third (31.7%) giving the answer of both A1 and A2 to this question (see Appendix II (3), Table II.3). It was also observed that all of the respondents within the "Not two MTs" group can be characterised by the fact that none of them had A2 or both languages (A1 and A2) as the language(s) mostly spoken at home during childhood (see Appendix II (3), Table II.3). The language spoken at home during childhood for this group was overwhelmingly the A1 (85.7%, 6 out of 7 respondents), with the remaining respondent indicating that another language (not A1 or A2) was mostly spoken at home during childhood (see Appendix II (3), Table II.3). These results differ from the pattern observed among the rest of the AA respondents, whose responses to this question were mostly split unevenly between A1 and both languages (58.5% and 34.1% respectively, with no respondents indicating that some other language was the language mostly spoken at home during childhood; see Appendix II (3), Table II.3). The same kind of patterns as those identified above can be observed for primary education and, to a lesser extent, secondary education, for the two groups (see Appendix II (3) for full results). Finally, with regard to the childhood environment, there is a marked difference between the groups in terms of the number of respondents who relocated to a different country (at least once) in childhood:

70.7% of the AA respondents with two mother moved to a different country in childhood, but only 28.6% of the "Not two MTs" group did so (see Appendix II (3), Table II.4).

As regards language use and linguistic environment in later life, no major differences were observed between the two groups in the language(s) of higher education and dominant linguistic environment at present categories (see Appendix II (4) and (5) respectively). In terms of self-reported daily language use across various categories, the AA respondents who feel they have two mother tongues exhibited a greater tendency to use both languages in the categories of reading, writing, TV and, to a lesser extent, radio compared with the "Not Two MTs" group, who favoured one language or the other – mostly the A1, with the exception of the writing category, where A2 dominated (see Appendix II (5), Table II.7). In the categories of socialising and internet, both groups exhibited very similar language use patterns, with the majority of both groups indicating that they use both of their A languages for these activities (see Appendix II (5), Table II.7). These results are difficult to interpret in terms of their relationship to mother tongue identity/competence in two languages because the responses are, to different degrees, influenced by external circumstances (e.g. language(s) of the country, social circle, work etc.) and do not necessarily imply deliberate personal choice to use a particular language. Furthermore, it is not clear which direction the influence goes in – whether feeling that both languages are mother tongues results in using both of these more equally on a daily basis, or vice versa.

With regard to language use in a professional context (interpreting and translation), there are several interesting observations that can be made (see Appendix II (6) for full results). First of all, we see that the respondents from the "Not Two MTs" group tend to interpret mostly into either the A2 or both languages (42.9% in each response category), with only one respondent interpreting mostly into the A1 (see Appendix II (6), Table II.8). However, this intensive active use of the A2 or both languages to carry out a cognitively demanding activity (simultaneous interpreting) does not result in both languages being considered mother tongues by the individual. In addition, it is also observed that, while most of the AA respondents who feel that they have two mother tongues have no preference when it comes to direction of interpreting (63.9%), less than a third of the "Not Two MTs" group (28.6%) chose this response category (see Appendix II (6), Table II.8). However, these findings may or may not be significant in terms of the respondents' bilingualism, because preferred interpreting direction may be influenced by a number of other factors that are specific to the practice of interpreting (e.g. conciseness of a language, or the specificities of a particular language combination). Finally, there was a difference in terms of how the respondents from the two groups felt about the relative importance of linguistic vs interpreting skill in interpreting. All of the respondents from the "Not Two MTs" group felt that both interpreting and linguistic skill are

equally important, whereas 50% of the rest of the AA group chose this response – 40% of this group chose interpreting skill with 10% considering linguistic skill to be more important (see Appendix II (6), Table II.8).

Turning our attention to the respondents' attitudes and perceptions, some further distinctions between the two subgroups of the AA group were observed. The "Not Two MTs" group appear to be aware to a greater extent of the conscious effort required to maintain their two A languages at the present high standard compared with the rest of the AA group (85.7% and 65.9% respectively; see Appendix II (7), Table II.11). We also see that, while the majority of the "Not Two MTs" group consider that it would not be possible to maintain both A languages at their present high standard if not working as an interpreter (57.1%), only a minority of the rest of the AA group chose this response (19.5%) (see Appendix II (7), Table II.11). It may also tentatively be concluded that the "Not Two MTs" group exhibit a slightly lower level of non-professional motivation to maintain both languages at their current high standard compared with the rest of the AA group. This is based on the findings that fewer respondents from the "Not Two MTs" group stated that they would make the effort to maintain both languages at this standard if not working as an interpreter compared with those who do have two mother tongues (42.9% and 62.5% respectively), and that more respondents from the "Not Two MTs" group indicated that their motivation for filling gaps in linguistic knowledge is purely professional, compared with the rest of the AA group (42.9% and 10.0% respectively; see Appendix II (7), Table II.11).

Respondents from the "Not Two MTs" group were also compared with the rest of the AA group in terms of their perceptions of language dominance shifts and cross-linguistic interference between their two A languages (see Appendix II (8) for full results). The response patterns for cross-linguistic interference and the direction it occurs in were almost identical for the two groups, with almost a third of respondents from each group indicating that cross-linguistic interference does not occur in either language (28.6% in the "Not Two MTs" group, 29.3% in the rest of the group) or occurs in both languages equally (28.6% in the "Not Two MTs" group, 31.7% in the rest of the group; see Appendix II (8), Table II.13). In terms of awareness of fluctuations in languages dominance, however, the groups exhibited differing response patterns. A greater proportion of the respondents from the "Not Two MTs" group felt that language dominance fluctuates between their two A languages compared with the rest of the AA group (71.4% and 46.3% respectively; see Appendix II (8), Table II.12). If identifying both languages as mother tongues is taken to be a measure of proximity of the two languages (in terms of competence), whereas not having two mother tongues is taken to imply that one of the languages is stronger than the other, then this finding goes against the prediction that the closer the two languages, the less stable the system and

hence more likely to be prone to fluctuations. However, in this case, all respondents have the same external proficiency ratings in both languages (the AA classification), and therefore identifying as having two mother tongues may imply an additional emotional component related to exposure to the languages in childhood, and is not necessarily to be taken as an objective marker of relative competence in the languages. Indeed, the responses to the question concerning attachment to the languages show that a greater percentage of the "Not Two MTs" group felt a special attachment towards their A1 compared with the rest of the AA group (57.1% and 29.3% respectively; see Appendix II (9), Table II.14). In addition, just over half of AA respondents who do consider both A languages to be mother tongues reported that their do not feel a special attachment towards one language over the other (51.2%), whereas this figure was slightly lower among the "Not Two MTs" group (see Appendix II (9), Table II.14). These findings are in line with expectations, and may be interpreted as confirmation of the hypothesis that the concept of the mother tongues carries an additional emotional attachment component. Interestingly, with respect to perceptions of word weight/emotional force of words (love/hate, swear words) in the two languages, the responses of the two groups appear to directly contradict expectations. An overwhelming majority of the "Not Two MTs" group reported that words carry equal weight in both of their A languages (85.7%), whereas this figure was lower among the rest of the AA group (56.1%; see Appendix II (9), Table II.14).

Finally, AA respondents who do not feel that they have two mother tongues were compared to the rest of the AA group in terms of self-ratings of proficiency in the two languages relative to each other, as well as self-ratings in each language compared to an average monolingual standards (taken to be a marker of language confidence), across different categories (see Appendix II (10) for full results). On the whole, it was found that the groups behaved as expected in terms of relative competence ratings in their A languages across the three categories of command of registers, gaps in vocabulary and writing, with the "Not Two MTs" group tending to rate the A1 as stronger, with the rest of the AA respondents tended to feel that both languages are equal. Specifically, 70.7% of AA respondents who feel that they have two mother tongues rated their A languages as equal in terms of command of registers (the corresponding figure for the "Not Two MTs" group is 28.6%), while 42.2% of the "Not Two MTs" group favoured the A1 (compared with 12.2% of the rest of the AA respondents; see Appendix II (10), Table II.15). In the relative number of gaps in vocabulary category, 28.6% of the "Not Two MTs" group rated both languages as equal (compared with 56.1% of the rest of the AA group), while 57.1% indicated that they have fewer gaps in the A1 (compared with 14.6% of the rest of the AA respondents; Appendix II (10), Table II.15). The difference was even more marked in the category of writing, with no respondents from the "Not Two MTs" group stating that they write equally well/easily in both of their A languages (while 70.7% of the rest of

the AA group indicated that this is the case), but 71.4% chose the A1 as the stronger language in writing (compared with 12.2% of the rest of the AA group) (see Appendix II (10), Table II.15). In terms of true bilingualism in writing – being indistinguishable from a monolingual in writing in both languages – it was found that the number of respondents from the "Not Two MTs" group who felt this was the case was lower at 42.9% compared with the same figure for the rest of the AA group (78.0%) (see Appendix II (10), Table II.15). These observed differences suggest that those AA respondents who do not consider both A languages to be mother tongues are also less likely to rate both languages as being equal in terms of competence, compared with the rest of the AA group.

With regard to self-ratings in each language relative to a monolingual standard across the categories of richness of vocabulary, instinctive/native comprehension and pragmatic/cultural competence, there are some slight differences between the two groups. As an overall trend, it can be observed that, across the first two categories (richness of vocabulary, native comprehension), slightly more respondents from the "Not Two MTs" group tend to rate both languages as being equal to the monolingual standard compared with the rest of the AA group, while more of the AA respondents who do feel they have two mother tongues tend to rate both languages as stronger than the monolingual standard compared with the "Not Two MTs" group (see Appendix II (10), Table II.16). However, it must be noted that this difference is small, especially in the case of native comprehension in the A2.. Where the difference is greatest is in the category of richness of vocabulary in the A2, with 71.4% of respondents from the "Not Two MTs" group rating this as being equal to the monolingual standard (compared with 48.8% of the rest of the AA group), while only 28.6% of the "Not Two MTs" group felt that their A2 is stronger in this category (compared with 48.8% of the rest of the AA group) (see Appendix II (10), Table II.16). The difference in responses is smallest with respect to native comprehension in the A2, with the majority of both groups rating this as equal to the monolingual standard (71.4% for the "Not Two MTs" group, 68.3% for the rest of the AA respondents; see Appendix II (10), Table II.16). Where the trend alters is in the third category – pragmatic/cultural competence – in both languages. Here, it was observed that, while the "Not Two MTs" group was more or less equally split between the "same" and "stronger" responses for both languages (42.9% and 57.1% respectively for A1; 57.1% and 42.9% respectively for A2), the rest of the AA respondents overwhelmingly rated both languages as equal to the monolingual standard (80.0% for A1, 75.6% for A2; see Appendix II (10), Table II.16). While the small differences and size of the "Not Two MTs" group make it impossible to extrapolate too much from this, it may be possible to speculate that these findings suggest that those AA respondents who feel that both languages are mother tongues have slightly higher confidence in both languages when it comes to active use (richness of vocabulary) compared with the "Not Two

MTs" group, whereas confidence in passive language use is around the same in both groups. Interestingly, the trend is reversed with respect to pragmatic/cultural competence in the two languages, with the "Not Two MTs" group exhibiting more confidence in both languages compared with the rest of the AA group.

(2) Respondents who obtained their AIIC AA classification at a later date

This section takes a closer look at the group of AA respondents who obtained their AA classification at a later date, and not immediately upon joining AIIC (referred to as the "AA Later" group) in order to identify whether there are any biographical or attitudinal characteristics that set this group apart from the rest of the AA respondents (referred to as the "AA Same Date" group). The "AA Later" group is made up of 7 respondents, 14.6% of the total AA population surveyed. The full comparison of responses for the "AA Later" group and the rest of the AA group is presented in Appendix III, with the main observations outlined below.

It was first considered whether the AA interpreters who obtained their AA classification at a later date had different perceptions of mother tongue competence/identity in the two languages and of true bilingualism compared with the rest of the AA group. The comparison of responses is presented in the table below.

Table 6.2/10. Responses of the AA Later and AA Same Date groups to the questions pertaining to mother tongue competence and true bilingualism

Group	Questions and responses (freq and %)		
	Were both of your A languages mother tongues in childhood?		
	Yes	No	Unsure
AA Same Date	27 (65.9%)	14 (34.1%)	0
AA Later	6 (85.7%)	1 (14.3%)	0
	Do you consider both of your A languages to be mother tongues?		
	Yes	No	Unsure
AA Same Date	35 (85.4%)	1 (2.4%)	5 (12.2%)
AA Later	6 (85.7%)	1 (14.3%)	0
	Are you a true bilingual in accordance with the definition?		
	Yes	No	Unsure
AA Same Date	37 (90.2%)	1 (2.4%)	3 (7.3%)
AA Later	7 (100.0%)	0	0

As we see from the Table 6.2/10 above, whether the AA classification was awarded at a later date or not appears to have no bearing on whether the languages are considered by respondents to be mother tongues, both currently and in childhood, or on respondents' tendency to class themselves

as true bilinguals. Indeed, contrary to expectations, slightly more respondents from the "AA Later" group reported that both of their A languages were mother tongues in childhood, compared with the rest of the AA group (85.7% and 65.9% respectively; see Table 6.2/10). Also, all of the "AA Later" group felt that they are true bilinguals, compared with 90.2% of the rest of the AA group (see Table 6.2/10). These findings suggest that achieving the AA classification at a later date, i.e. the fact that one of the languages was initially classes as a non-native language by external reviewers, is not connected to one's own perceptions of mother tongue identity or competence. Furthermore, it does not appear to be connected to whether both languages were mother tongues in childhood or not.

The latter observation finds further confirmation in the comparison of childhood linguistic environment categories for the two groups. Overall, no differences were observed between the two groups that would suggest that attaining the AA classification at a later date is related to reduced exposure to one of the languages in childhood (see Appendix III (1), (3) for full results). First of all, a comparison of the mean age of SLA for the "AA Later" group with the rest of the AA respondents revealed this to be virtually the same (4.4 years and 4.3 years respectively; see Appendix III (1), Table III.1). The only observable difference here is the standard deviation, which is higher among the "AA Later" group compared with the rest of the AA respondents (8.25 and 3.78 respectively; see Appendix III (1), Table III.1), which is indicative of a larger age range. As regards relative exposure to the two A languages across the childhood linguistic environment components of "home", "country" and "primary school", both groups exhibited very similar patterns (see Appendix III (3)). In particular, contrary to predictions, the "AA Later" group did not demonstrate increased exposure to the A1 compared with the rest of the AA respondents. The only category where this was found to be the case to a small degree is the first language spoken, with slightly more of the "AA Later" respondents indicating A1 as their first language compared with the rest of the AA group (71.4% and 65.9% respectively), and a smaller percentage of "AA Later" respondents stating that they acquired both languages simultaneously compared with the rest of the group (14.3% and 29.3% respectively; see Appendix III (3), Table III.3). No major differences were observed in terms of the number of respondents within each group who relocated to a different country during childhood, with 57.1% of the "AA Later" group and 65.9% of the rest of the AA group indicating that this was the case (see Appendix III (3), Table III.4).

As regards language use and exposure in later life, again, very similar patterns emerged for both groups, with the majority of both groups indicating that they are generally exposed to and use both of their A languages in everyday life (see Appendix III (5) for full results). The only marked difference observed was in the category of language(s) of higher education, but this difference was found to go against expectations that the "AA Later" group are less likely to have had both

languages as the languages of higher education. Instead, the opposite was found to be true, with 71.4% of respondents from the "AA Later" group indicating that both A languages were their languages of higher education, compared with 33.3% of the rest of the AA group see Appendix III (4). Table III.5). Some slight differences were found between the two groups in terms of language use in a professional context (interpreting and translation). In particular, fewer respondents from the "AA Later" group reported that they interpret into both languages equally, compared with the rest of the AA group (14.3% and 43.9% respectively; see Appendix III (6), Table III.8). The "AA Later" respondents tended to be split equally between those who mostly interpret into the A1 or the A2 (42.9% in each category; see Appendix III (6), Table III.8). Thus, obtaining the AA classification at a later date does not correspond to being required to interpret predominantly into one language. While it was found that fewer of the "AA Later" respondents expressed to preference for interpreting direction compared with the rest of the group (20.0% and 63.2% respectively; see Appendix III (6), Table III.8), this finding may be explained by practice or habit, in light of the previous observation that fewer "AA Later" respondents interpret into both languages equally. There was a difference between the two groups' perceptions of the relative importance of interpreting vs linguistic skill. Specifically, a higher proportion of "AA Later" respondents felt that both were equally important, compared with the rest of the group (85.7% and 52.5% respectively; see Appendix III (6), Table III.8). Only one respondent (14.3%) from the "AA Later" group considered interpreting skill to be the most important (compared with 37.5% of respondents from the rest of the group), while no "AA Later" respondents considered linguistic skill to be the most important (while a small minority, 10.0%, of the rest of the AA group felt that this was the case; see Appendix III (6), Table III.8).

Next, the two groups were compared in terms of their attitudes and perceptions. With regard to the questions concerning effort and motivation it was observed, first of all, that respondents from the "AA Later" group were less likely to think that maintaining both languages at their present high standard requires conscious effort, compared with the rest of the AA group (57.1% and 70.7% respectively; see Appendix III (7), Table III.11). With respect to levels of non-professional motivation to maintain the languages, the results are ambiguous. On the one hand, 71.4% of the "AA Later" group stated that they would make the effort to maintain both A languages at their current standard if not working as a professional interpreter, compared with 57.5% of the rest of the AA group (see Appendix III (7), Table III.11). However, the percentage of "AA Later" respondents who indicated that their motivation for filling gaps in vocabulary in their languages is not purely professional is slightly lower compared with the rest of the AA group (71.4% and 82.5% respectively; see Appendix III (7), Table III.11). Some differences were observed between the groups in terms of awareness of fluctuations in language dominance. In particular, a much larger

percentage of the "AA Later" respondents felt that language dominance does not fluctuate between their A languages, compared with the rest of the AA group (71.4% and 34.1% respectively; see Appendix III (8), Table III.12). The response patterns for perceptions of cross-linguistic interference were similar for the two groups (see Appendix III (8), Table III.13). An examination of the response patterns for the two groups to the questions concerning emotional attachment to the languages revealed results that are contrary to expectations. In all three categories intended to measure attachment/emotional response to the languages – language preference when tired/upset, perception of weight of words, attachment towards one language over the other – a greater proportion of the "AA Later" respondents tended to rate both languages as being equal compared with the rest of the AA group (see Appendix III (9), Table III.14). Specifically, 71.4% of the "AA Later" group indicated that they would not revert to one of their A languages if possible when tired/upset, compared with 36.6% of the rest of the group; 85.7% of the "AA Later" respondents felt that words carry equal weight in both of their A languages, compared with 56.1% of the rest of the group; 71.4% of the "AA Later" group stated that they do not have a special attachment to one of their A languages over the other, compared with 46.3% of the rest of the group (see Appendix III (9), Table III.14).

Finally, the two groups were compared in terms of self-ratings of proficiency in their A languages. With respect to self-ratings of proficiency in the two languages relative two each other in the categories of command of registers, number of gaps in vocabulary and writing, the response patterns for command of registers were very similar, with the majority of both groups tending to rate both A languages as being equal (57.1% of the "AA Later" group and 65.9% of the rest of the group; see Appendix III (10), Table III.15). However, in the latter two categories, the "AA Later" group tended to favour the A1, whereas the rest of the AA respondents tended to rate both languages as being equal. Specifically, 28.6% of "AA Later" respondents stated that their A languages are equal in terms of gaps in vocabulary, while 57.1% felt that they had fewer gaps in the A1 (the corresponding figures for the rest of the AA group are 56.1% and 14.6% respectively); 28.6% of the "AA Later" respondents felt that they write equally well/easily in both languages, while 42.9% rated the A1 as stronger in this category (the figures for the rest of the AA group are 65.9% and 17.1% respectively; see Appendix III (10), Table III.15). As regards true bilingualism in writing, the majority of both groups – 71.4% of the "AA Later" group and 73.2% of the rest of the AA group – felt that they are indistinguishable from monolinguals in writing in both A languages (see Appendix III (10), Table III.15). Taken together, these findings suggest that, with respect to certain language use categories at least, respondents who achieved their AA classification at a later date tend to rate the A1 as being slightly stronger than the A2, whereas the rest of the AA respondents are more likely to consider both languages as equal.

Differences were observed between the two groups in terms of self-ratings of proficiency in each language compared to a monolingual standard. In particular, with respect to richness of vocabulary and native comprehension in both languages, it was found that the "AA Later" respondents were more likely to rate both languages as corresponding to the monolingual standard than the rest of the AA group, and less likely to rate the languages as being above this standard (see Appendix III (10), Table III.16). Specifically, 85.7% of the "AA Later" respondents rated their richness of vocabulary in the A1 as being equal to the monolingual standard, with 14.3% rating it as stronger (compared with 41.5% and 51.2% respectively for the rest of the AA group); the figures for richness of vocabulary in the A2 were the same among the "AA Later" respondents (the corresponding figures for A2 for the rest of the AA group are 46.3% and 51.2% for same and stronger respectively; see Appendix III (10), Table III.16). As regards native comprehension, all respondents from the "AA Later" group rated both languages as being equal to the monolingual standard, whereas the percentage of the rest of the group who rated the A1 as equal to the monolingual standard in this category is 61.0%, and 63.4% for the A2; just over a third of the rest of the AA group rated both languages as being stronger in this category (34.1% for A1 and 36.6% for A2; see Appendix III (10), Table III.16). The response patterns for pragmatic/cultural competence in each language were similar for both groups, in particular in the case of the A2, with the majority of respondents in the two groups rating the languages as being equal to the monolingual standard, and around a quarter of respondents from both groups rating the languages as stronger (see Appendix III (10), Table III.16). These findings suggest that, if the ratings relative to an average monolingual standard are interpreted as markers of language confidence then, with respect to certain parameters at least, the "AA Later" group display slightly lower confidence levels compared with the rest of the AA respondents. However, the overwhelming majority of respondents from both groups tend to consider both languages as being at least equal to the monolingual standard

6.3 Description and comparison of the AIIC AA and AB groups

This Section presents the results for the AA and AB groups, comparing the responses of the two groups in terms of biographical and attitudinal factors. The final part of this Section focuses on the characteristics of the subgroup of AB respondents who consider both of their languages to be mother tongues – in other words, the internal perceptions of this group do not match external perceptions of mother tongue identity/competence (as represented by the AIIC AB language classification).

6.3.1 Mother tongue identity, biographical factors and language use

It was first considered whether AB respondents consider one of their languages to be the mother tongue, as expected on the basis of the AIIC language classification. The responses to this question are presented in the table below.

Table 6.3/1. Responses of the AB group to the question of which languages they consider to be mother tongues

Group	Mother tongue			
	A	B	Both	Other
AB	179 (84.4%)	0	28 (13.2%)	5 (2.4%)

As we can see from Table 6.3/1 above, the overwhelming majority (84.4%) of AB respondents consider the A language to be the mother tongue, with only 13.2% (28 respondents in total) indicating that both A and B are mother tongues. Compare this figure with 85.4% of AA respondents who feel that they have two mother tongues (see Section 6.2.1). These findings suggest that internal perceptions of mother tongue competence/identity tend to match external perceptions, as represented by the AIIC language classifications. The characteristics of the subgroup of AB respondents who do consider both languages to be mother tongues are explored in more detail in Section 6.3.3 below and compared with the rest of the AB group.

Next, the AA and AB groups were compared in terms of age of SLA and childhood linguistic environment, including languages of primary and secondary education. The first notable difference observed between the groups was the mean and of SLA, which is given in the table below.

Table 6.3/2. Comparison of mean age of SLA in years for the AA and AB groups

Group	No. in group	Mean age SLA (years)	Std. Deviation
AA	47	4.3	4.841
AB	205	8.6	4.889

It was found that the average (mean) age of SLA for the AA group was 4.3 years, and that the AB group tended to acquire their second language 4 years later on average than the AA group, at age the age of 8.6 years (see Table 6.3/2 above). An independent samples t-test showed that the difference in mean age of SLA for the AA and AB groups is significant and represents a medium sized effect: $t(250) = -5.414$, $p = .000$; $r = .324$. It can therefore be inferred that the AIIC AA group acquired both of their strongest working languages at an earlier age than the AB group. We note also that the mean age of SLA for the AB group is close to the mean age of SLA for the subgroup of AA respondents who do not feel that they have two mother tongues (see Section 6.2.3).

In addition to calculating the mean age of SLA for the AB and AA groups, the data were examined more closely. In particular, it was observed that not only is the average age of SLA lower among the AA group compared with the AB group, the maximum age of SLA is also lower among the AA respondents (18 years for the AA group, 30 years for AB). It was also found that, while the SLA range for the AA group is 0 – 18 years, the majority of respondents fall within the 0 – 8 year range. Within the AB group, the actual SLA range is 0 – 30 years, but the majority of respondents fall into the 5 – 11 year range. Thus, while the overall ranges for both groups are indicative of a high degree of individual variation, there is a general tendency to cluster within a smaller set of values, which is lower among the AA population.

The AA and AB groups were next compared in terms of relative exposure to their two strongest languages in childhood. The full comparison of responses across all childhood linguistic environment categories considered in the questionnaire is presented in Table 6.3/3 below.

Table 6.3/3. Comparison of childhood linguistic environment (by category) and language(s) of primary and secondary education for the AA and AB groups

Group	Childhood linguistic environment/education category and responses (freq and %)			
	First language(s) spoken			
	A1/A	**A2/B**	**Both**	**Other**
AA	32 (66.7%)	0	13 (27.1%)	3 (6.3%)
AB	183 (86.7%)	14 (6.6%)	4 (1.9%)	10 (4.7%)
	Mother's language(s)			
	A1/A	**A2/B**	**Both**	**Other**
AA	27 (56.3%)	11 (22.9%)	6 (12.5%)	4 (8.3%)
AB	171 (80.7%)	20 (9.4%)	4 (1.9%)	17 (8.0%)
	Father's language(s)			
	A1/A	**A2/B**	**Both**	**Other**
AA	31 (64.6%)	9 (18.8%)	7 (14.6%)	1 (2.1%)
AB	179 (85.2%)	11 (5.2%)	8 (3.8%)	12 (5.7%)
	Language(s) mostly spoken in the home during childhood			
	A1/A	**A2/B**	**Both**	**Other**
AA	30 (62.5%)	3 (6.3%)	14 (29.2%)	1 (2.1%)
AB	185 (87.3%)	7 (3.3%)	13 (6.1%)	7 (3.3%)
	Childhood linguistic environment (country)			
	A1/A	**A2/B**	**Both**	**Other/Unclear**
AA	13 (27.1%)	12 (25.0%)	18 (37.5%)	5 (10.4%)
AB	152 (72.0%)	4 (1.9%)	14 (6.6%)	41 (19.4%)
	Language(s) of primary education			
	A1/A	**A2/B**	**Both**	**Other**
AA	20 (43.5%)	12 (26.1%)	14 (30.4%)	0
AB	164 (78.5%)	13 (6.2%)	27 (12.9%)	5 (2.4%)
	Language(s) of secondary education			
	A1/A	**A2/B**	**Both**	**Other**
AA	11 (23.9%)	15 (32.6%)	20 (43.5%)	0
AB	139 (66.5%)	26 (12.4%)	42 (20.1%)	2 (1.0%)

We see from Table 6.3/3 above that the response patterns for the two groups are in line with expectations: the proportion of AB respondents who were exposed to one of their languages (A) is greater than the proportion of AA respondents who were exposed to language A1 only across all categories considered, and a greater percentage of AA respondents were exposed to both of their languages simultaneously, compared with the AB group. Specifically, it was found that while one

language dominates as the first language spoken within both the AA and AB groups (A1 with 66.7% for AA; A with 86.7% for AB), the proportion of AA respondents who acquired both languages simultaneously from birth is much higher than the same proportion of AB respondents (27.1% for AA compared with 1.9% for AB; see Table 6.3/3). A similar pattern is observed for the parents' languages of the two groups, with one language dominating as the language of the mother and father in both cases, but to a lesser extent within the AA group (A1 with 56.3% and 64.6% respectively for AA; A with 80.7% and 85.2% for AB; see Table 6.3/3). As regards the languages mostly spoken at home during childhood ("home"), language A1 was the dominant category within the AA group, and language A within the AB group (62.5% and 87.3% respectively; see Table 6.3/3). That said, the category of "both languages together" was again found to be represented to a higher degree within the AA group compared with the AB group for the variable "home" (29.2% and 6.1% respectively; see Table 6.3/3).

With regard to the dominant linguistic environment of the country of residence in childhood, it was found that a substantially larger proportion of AA respondents had both languages present in the linguistic environment of the country of residence in childhood compared with the AB group (37.5% and 6.6% respectively; see Table 6.3/3). This overall statistic was calculated by taking into account the official language(s) of the country of birth, together with the official language(s) of the country of relocation in childhood for those respondents who relocated. In addition, for those AA respondents who did not have both A languages present in the linguistic environment of the country of residence in childhood, there was a much more even split between the two strongest working languages (27.1% A1, 25.0% A2) compared with the AB group, where language A dominated (72.0%, see Table 6.3/3). Similar patterns emerged in the category of language(s) of primary education and, to a lesser extent, secondary education. With regard to the language(s) of primary education for the AA and AB respondents, it was again found that both of the strongest working languages together were represented to a much higher degree within the AA group compared to the AB group (30.4% and 12.9% respectively; see Table 6.3/3). Furthermore, while language A was found to be the dominant language of primary education for the AB group, and language A1 the dominant category within the AA group, this dominance was more pronounced within the AB group compared with the AA group (see Table 6.3/3). As regards secondary education, while language A was again the dominant language in this category for the AB group with 66.5%, and both together languages were again represented to a greater degree among AA respondents than AB respondents (43.5% and 20.1% respectively), in the case of secondary education, A2 was more widespread as the language of education among AA respondents that A1 for the first time (with 32.6% and 23.9% respectively; see Table 6.3/3).

While this question is not language-specific, the percentage of AA and AB respondents who relocated to a different country during childhood was also taken into consideration. The responses to this question are presented below.

Table 6.3/4. Comparison of responses of the AA and AB groups to the question of whether they relocated to a different country in childhood

Group	Did you relocate to a different country during childhood? (freq and %)	
	Yes	No
AA	31 (64.6%)	17 (35.4%)
AB	56 (26.4%)	156 (73.6%)

It was observed that over twice as many AA respondents relocated to a different country in childhood compared with AB respondents (64.6% and 26.4% respectively; see Table 6.3/4). Although this relocation does not necessarily correspond to a change in linguistic environment in every case, it can be taken to indicate at least a change in cultural environment. The average age of relocation was compared for those AA and AB respondents who did relocate to a different country in childhood, and it was found to be around 5 and a half years for both groups. It is also worth noting that, with respect to the general trends in terms of childhood linguistic environment, the subgroup of AA respondents who do not feel that they have two mother tongues described in Section 6.2.3 (1) lies somewhere between the AA and AB groups.

The AA and AB groups were next compared in terms of languages use and exposure in later life, including in a professional context. First of all, with respect to language(s) of higher education, the two groups exhibited different patterns, summarised in Table 6.3/5 below.

Table 6.3/5. Comparison of language(s) of higher education for the AA and AB groups

Group	Language(s) of higher education (freq and %)			
	A1/A	**A2/B**	**Both**	**Other**
AA	7 (15.2%)	19 (41.3%)	18 (39.1%)	2 (4.3%)
AB	64 (31.2%)	34 (16.6%)	104 (50.7%)	3 (1.5%)

The AA respondents were split almost equally between A2 and both languages in the higher education category (41.3% and 39.1% respectively), with only a small proportion of the group indicating that A1 was their language of higher education (15.2%; see Table 6.3/5 above). On the other hand, half of AB respondents reported that both of their languages were languages of higher education (50.7%), followed by language A with 31.2%, and only 16.6% of AB respondents had language B was their language of higher education (see Table 6.3/5).

The two groups were next compared in terms of their dominant linguistic environment and relative exposure to each language at the time of completion of the questionnaire. The results are presented in Table 6.3/6 below.

Table 6.3/6. Comparison of present linguistic environment for the AA and AB groups

Group	Present linguistic environment (freq and %)			
	Dominant language(s) of country of residence			
	A1/A	A2/B	Both	Other
AA	10 (22.2%)	27 (60.0%)	3 (6.7%)	5 (11.1%)
AB	97 (49.2%)	50 (25.4%)	21 (10.7%)	29 (14.7%)
	Language(s) exposed to the most on a daily basis			
	A1/A	A2/B	Both	Other
AA	12 (25.0%)	21 (43.8%)	14 (29.2%)	1 (2.1%)
AB	98 (46.2%)	41 (19.3%)	66 (31.1%)	7 (3.3%)

The responses showed that the majority of AA respondents live in an A2-speaking country (60%), followed by those who live in an A1-speaking country (22.2%), whereas the dominant language of the country of residence for AB interpreters was found to be language A (49.2%), followed by B (25.4%) (see Table 6.3/6). Only a small minority of each group reported living in a country where some other language is mostly spoken (11.1% of AA respondents, 14.7% of AB respondents). Looking next at the language(s) respondents perceive to be exposed to the most on a daily basis, we see that the response patterns reflect the influence of the dominant language of the country of residence, with A2 being the most popular choice among AA respondents (43.8%) and A1 among AB respondents (with 46.2%; see Table 6.3/6). However, within both groups this dominance was less pronounced compared with the figures observed for the language(s) of the country of residence – instead, a higher percentage of respondents within both groups indicated that they are exposed to both languages equally on a daily basis (29.2% among the AA group and 31.1% among the AB group; see Table 6.3/6). This suggests that, while the linguistic environment is a significant contributing factor to perceived degree of language exposure, other factors (e.g. work, leisure, family) can, in part, redress the balance between languages.

Respondents' daily language use habits were also considered across several different categories, namely reading, writing, TV, radio, socialising and the internet. The results are summarised in Table 6.3/7 below.

Table 6.3/7. Comparison of self-reported daily language use (by category) for the AA and AB groups

Group	Language use category and responses (freq and %)			
	Reading			
	A1/A	**A2/B**	**Both**	**Neither**
AA	10 (20.8%)	2 (4.2%)	35 (72.9%)	1 (2.1%)
AB	17 (8.0%)	18 (8.5%)	175 (82.5%)	2 (0.9%)
	Writing			
	A1/A	**A2/B**	**Both**	**Neither**
AA	2 (4.2%)	3 (6.3%)	42 (87.5%)	1 (2.1%)
AB	40 (18.9%)	9 (4.2%)	160 (75.5%)	3 (1.4%)
	Watching TV			
	A1/A	**A2/B**	**Both**	**Neither**
AA	8 (16.7%)	7 (14.6%)	23 (47.9%)	10 (20.8%)
AB	32 (15.1%)	34 (16.0%)	122 (57.5%)	24 (11.3%)
	Listening to the radio			
	A1/A	**A2/B**	**Both**	**Neither**
AA	8 (16.7%)	18 (37.5%)	16 (33.3%)	6 (12.5%)
AB	38 (17.9%)	60 (28.3%)	28 (13.2%)	38 (17.9%)
	Socialising			
	A1/A	**A2/B**	**Both**	**Neither**
AA	5 (10.4%)	8 (16.7%)	35 (72.9%)	0
AB	47 (22.2%)	20 (9.4%)	136 (64.2%)	9 (4.2%)
	Using the internet			
	A1/A	**A2/B**	**Both**	**Neither**
AA	7 (14.6%)	3 (6.3%)	35 (72.9%)	3 (6.3%)
AB	16 (7.5%)	28 (13.2%)	155 (73.1%)	13 (6.1%)

It was found that the majority of respondents from both groups use both languages for reading, writing, socialising and viewing internet pages/using social media, with the responses spread more evenly across different response options in the TV and radio categories (see Table 6.3/7). Taken together with the previous results on the dominant linguistic environment of the two groups on interpreters, these findings suggest that members of both groups use both of their strongest languages on a daily basis for a range of activities, irrespective of the main language of the country of residence. This finding is in line with expectations, however, it is not clear whether daily use of both languages in a variety of contexts is a consequence of advanced bilingualism, or a necessary condition for maintaining both languages at this standard. What was not found was a greater use of both languages by the AA group compared with the AB group across the different categories. For

example, in the case of reading, a higher percentage of AB respondents reported using both languages compared with the same figure for AA respondents (82.5% and 72.9% respectively; see Table 6.3/7 above). However, in the case of writing and socialising, this was found to be the case, with more AA respondents reporting that the use both languages on a daily basis for these activities compared with AB respondents (87.5% and 72.9% respectively for AA; 75.5% and 64.2% respectively for AB; see Table 6.3/7 above).

The final part of the comparison of the AIIC AA and AB respondents' current language use concerns language use in a professional context (interpreting and translation). The results for questions pertaining to interpreting are presented in the table below.

Table 6.3/8. Comparison of responses for the AA and AB groups to questions pertaining to interpreting

Group	**Responses to questions concerning interpreting (freq and %)**		
	Language(s) you mostly interpret into:		
	A1/A	**A2/B**	**Both**
AA	15 (31.3%)	14 (29.2%)	19 (39.6%)
AB	127 (59.9%)	56 (26.4%)	29 (13.7%)
	Preferred interpreting direction		
	A1/A	**A2/B**	**No preference**
AA	9 (20.9%)	9 (20.9%)	25 (58.1%)
AB	127 (62.3%)	32 (15.7%)	45 (22.1%)
	What is more important: interpreting skill or linguistic skill?		
	Interpreting skill	**Linguistic skill**	**Both equally important**
AA	16 (34.0%)	4 (8.5%)	27 (57.4%)
AB	90 (43.1%)	24 (11.5%)	95 (45.5%)

The results showed a fairly even spread between the three response categories (A1, A2, both) within the AA group in terms of the languages respondents interpret into the most, with the "both A1 and A2" category receiving the highest proportion of responses (39.6%; see Table 6.3/8). Within the AB group, language A was found to be the target language used most frequently in interpreting for the majority of AB respondents (59.9%; see Table 6.3/8). In terms of preferred interpreting direction, a greater proportion of AA respondents reported no preference (58.1%) compared with the same figure for AB respondents (22.1%; see Table 6.3/8). However, these findings are not necessarily indicative of greater ease or confidence in one of the languages, and could be related to interpreting-specific factors (language pair, practice etc.) as opposed to bilingualism. Respondents were also asked whether they consider linguistic skill or interpreting

skill to be most important in interpreting, and similar response patterns were observed for both groups. In particular, the most popular response category within both the AA and AB groups was that both are equally important (selected by 57.4% of AA and 45.5% of AB respondents respectively), with interpreting skill coming next (34.0% for AA, 43.1% for AB) and linguistic skill being the least popular option (8.5% for AA, 11.5% for AB; see Table 6.3/8).

The proportion of respondents from both groups who carry out translation work was also considered, as well as the languages they translate into. Table 6.3/9 below gives the number of respondents from each group who engage in translation work in addition to interpreting.

Table 6.3/9. Number of respondents from the AA and AB groups who also carry out translation work

Group	**Do you do any translation work? (freq and %)**	
	Yes	**No**
AA	23 (47.9%)	25 (52.1%)
AB	149 (70.6%)	62 (29.4%)

It was found that a higher proportion of AB interpreters also work as translators, compared with AA interpreters (70.6% and 47.9% respectively; see Table 6.3/9 above). For those AA and AB interpreters who also carry out translation work, the languages respondents translate into the most are given below.

Table 6.3/10. Languages respondents from the AA and AB groups mostly translate into

Group	**Language(s) you mostly translate into (freq and %):**		
	A1/A	**A2/B**	**Both**
AA	6 (26.1%)	3 (13.0%)	14 (60.9%)
AB	69 (46.6%)	4 (2.7%)	75 (50.7%)

Of those respondents who do carry out translation work, the majority of the AA respondents indicated that they translate into both of their A languages (60.9%; see Table 6.3/10 above). Of the AB respondents who also work as translators, almost half translate into both languages A and B, with slightly fewer translating into language A only (50.7% and 46.6% respectively; see Table 6.3/10 above). This last finding is shows that a large number of respondents translate into a language that is not considered to be their native language.

6.3.2 Attitudes, perceptions and self-ratings

The two groups were next compared in terms of attitudinal factors and self-ratings, with respect to the categories outlined in Chapter 5. First of all, respondents' perception of language maintenance effort and their motivation to maintain their two strongest working languages at their current high standard was investigated and, in particular, the extent to which respondents' motivation to maintain their two strongest languages is connected to professional requirements. The responses to these questions are presented in Table 6.3/11.

Table 6.3/11. Comparison of responses for the AA and AB groups to questions pertaining to language maintenance effort and motivation

Group	Responses to questions on language maintenance effort and motivation (freq and %)		
	Do you feel that maintaining your two strongest languages at their present high standard requires a degree of conscious effort?		
	Yes	**No**	**Unsure**
AA	33 (68.8%)	13 (27.1%)	2 (4.2%)
AB	154 (73.7%)	42 (20.1%)	13 (6.2%)
	Would you make the effort to maintain both of your strongest languages at their present high standard if not working as a professional interpreter?		
	Yes	**No**	**Unsure**
AA	28 (59.6%)	7 (14.9%)	12 (25.5%)
AB	105 (50.5%)	57 (27.4%)	46 (22.1%)
	Would it be possible to maintain both of your strongest languages at their present high standard if not working as a professional interpreter?		
	Yes	**No**	**Unsure**
AA	22 (45.8%)	12 (25.0%)	14 (29.2%)
AB	65 (31.1%)	96 (45.9%)	48 (23.0%)
	Do you seek to fill gaps in your linguistic knowledge when you notice them?		
	Yes	**No**	**Unsure**
AA	46 (95.8%)	1 (2.1%)	1 (2.1%)
AB	206 (98.1%)	1 (0.5%)	3 (1.4%)
	Is your motivation for filling gaps in linguistic knowledge purely professional?		
	Yes	**No**	**Unsure**
AA	7 (14.9%)	38 (80.9%)	2 (4.3%)
AB	38 (18.1%)	148 (70.5%)	24 (11.4%)

Respondents were asked whether they feel that maintaining their two strongest working languages at their present high level requires a degree of conscious effort (Q4.10/AA, 4.11/AB), and also whether they believe it would be possible to maintain both languages at this standard without working as professional interpreters (Q4.12/AA, 4.13/AB). The results showed that the majority of respondents in both groups feel that language maintenance requires a degree of conscious effort, but this proportion was slightly higher within the AB group compared with the AA group (73.7% and 68.8% respectively; see Table 6.3/11). Interestingly, different response patterns were observed within the two groups with regard to whether language maintenance would be possible without the practice of interpreting. Within the AA group, the largest proportion of respondents (45.8%) felt that it would be possible to maintain their two strongest languages at their current high standard without working as professional interpreters, however, within the AB group, the largest proportion of respondents (45.9%) felt that this would not be possible (see Table 6.3/11). This suggests that the practice of interpreting is perceived to be a significant factor in language maintenance by AIIC AB respondents, whereas there appears to be no such connection among the AA group, who tend to feel that they would be able to maintain both of their A languages at the present standard without working as interpreters.

Further, respondents from both groups were asked to indicate whether they believe that they would make the effort to maintain both of their strongest languages at the current high standard if they were not working as professional interpreters (Q4.11/AA, Q4.12/AB), in an attempt to elicit whether maintaining the two languages is important to them regardless of the demands of their profession. Additionally, and for the same purpose, AA and AB respondents were asked to indicate whether they seek to fill gaps in their linguistic knowledge when they notice them, and whether their motivation for this is purely professional (Q4.13/AA, Q4.14/AB and Q4.14/AA, Q4.15/AB respectively). It was found that more than half of respondents within both groups believe that they would strive to maintain both of their strongest working languages at the present high standard even if they were not working as professional interpreters, but this figure was slightly higher within the AA group compared with the AB group (59.6% and 50.5% respectively; see Table 6.3/11 above). It was also observed that almost all respondents within both groups seek to fill gaps in their linguistic knowledge when they notice them (95.8% AA, 98.1% AB; see Table 6.3/11). The motivation for this was not purely professional for the majority of respondents within both groups, but this figure was slightly higher within the AA group compared with the AB group (80.9% and 70.5% respectively; see Table 6.3/11).

The two groups were compared in terms of metalinguistic awareness, specifically, awareness of fluctuations in language dominance and perceptions of cross-linguistic interference between their two strongest languages. The responses to the first question are set out in Table 6.3/12 below.

Table 6.3/12. Responses of the AA and AB groups to the question of whether language dominance is perceived to fluctuate between their strongest languages

Group	**Do you feel that language dominance fluctuates between your two strongest languages? (freq and %)**		
	Yes	**No**	**Unsure**
AA	24 (50.0%)	19 (39.6%)	5 (10.4%)
AB	79 (37.3%)	120 (56.6%)	13 (6.1%)

It was found that the largest proportion of AA respondents (50%) agreed that language dominance does fluctuate between their two strongest working languages, while this general trend was reversed within the AB group, where over half of respondents indicated that language dominance does not fluctuate between their two strongest working languages (56.6%; see Table 6.3/12). This finding is in line with expectations (see Chapter 7). Respondents were also asked to indicate the reasons they feel are responsible for such shifts in language dominance. It was found that both groups cited similar reasons, with the most popular categories among both the AA and AB groups being travel/change of country or work (interpreting), followed by reading or interacting socially in one of the languages.

Respondents were also asked to indicate whether they were aware of making unnatural utterances in either of their strongest working languages, due to the influence of the other strongest language (Q14/AA, 13/AB). This is taken to be a marker of the relative level of perceived linguistic interference in each language. The responses to this question are presented in Table 6.3/13 below.

Table 6.3/13. Comparison of responses for the AA and AB groups to the question pertaining to perceptions of non-linguistic interference between their strongest languages

Group	**Do you notice yourself making unnatural utterances in either of your two strongest languages due to the influence of the other language? (freq and %)**				
	In neither	**Mostly in A1/A**	**Mostly in A2/B**	**In both equally**	**Unsure**
AA	14 (29.2%)	7 (14.6%)	5 (10.4%)	15 (31.3%)	7 (14.6%)
AB	51 (24.3%)	33 (15.7%)	63 (30.0%)	43 (20.5%)	20 (9.5%)

We see that the majority of AA respondents reported either making unnatural utterances in both of their strongest languages equally (31.3%) or in neither language (29.2%; see Table 6.3/13). On the other hand, the largest proportion of AB respondents reported either making unnatural utterances in language B only (30.0%) or in neither language (24.3%), followed closely by the "both languages equally" response category (20.5%; see Table 6.3/13). The findings suggest the following. First of all, taking the "neither" and "both" categories together and comparing the responses for the two groups shows that 60.5% of AA respondents chose one of these two response categories, compared with 44.8% of AB respondents. This implies that AA respondents are more likely to perceive both languages as being equal in terms of cross-linguistic interference (either equally susceptible or equally immune to it) compared with AB respondents. Comparing the responses for each of the languages separately, we see that languages A1 and A2 within the AA group are closer in terms of perceived levels of interference than languages A and B within the B group (14.6% for A1, 10.4% for A2; 15.7% for A, 30.0% for B; see Table 6.3/13).

Attention was next turned to the respondents' attitudes towards their two strongest languages and, in particular, whether there is any special attachment to one of the languages over the other among the AA and AB groups. Respondents were asked to indicate whether they have a preference for speaking in one of their two strongest languages when tired/emotionally upset (Q5.4/AA/AB), whether they feel that words carry the same "weight" in both of their strongest languages (Q5.5/AA/AB), and if they feel an attachment to one of the languages over the other (Q5.6/AA/AB). The responses to these questions are summarised in the Table 6.3/14 on the next page.

Table 6.3/14. Comparison of responses for the AA and AB groups to questions pertaining to emotional response and attachment to the languages

Group	Responses to questions on emotional response and attachment to the languages (freq and %)			
	If possible, would you revert to one of your two strongest languages when tired/upset?			
	No	A1/A	A2/B	Unsure
AA	20 (41.7%)	16 (33.3%)	5 (10.4%)	7 (14.6%)
AB	65 (31.1%)	106 (50.7%)	18 (8.6%)	20 (9.6%)
	Do you feel that words carry the same weight in your two strongest languages (in particular, swear words and words such as "love" and "hate")?			
	Equal	A1/A more weight	A2/B more weight	Unsure
AA	29 (60.4%)	9 (18.8%)	3 (6.3%)	7 (14.6%)
AB	77 (36.8%)	76 (36.4%)	18 (8.6%)	38 (18.2%)
	Do you feel a greater attachment towards one of your strongest languages over the other?			
	No	To A1/A	To A2/B	Unsure
AA	24 (50.0%)	16 (33.3%)	2 (4.2%)	6 (12.5%)
AB	78 (37.3%)	84 (40.2%)	26 (12.4%)	21 (10.0%)

With respect to all three components of attachment considered here ("language preference when tired/upset", "relative word weight in the two languages" and "attachment to one language over the other"), the largest proportion of AA respondents consistently selected the category that corresponds to both languages being equal (41.7%, 60.4% and 50.0% respectively; see Table 6.3/14 above). Within the AB group, language A was the preferred language for the largest proportion of respondents when tired/upset (50.7%; see Table 6.3/14). However, with regard to the other two components of attachment ("word weight" and "special attachment"), the AB respondents were split fairly evenly between the "no preference" and "preference for language A" categories (36.8% and 36.4% respectively for "word weight", 37.3% and 40.2% for "special attachment"; see Table 6.3/14). These observations are in line with the hypothesis that AA interpreters are more likely to view both of their languages as being equal in terms of emotional attachment or the emotional response they illicit, compared with AB interpreters. Looking at the percentages for each of the languages separately, we see that language A1 scored consistently higher than A2 in all three categories in the AA group, and language A scored higher in all three categories than language B in the AB group (see Table 6.3/14 above). If we look back at the childhood linguistic environment results for the two groups (see Section 6.3.1 above), we see that language A1 and language A within the AA and AB groups respectively are associated more strongly with the languages the respondents were exposed to the most in childhood.

Finally, the AA and AB groups were compared in terms of perceived proficiency in each of their strongest languages, both relative to each other and relative to an average monolingual standard. In the first case, respondents were asked to rate their proficiency in their two strongest languages relative to each other in the following three categories: command of registers (Q5.7/AA/AB), relative number of gaps in vocabulary (Q5.8/AA/AB) and writing skills (Q5.9/AA/AB). The results are presented in the Table 6.3/15 below.

Table 6.3/15. Self-ratings of proficiency in the strongest languages relative to each other (by category) of the AA and AB groups

Group	**Self-ratings in the two languages relative to each other across difference categories (freq and %)**			
	Do you feel that your command of registers is equal in both of your strongest languages, or better in one language than the other?			
	Equal	**Better in A1/A**	**Better in A2/B**	**Unsure**
AA	31 (64.6%)	8 (16.7%)	3 (6.3%)	6 (12.5%)
AB	58 (27.6%)	140 (66.7%)	2 (1.0%)	10 (4.8%)
	Do you have fewer gaps in vocabulary in one of your strongest languages compared with the other?			
	Equal	**Fewer in A1/A**	**Fewer in A2/B**	**Unsure**
AA	25 (52.1%)	10 (20.8%)	5 (10.4%)	8 (16.7%)
AB	58 (27.8%)	126 (60.3%)	11 (5.3%)	14 (6.7%)
	Do you write equally well/just as easily in both of your strongest languages?			
	Equal	**Better in A1/A**	**Better in A2/B**	**Unsure**
AA	29 (60.4%)	10 (20.8%)	6 (12.5%)	3 (6.3%)
AB	73 (35.1%)	123 (59.1%)	5 (2.4%)	7 (3.4%)

The results showed consistent response patterns across all three proficiency categories considered within the AA and AB groups. The majority of AA respondents felt that their proficiency in both of their strongest working languages is equal with respect to command of registers, gaps in vocabulary and writing skills (64.6%, 52.1% and 60.4% respectively; see Table 6.3/15). On the other hand, the majority of AB respondents indicated that language A is their strongest language in all three categories (66.7%, 60.3% and 59.1% respectively; see Table 6.3/15). This general observation is in line with the expectation that AA respondents would be more likely to rate both languages as being equal compared with AB respondents, whereas AB respondents would tend to rate language A as being the stronger of the two languages. Considering the results for languages A1 and A2 within the AA group, we see that respondents tended to rate language A1 as stronger than A2 in all three categories (16.7% for A1, 6.3% for A2 in command of registers; 20.8% for A2, 10.4% for A2 in fewer gaps in vocabulary; 20.8% for A1 and 12.5% for A2 in writing; see Table

6.3/15). Given that language A1 within the AA group is characterised by earlier acquisition (first language spoken tended to be the A1) and greater exposure in childhood (see Section 6.3.1 above), this finding is in line with the literature on age of SLA and subsequent proficiency.

Respondents were also asked to rate their proficiency in their two strongest languages against a monolingual standard in the following three categories: "richness of vocabulary" (Q5.11/AA, Q5.10/AB), "instinctive native understanding" (Q5.12/AA, Q5.11/AB) and "pragmatic competence/cultural awareness" (Q5.13/AA, Q5.12/AB), by indicating whether they believe that they are stronger, weaker or about the same as a monolingual of roughly the same educational/cultural level in each of their strongest languages. These self-ratings relative to a monolingual standard are taken to be an indicator of language confidence. The results for the three categories set out above for the groups' two languages are presented in the Table 6.3/16 on the next page.

An examination of the results reveals several important trends. First of all, we notice that the largest portion of the AA respondents consistently choose the "same" response category for both languages, with the next most popular response category being "stronger" (although this difference is very slight in the richness of vocabulary category for both languages, where the responses are split almost equally between "same" and "stronger"; see Table 6.3/16). On the other hand, the majority of AB respondents tend to rate language A as being above the monolingual standard across all three categories (71.2% for richness of vocabulary; 63.2% for native comprehension; 64.4% for pragmatic/cultural competence; see Table 6.3/16). As regards language B, only around a third of AB respondents rate this language as being above the monolingual standard in all three categories (32.8%, 27.2% and 36.9% respectively), with the highest proportion of AB respondents indicating that the languages is equal to the monolingual standard in all three categories (51.5%, 55.9% and 44.4% respectively; see Table 6.3/16). In addition, in all three categories, the percentage of AB respondents who rate their B language as being weaker than the monolingual standard is much higher compared with the same figures for language A (see Table 6.3/16). Taken together the above-listed findings imply the following. Firstly, that AA interpreters tend to not only perceive both languages as being about the same, but both are generally regarded as being equal to the monolingual standard. Among the AB group, on the other hand, there is a tendency to rate language A as being stronger than language B, with language A regarded as being above the monolingual standard by most respondents, and language B as being about the same. Comparing the results for the AA and AB groups, it can be concluded that the two populations are characterised by two languages of about the same proficiency (which is perceived to be more or less equal to the monolingual standard) in the case of AA interpreters, and two languages with differing levels of

proficiency – one (language A) very strong language (above the monolingual standard) and one weaker language (B) – in the case of AB interpreters. If these self-ratings are viewed as markers of language confidence, the results imply that AA respondents exhibit about the same level of confidence in both languages, whereas AB respondents display greater confidence in language A compared with language B.

Table 6.3/16. Self-ratings of proficiency relative to an average monolingual standard in each language (by category) of the AA and AB groups

Group	**Self-ratings in each language relative to a monolingual standard across different categories (freq and %)**		
	Richness of vocabulary in A1/A		
	Weaker	**Same**	**Stronger**
AA	3 (6.3%)	23 (47.9%)	22 (45.8%)
AB	3 (1.4%)	57 (27.4%)	148 (71.2%)
	Richness of vocabulary in A2/B		
	Weaker	**Same**	**Stronger**
AA	1 (2.1%)	25 (52.1%)	22 (45.8%)
AB	31 (15.7%)	102 (51.5%)	65 (32.8%)
	Instinctive/native comprehension in A1/A		
	Weaker	**Same**	**Stronger**
AA	2 (4.2%)	32 (66.7%)	14 (29.2%)
AB	1 (0.5%)	74 (36.3%)	129 (63.2%)
	Instinctive/native comprehension in A2/B		
	Weaker	**Same**	**Stronger**
AA	0	33 (68.8%)	15 (31.3%)
AB	33 (16.9%)	109 (55.9%)	53 (27.2%)
	Pragmatic/cultural competence in A1/A		
	Weaker	**Same**	**Stronger**
AA	2 (4.3%)	35 (74.5%)	10 (21.3%)
AB	3 (1.4%)	71 (34.1%)	134 (64.4%)
	Pragmatic/cultural competence in A2/B		
	Weaker	**Same**	**Stronger**
AA	1 (2.1%)	35 (72.9%)	12 (25.0%)
AB	37 (18.7%)	88 (44.4%)	73 (36.9%)

6.3.3 Self-ascribed mother tongue identity vs. identity ascribed by others among the AB group

It was observed in Section 6.3.1 that 13.2% (28 respondents) of AB interpreters consider both of their strongest languages to be mother tongues, although this does not correspond to external perceptions (as represented by the AIIC AB classification). This subgroup of AB respondents was compared to the rest of the AB group in order to determine whether there is a difference between the two populations in terms of biographical and attitudinal factors. The full comparison is presented in Appendix IV, with the main trends summarised below. For convenience, the subgroup of AB respondents who consider that they have two mother tongues shall be referred to as the "AB Two MTs" group. The findings for this subgroup of AB respondents are contrasted with those observed for the rest of the AB group (referred to as the "AB Not Two MTs" group).

First of all, the "AB Two MTs" group was compared to the rest of the AB group with respect to the age of SLA. It was found that the mean age of SLA among the "AB Two MTs" group was lower than that of the rest of the AB respondents, with 4.8 and 9.2 years as the mean age of SLA for the two groups respectively (see Appendix IV (1), Table IV.1). This difference in mean ages of SLA was found to be significant, representing a medium sized effect (see Appendix IV (1) for t-statistics). Therefore, AB interpreters who self-identify as having two mother tongues have generally acquired their second language at an earlier age than those AB interpreters who feel that language A is their only mother tongue.

Turning out attention to other aspects of language acquisition and the linguistic environment in childhood, it was observed that the "AB Two MTs" group behaved as expected in comparison with the rest of the AB group. Namely, it was found that, while language A tended to dominate among both groups, this dominance was less pronounced among the "AB Two MTs" group across all childhood linguistic environment categories considered (see Appendix IV (2)). In particular, in the categories of "home", "street" and "(primary) school" identified as the major components of the childhood linguistic environment by Thiéry (see Chapter 4), language A was the main language for 50.0%, 42.9% and 57.1% of the "AB Two MTs" respondents respectively, and for 95.0%, 77.0% and 81.8% of the rest of the AB respondents in the respective categories (see Appendix IV (2), Table IV.2). In addition, a particularly large difference was observed between the number of respondents in each group who reported that both languages were spoken in the home during childhood: 28.6% of the "AB Two MTs" group indicated that this was the case, compared with just 2.8% of the rest of the AB group (see Appendix IV (2), Table IV.2). This figure for the "AB Two MTs" group is comparable to that observed among the AA interpreters (see Section 6.3.1 above). It was also noted that a higher percentage of respondents from the "AB Two MTs" group relocated to

a different country in childhood compared with the rest of the AB group (53.6% and 22.3% respectively; see Appendix IV (2), Table IV.3).

The groups were next compared in terms of language use and exposure in later life. With regard to higher education, the findings did not suggest that exposure to both languages in this context is connect with the two languages being considered mother tongues. In fact, a higher proportion of AB respondents who do not consider both languages to be mother tongues were found to have had both A and B as their languages of higher education, compared with the same figure for the "AB Two MTs" group (54.0% and 26.9% respectively; see Appendix IV (3), Table IV.4). A comparison of overall daily language use/exposure revealed that a higher proportion of respondents from the "AB Two MTs" group reported being exposed to both languages equally on a daily basis, compared with the same figure among the rest of the AB group (42.9% and 28.5% respectively; see Appendix IV (4), Table IV.5). However, this finding does not necessarily imply a greater effort on the part of the "AB Two MTs" to use both languages in their daily lives, as proposed in Chapter 5, and could be related to other, practical factors (country of residence, work etc.) Indeed, a comparison of self-reported daily language use across various categories (reading, writing, TV, radio, socialising, internet) appears to contradict this hypothesis, since it was found that in all cases except for socialising and radio a lower percentage of the "AB Two MTs" group used both of their languages equally compared with the rest of the AB group (see Appendix IV (4), Table IV.6).

With respect to language use in a professional context, the response patterns were very similar for the two groups in the case of interpreting, although respondents from the "AB Two MTs" group were more evenly split between those who mostly interpreter into language A and those who mostly interpret into language B compared with the same figures for the rest of the AB group (46.4% for A, 35.7% for B in the "AB Two MTs" group; 61.5% for A, 25.1% for B in the rest of the group; see Appendix IV (5), Table IV.7). The results for preferred interpreting direction were very similar for both groups, with around 60% of both expressing a preference for language A, and the rest spread more or less evenly between the "language B" or "no preference" response categories, although it was observed that slightly more AB respondents who do not feel that they have two mother tongues chose this latter category compared with the "AB Two MTs" group (23.3% and 18.5% respectively; see Appendix IV (5), Table IV.7). However, as previously noted, interpreting preferences are not necessarily directly related to bilingualism. The two groups differed in terms of their perceptions of the relative importance of interpreting vs linguistic skill, with a lower proportion of "AB Two MTs" respondents choosing interpreting skill compared with the rest of the AB group (28.6% and 44.9% respectively), and a higher proportion of "AB Two MTs" respondents choosing linguistic skill compared with the rest of the group (21.4% and 9.1%

respectively; see Appendix IV (5), Table IV.7). The number of respondents who also carry out translation work was similar within both groups, although the percentage of respondents who translate into both languages was higher within the "AB Two Mts" group than in the rest of the AB group (68.2% and 48.4% respectively; see Appendix IV (5), Table IV.8).

In terms of attitudes and perceptions, the two groups were first compared with respect to perceptions of language maintenance effort and motivation. With regard to perceptions of language maintenance effort, the majority of respondents from both groups felt that maintaining their strongest languages requires a degree of conscious effort, although this figure was slightly lower among the "AB Two MTs" respondents (67.9% for the "AB Two MTs" group, 74.4% for the rest of the AB group; see Appendix IV (6), Table IV.10). As regards non-professional motivation to maintain the two languages, it was found that the largest proportion of respondents from both groups stated that they would continue to make the effort to maintain both languages at their current high standard if not working as professional interpreters (44.4% of the "AB Two MTs" group, 51.7% of the rest of the group), and that their motivation for filling gaps in linguistic knowledge is not purely professional (78.6% of the "AB Two MTs" group, 69.5% of the rest of the group see Appendix IV (6), Table IV.10). However, we note that the percentage was lower among the "AB Two MTs" group compared with the rest of the group in the first instance, but higher in the second case. The two groups differed most substantially in their responses to the question of whether they believe that it would be possible to maintain both languages at their present high standard without interpreting, with the greatest proportion of respondents from the "AB Two MTs" group feeling that it would (42.9%), while the greatest proportion of the rest of the AB group felt that it would not be possible (48.3%) (see Appendix IV (6), Table IV.10).

Looking at the perceptions of fluctuations in language dominance for the two groups, response patterns were similar, with just over half of respondents within both groups reporting that language dominance does not fluctuate between their two languages (see Appendix IV (7), Table IV.11). However, the percentage of respondents who did feel that language dominance fluctuates was higher among the "AB Two MTs" group compared with the rest of the AB group (42.9% and 36.9% respectively; see Appendix IV (7), Table IV.11). With regard to perceptions of cross-linguistic interference, the two groups exhibited fairly similar response patterns, although respondents from the "AB Two MTs" group were more likely to rate both languages as being equal with respect to interference compared with the rest of the AB group (28.6% of "AB Two MTs" and 23.7% of the rest of the group reported that interference does not occur in either language, while 28.6% of "AB Two MTs" and 19.8% of the rest of the group felt that interference occurs in both languages equally; see Appendix IV (7), Table IV.12). Comparing interference levels for languages

A and B separately it was found that both groups perceived interference levels as being greater in language B compared with language A (see Appendix IV (7), Table IV.12).

Comparing the responses for the two groups with regard to the questions concerning emotional factors and attachment to the two languages, some differences were observed. It was found that, while just under a third of respondents from both groups indicated that they would not revert to one of their languages when tired/upset if given the choice, a considerably larger percentage of AB respondents who do not feel that they have two mother tongues would revert to language A as opposed to language B (52.8% and 7.4% respectively), whereas the figures for the two languages were more evenly matched within the "AB Two MTs" group (35.7% and 17.9% respectively; see Appendix IV (8), Table IV.13). In terms of perceptions of word weight in each language, a greater percentage of "AB Two MTs" respondents considered this to be equal in both languages, compared with the same figure for the rest of the AB group (53.6% and 34.1% respectively), while a greater proportion of AB respondents who do not feel that they have two mother tongues considered words to have more weight in the A languages, compared with the "AB Two MTs" group (40.3% and 14.3% respectively; see Appendix IV (8), Table IV.13). Finally, with respect to emotional attachment, the largest proportion of "AB Two MTs" respondents (44.4%) reported that they do not feel a special attachment towards one of their languages over the other (the corresponding figure for the rest of the group is 36.7%), while the largest proportion of AB respondents who do not have two mother tongues (44.1%) stated that they feel a special attachment towards language A (the figure for the "AB Two MTs" group is 18.5%; see Appendix IV (8), Table IV.13).

Respondents were also compared in terms of self-ratings of proficiency in each language, relative to each other and relative to a monolingual standard. Similar overall trends were observed for the two groups in their responses to the questions concerning relative proficiency in each language. In all three categories considered – command of registers, least amount of gaps in vocabulary, writing – the largest percentage of respondents from both groups felt that language A is the stronger language (see Appendix IV (9), Table IV.14). However, the percentage of respondents who considered both languages to be equal was higher in all three categories within the "AB Two MTs" group compared with the rest of the AB group (35.7% and 27.1% respectively for command of registers; 39.3% and 25.6% for gaps in vocabulary; 39.3% and 34.3% for writing; see Appendix IV (9), Table IV.14). This suggests that, while both groups tend to feel that language A is their strongest language (compared with language B), those AB respondents who feel that they have two mother tongues are slightly more likely to regard both languages as being equal, compared with those AB interpreters who have one mother tongue. In terms of self-ratings of proficiency in each language relative to a monolingual standard, two main differences between the groups can be

observed. Firstly, the findings imply that AB interpreters who have one mother tongue feel a greater confidence in language A compared with the "AB Two MTs" group in the categories of richness of vocabulary and native comprehension. This is suggested by the fact that a greater proportion of AB respondents with one mother tongue tended to rate language A as being above the monolingual standard in these categories, compared with respondents from the "AB Two MTs" group (see Appendix IV (9), Table IV.15). As regards language B, the response patterns for the two groups in both categories were very similar, with the largest proportion of both rating this language as being equal to the monolingual standard (see Appendix IV (9), Table IV.15). However, slightly more respondents in the "AB Two MTs" group rated language B as being above the monolingual standard in both of these categories compared with the rest of the AB group, suggesting that confidence in language B is slightly higher among the "AB Two MTs" group. With regard to pragmatic/cultural competence, a larger percentage of "AB Two MTs" respondents rated both languages as being above the monolingual standard, compared with the same figure among the rest of the group (see Appendix IV (9), Table IV.15). This implies that, with respect to pragmatic/cultural competence, "AB Two MTs" respondents feel more confidence in both languages overall compared with the rest of the AB group. However, confidence in language A was higher than in language B within both groups in this category.

6.4 Description of the PSI group and comparison with the AIIC AB group

This final section of the present Chapter presents the findings for the PSI groups, comparing and contrasting the responses of this population of interpreters with those given by the AIIC AB group. The format followed is the same as in the case of the AA/AB comparison presented earlier. While the findings for the AB group have already been presented in Section 6.3, they are reproduced here for convenience so that they can be more readily compared with the responses of the PSI group.

6.4.1 Mother tongue identity, biographical factors and language use

It was first explored whether PSI respondents consider both of their strongest working languages (L1, L2) to be mother tongues, or if they feel that they have one mother tongue only. The responses to this question are presented in the Table 6.4/1 below, together with those for the AB group.

Table 6.4/1. Responses of the PSI and AB groups to the question of which languages they consider to be mother tongues

Group	Mother tongue			
	L1/A	L2/B	Both	Other
PSI	156 (86.7%)	0	23 (12.8%)	1 (0.6%)
AB	179 (84.4%)	0	28 (13.2%)	5 (2.4%)

We see that the overwhelming majority consider L1 to be their mother tongue (86.7% of respondents), with only 12.8% identifying as having two mother tongues (see Table 6.4/1). These findings are almost identical to the results observed for the AB group (see Table 6.4/1). Therefore, the PSI group can be characterised, in general, as having one distinct mother tongue, the L1, and a second foreign language (L2). Looking ahead to Table 6.4/3 below, we also see that L1 was the first language spoken for 95.0% of PSI respondents. Thus, similarly for the A language within the AB group, the L1 in the PSI group can be taken to be the first language spoken and the mother tongue.

The average (mean) age of SLA for the PSI group was next considered, and the findings are compared with those for the AB group in the Table 6.4/2 below.

Table 6.4/2.Comparison of mean age of SLA in years for the PSI and AB groups

Group	No. in group	Mean age SLA (years)	Std. Deviation
PSI	178	11.0	6.134
AB	205	8.6	4.889

We see that the mean age of SLA for the PSI group is slightly higher at 11 years than that of the AB group (8.6 years). The range of age of SLA was the same for both groups, from 0 to 30 years. An independent samples t-test showed that this difference in mean ages of SLA is significant, but represents a fairly small effect: $t(337.111) = -4.310$, $p = .000$; $r = .229$. It can therefore be concluded that PSI interpreters tend to have acquired their second language at a slightly higher age than conference interpreters. However, we note that both groups generally acquired their second language before puberty.

Looking at the childhood linguistic environment of the PSI group more generally, Table 6.4/3 on the next page shows the relative exposure to each of the languages in childhood across the difference components of childhood linguistic environment considered in the questionnaire, for both the PSI and AB groups. The results revealed strikingly similar response patterns for the PSI and AB groups, with language L1/A dominating as the language each population of interpreters was exposed to the most in all components of childhood linguistic environment, although this dominance was slightly less pronounced in the AB group, with the exception of primary and secondary education, where this was reversed (see Table 6.4/3). In particular, for the main components of childhood linguistic environment of "home", "street" and "(primary) school", L1 was the language mostly spoken at home during childhood for 93.9% of PSI respondents (compared with 87.3% for language A within the AB group), L1 was the dominant language of the country of residence in childhood for 91.1% of PSI respondents (compared with 72.0% for language A within the AB group), and L1 was the language of primary education for 78.3% of PSI respondents (compared with 78.5% for language A within the AB group; see Table 6.4/3). The response patterns for languages of secondary education were found to be nearly identical for the two groups, with around two thirds of each indicating that L1/A was the dominant language (60.6% for PSI, 66.5% for AB), around 20% of each group reported that both languages featured as the languages of secondary education, followed by language B, which was selected by a little over 10% of respondents within each group (see Table 6.4/3)

Table 6.4/3. Comparison of childhood linguistic environment (by category) and language(s) of primary and secondary education for the PSI and AB groups

Group	Childhood linguistic environment/education category and responses (freq and %)			
	First language(s) spoken			
	L1/A	L2/B	Both	Other
PSI	171 (95.0%)	0	3 (1.7%)	5 (2.8%)
AB	183 (86.7%)	14 (6.6%)	4 (1.9%)	10 (4.7%)
	Mother's language(s)			
	L1/A	L2/B	Both	Other
PSI	168 (93.3%)	3 (1.7%)	1 (0.6%)	8 (4.4%)
AB	171 (80.7%)	20 (9.4%)	4 (1.9%)	17 (8.0%)
	Father's language(s)			
	L1/A	L2/B	Both	Other
PSI	169 (93.9%)	3 (1.7%)	0	8 (4.4%)
AB	179 (85.2%)	11 (5.2%)	8 (3.8%)	12 (5.7%)
	Language(s) mostly spoken in the home during childhood			
	L1/A	L2/B	Both	Other
PSI	169 (93.9%)	2 (1.1%)	3 (1.7%)	6 (3.3%)
AB	185 (87.3%)	7 (3.3%)	13 (6.1%)	7 (3.3%)
	Childhood linguistic environment (country)			
	L1/A	L2/B	Both	Other/Unclear
PSI	164 (91.1%)	7 (3.9%)	7 (3.9%)	2 (1.1%)
AB	152 (72.0%)	4 (1.9%)	14 (6.6%)	41 (19.4%)
	Language(s) of primary education			
	L1/A	L2/B	Both	Other
PSI	141 (78.3%)	13 (7.2%)	14 (7.8%)	4 (2.2%)
AB	164 (78.5%)	13 (6.2%)	27 (12.9%)	5 (2.4%)
	Language(s) of secondary education			
	L1/A	L2/B	Both	Other
PSI	109 (60.6%)	21 (11.7%)	35 (19.4%)	5 (2.8%)
AB	139 (66.5%)	26 (12.4%)	42 (20.1%)	2 (1.0%)

Respondents were also asked to indicate whether they relocated to a different country in childhood at any point. We see from Table 6.4/4 below that the overall trend is similar for both the PSI and AB groups, with the majority of both indicating that they did not relocate to a different country in childhood (87.2% among PSI respondents, 73.6% among AB respondents), although the number of respondents who did relocate in childhood is higher within the AB group compared with the PSI group.

Table 6.4/4. Comparison of responses of the PSI and AB groups to the question of whether they relocated to a different country in childhood

Group	Did you relocate to a different country during childhood? (freq and %)	
	Yes	No
PSI	21 (11.7%)	157 (87.2%)
AB	56 (26.4%)	156 (73.6%)

It can therefore be concluded that the childhood linguistic environment of both PSI and AB interpreters is comparable in terms of the relative exposure to each of their strongest languages in the components of childhood linguistic environment considered in the questionnaire. The main differences identified between the groups include a slightly higher age of SLA among the PSI respondents, a slightly less pronounced dominance of the first language (A/L1) within the AB group, and a higher proportion of respondents who relocated to a different country in childhood within the AB group compared with the PSI group.

Considering next the languages of higher education of the PSI group, it was found that respondents were split almost equally between L1, L2 and both languages (33.9%, 27.8% and 31.7% respectively; see Table 6.4/5 below). This pattern differs from that observed for the AB group, just over half of which reported that both languages were their languages of higher education, with a third selecting language A and a little over 15% language B (see Table 6.4/5 below).

Table 6.4/5. Comparison of language(s) of higher education for the PSI and AB groups

Group	Language(s) of higher education (freq and %)			
	L1/A	**L2/B**	**Both**	**Other**
PSI	61 (33.9%)	50 (27.8%)	57 (31.7%)	4 (2.2%)
AB	64 (31.2%)	34 (16.6%)	104 (50.7%)	3 (1.5%)

The dominant linguistic environment of the country of residence, as well as the language(s) respondents feel that they are exposed to or use the most on a daily basis, was also considered, and these results are presented in Table 6.4/6 below.

Table 6.4/6. Comparison of present linguistic environment for the PSI and AB groups

Group	Present linguistic environment (freq and %)			
	Dominant language(s) of country of residence			
	L1/A	L2/B	Both	Other
PSI	23 (12.8%)	153 (85.0%)	4 (2.2%)	0
AB	97 (49.2%)	50 (25.4%)	21 (10.7%)	29 (14.7%)
	Language(s) exposed to the most on a daily basis			
	L1/A	L2/B	Both	Other
PSI	42 (23.3%)	110 (61.1%)	26 (14.4%)	1 (0.6%)
AB	98 (46.2%)	41 (19.3%)	66 (31.1%)	7 (3.3%)

As expected on the basis of what is known about PSIs, the overwhelming majority of respondents from this group indicated that the L2 (i.e. English) is currently the dominant language of their country of residence (85.0%; see Table 6.4/6). This is reflected in the next figure of perceived degree of exposure to each language, with the majority of PSI respondents (61.1%) reporting that they are exposed predominantly to the L2 on a daily basis (see Table 6.4/6). The responses to these questions for the AB group, as we saw earlier in Section 6.3, are more spread out, and thus the AB group cannot be characterised as neatly as the PSI group in terms of a dominant linguistic environment of the country of residence.

The PSI respondents' daily language use across difference categories was also considered, and the results are presented in Table 6.4/7 on the next page, together with those for the AB group for comparison.

We see that the majority of PSI respondents report using both languages equally on a daily basis in the categories of reading (71.7%), writing (60.0%), socialising (71.1%) and the internet (68.3%) (see Table 6.4/7). These trends are in line with the findings for the AB group (see Table 6.4/7). Language L2 was the most popular choice in the categories of TV and radio (43.3% and 47.8% respectively) among the PSI respondents, which is likely a reflection of the dominant linguistic environment of the country of residence. Therefore, it can be concluded that, while the language of the country of residence certainly affects language use and exposure, PSI interpreters tend to use both languages on a daily basis for a variety of activities.

Table 6.4/7. Comparison of self-reported daily language use (by category) for the PSI and AB groups

Group	Language use category and responses (freq and %)			
	Reading			
	L1/A	**L2/B**	**Both**	**Neither**
PSI	14 (7.8%)	34 (18.9%)	129 (71.7%)	0
AB	17 (8.0%)	18 (8.5%)	175 (82.5%)	2 (0.9%)
	Writing			
	L1/A	**L2/B**	**Both**	**Neither**
PSI	19 (10.6%)	49 (27.2%)	108 (60.0%)	1 (0.6%)
AB	40 (18.9%)	9 (4.2%)	160 (75.5%)	3 (1.4%)
	Watching TV			
	L1/A	**L2/B**	**Both**	**Neither**
PSI	22 (12.2%)	78 (43.3%)	66 (36.7%)	11 (6.2%)
AB	32 (15.1%)	34 (16.0%)	122 (57.5%)	24 (11.3%)
	Listening to the radio			
	L1/A	**L2/B**	**Both**	**Neither**
PSI	24 (13.3%)	86 (47.8%)	54 (30.0%)	13 (7.2%)
AB	38 (17.9%)	60 (28.3%)	28 (13.2%)	38 (17.9%)
	Socialising			
	L1/A	**L2/B**	**Both**	**Neither**
PSI	20 (11.1%)	25 (13.9%)	128 (71.1%)	4 (2.3%)
AB	47 (22.2%)	20 (9.4%)	136 (64.2%)	9 (4.2%)
	Using the internet			
	L1/A	**L2/B**	**Both**	**Neither**
PSI	10 (5.6%)	41 (22.8%)	123 (68.3%)	3 (1.7%)
AB	16 (7.5%)	28 (13.2%)	155 (73.1%)	13 (6.1%)

Language use in the context of interpreting and translation among the PSI group was also considered. The responses to the questions pertaining to interpreting are summarised in Table 6.4/8 below.

Table 6.4/8. Comparison of responses for the PSI and AB groups to questions pertaining to interpreting

Group	Responses to questions concerning interpreting (freq and %)		
	Language(s) you mostly interpret into:		
	L1/A	L2/B	Both
PSI	76 (42.2%)	43 (23.9%)	55 (30.6%)
AB	127 (59.9%)	56 (26.4%)	29 (13.7%)
	Preferred interpreting direction		
	L1/A	L2/B	No preference
PSI	56 (31.1%)	37 (20.6%)	76 (42.2%)
AB	127 (62.3%)	32 (15.7%)	45 (22.1%)
	What is more important: interpreting skill or linguistic skill?		
	Interpreting skill	Linguistic skill	Both equally important
PSI	69 (38.3%)	35 (19.4%)	73 (40.6%)
AB	90 (43.1%)	24 (11.5%)	95 (45.5%)

While the largest proportion of PSI respondents reported interpreting into the L1 the most (42.2%), the number who indicated that that interpret into both languages equally was not far behind (30.6%)(see Table 6.4/8. In particular, the percentage of PSI respondents who interpret into both languages is greater than that for the AB group (13.7%; see Table 6.4/8). In terms of preferred interpreting direction, the largest proportion of PSI respondents reported that they have no preference (42.2%), with just under a third expressing a preference for the L1 (31.1%; see Table 6.4/8). Compared with the AB group, we see that the percentage of PSI respondents who do not have a preference when it comes to interpreting direction is greater (the corresponding figure for AB is 22.1%; see Table 6.4/8). With regard to perceptions of the relative importance of interpreting and linguistic skill in interpreting, the responses of the PSI group followed the same trends as those observed within the AB group. Specifically, the largest proportion of respondents felt that both were equally important (40.6%), followed closely by interpreting skill (38.3%), with linguistic skill the least popular choice (19.4%; see Table 6.4/8). However, the percentage of PSI interpreters who felt that linguistic skill is most important is almost twice as high as the same figure within the AB group (11.5%; see Table 6.4/8).

The practice of translation was next considered and, as can be seen from Table 6.4/9 below, almost all PSI interpreters also work as translators.

Table 6.4/9. Number of respondents from the PSI and AB groups who also carry out translation work

Group	Do you do any translation work? (freq and %)	
	Yes	No
PSI	165 (91.7%)	15 (8.3%)
AB	149 (70.6%)	62 (29.4%)

The breakdown of the languages that respondents mostly translate into is presented in the Table 6.4/10 below.

Table 6.4/10. Languages respondents from the PSI and AB groups mostly translate into

Group	Language(s) you mostly translate into (freq and %):		
	L1/A	L2/B	Both
PSI	59 (32.8%)	11 (6.1%)	95 (52.8%)
AB	69 (46.6%)	4 (2.7%)	75 (50.7%)

The responses for the PSI group were found to be similar to those observed for the AB group, with just over half of respondents reporting that they translate into both languages (52.8%), followed by L1 only (32.8%), with only a small proportion translating exclusively into the L2 (6.1%; see Table 6.4/10). Again, these findings are perhaps surprising, as they appear to go against the widely-held belief in the field of translation that one is expected to translate into the native language only.

6.4.2 Attitudes, perceptions and self-ratings

The responses of the PSI group to the questions concerning awareness of language maintenance effort and motivation for maintaining both languages were compared with the responses given by the AB group. As can be seen from Table 6.4/11 on the next page, the two groups' responses to four of the five questions were strikingly similar.

Table 6.4/11. Comparison of responses for the PSI and AB groups to questions pertaining to language maintenance effort and motivation

Group	Responses to questions on language maintenance effort and motivation (freq and %)		
	Do you feel that maintaining your two strongest languages at their present high standard requires a degree of conscious effort?		
	Yes	**No**	**Unsure**
PSI	134 (74.4%)	39 (21.7%)	7 (3.9%)
AB	154 (73.7%)	42 (20.1%)	13 (6.2%)
	Would you make the effort to maintain both of your strongest languages at their present high standard if not working as a professional interpreter?		
	Yes	**No**	**Unsure**
PSI	99 (55.0%)	47 (26.1%)	33 (18.3%)
AB	105 (50.5%)	57 (27.4%)	46 (22.1%)
	Would it be possible to maintain both of your strongest languages at their present high standard if not working as a professional interpreter?		
	Yes	**No**	**Unsure**
PSI	62 (34.4%)	85 (47.2%)	33 (18.3%)
AB	65 (31.1%)	96 (45.9%)	48 (23.0%)
	Do you seek to fill gaps in your linguistic knowledge when you notice them?		
	Yes	**No**	**Unsure**
PSI	175 (97.2%)	3 (1.7%)	2 (1.1%)
AB	206 (98.1%)	1 (0.5%)	3 (1.4%)
	Is your motivation for filling gaps in linguistic knowledge purely professional?		
	Yes	**No**	**Unsure**
PSI	55 (30.6%)	111 (61.7%)	11 (6.1%)
AB	38 (18.1%)	148 (70.5%)	24 (11.4%)

It was found that perceptions of language maintenance efforts among PSI respondents mirrored the responses of the AB group, with the majority of both groups indicating that language maintenance requires a degree of conscious effort (74.4% for PSI, 73.7% for AB; see Table 6.4/11). Similar proportions of respondents within the two groups felt that it would be possible to maintain both languages at their current high standard without the practice of interpreting (34.4% for PSI, 31.1% for AB; see Table 6.4/11) and, similarly to the AB group, almost all PSI respondents reported that they seek to fill gaps in their linguistic knowledge when they notice them (97.2%). The greatest differences between the two groups were observed with regard to the nature of their motivation to maintain their languages (i.e. professional or otherwise). While the responses of the two groups to the question of whether they would continue to make the effort to maintain both languages at their present high standard if not working as interpreters were similar, with just over half of both

indicating that they would (55.0% for PSI, 50.5% for AB; see Table 6.4/11) and a little over a quarter that they would not (26.1% for PSI, 27.4% for AB; see Table 6.4/11), we note that the percentage of PSI respondents who would make this effort is slightly higher than that observed among the AB group. On the other hand, a substantially larger proportion of PSI respondents than AB respondents stated that their motivation for filling gaps in linguistic knowledge was purely professional (30.6% and 18.1% respectively; see Table 6.4/11), and a lower percentage of PSI than AB respondents indicated that it was not (61.7% and 70.5% respectively; see Table 6.4/11). It is therefore difficult to reach a conclusion on the basis of these results as to the relative levels of non-professional language maintenance motivation within the two groups.

Next, the PSI group's responses to the questions concerning awareness of dominance shifts between their two strongest languages are set out in Table 6.4/12 below, together with the findings for the AB group.

Table 6.4/12. Responses of the PSI and AB groups to the question of whether language dominance is perceived to fluctuate between their strongest languages

Group	**Do you feel that language dominance fluctuates between your two strongest languages? (freq and %)**		
	Yes	**No**	**Unsure**
PSI	82 (45.6%)	76 (42.2%)	22 (12.2%)
AB	79 (37.3%)	120 (56.6%)	13 (6.1%)

It was found that the PSI respondents were split almost equally between those who felt that language dominance fluctuates between their two strongest languages (45.6%) and those who feel that it does not (42.2%; see Table 6.4/12). Comparing the results for the PSI group with those observed for the AB group, we see that the percentage of PSI respondents who feel that language dominance does fluctuate is slightly higher compared with the same figure within the AB group (37.3% for AB; see Table 6.4/12). Given that the childhood linguistic environment conditions for the two groups are very similar (see Section 6.4.1 above), this difference may be due to the influence of the dominant linguistic environment, which is overwhelmingly the L2 in the case of the PSI group (see Chapter 7, Section 7.4 for details).

Differences were also observed between the PSI and AB groups with respect to perceptions of cross-linguistic interference between their two strongest languages. The responses for both groups are summarised in Table 6.4/13 below.

Table 6.4/13. Comparison of responses for the PSI and AB groups to the question pertaining to perceptions of non-linguistic interference between their strongest languages

Group	**Do you notice yourself making unnatural utterances in either of your two strongest languages due to the influence of the other language? (freq and %)**				
	In neither	**Mostly in L1/A**	**Mostly in L2/B**	**In both equally**	**Unsure**
PSI	52 (28.9%)	55 (30.6%)	28 (15.6%)	30 (16.7%)	14 (7.8%)
AB	51 (24.3%)	33 (15.7%)	63 (30.0%)	43 (20.5%)	20 (9.5%)

In particular, while comparable proportions of respondents within each group felt that interference occurs in neither language (28.9% for PSI, 24.3% for AB) or both languages equally (16.7% for PSI, 20.5% for AB), the trend was reversed for perceptions of interference in each of the languages separately (see Table 6.4/13). While 30.6% of PSI respondents felt interference occurs mostly in the L1, and only 15.6% reported that it occurs mostly in the L2, within the AB group the opposite trend was observed: 15.7% of respondents reported greater interference in language A, while 30.0% felt that it occurred mostly in language B (see Table 6.4/13). Once again, this observation could be a manifestation of the influence of the dominant linguistic environment on the bilingualism of the PSI group (see Chapter 7, Section 7.4).

The responses of the PSI group to the questions pertaining to emotional attachment/attitudes towards their languages were considered next, and the results are summarised in Table 6.4/14 on the next page, together with those for the AB group. First of all, it was observed that the PSI group exhibited very similar response patterns to the AB group in all the three questions in this category. In particular, it was found that the largest proportion (45.6%) of PSI respondents would revert to L1 when tired/emotionally upset, with just under a third (29.4%) indicating that they have no preference (the corresponding figures for AB are 50.7% and 31.1%; see Table 6.4/14). In terms of perceptions of word weight in the two languages, the majority of PSI respondents were split more or less evenly between those who felt that words in the L1 carry more weight (38.3%) and those who perceived this as being equal in both languages (35.0%), with the corresponding figures for the AB group 36.4% and 36.8% respectively (see Table 6.4/14). With regard to attachment to the languages, the largest percentage of PSI respondents reported feeling a special attachment towards the L1 (44.4%), with the next largest group indicating that they do not feel an attachment to one of their languages over the other (36.7%); the corresponding figures for the AB group are 40.2% and 37.3% (see Table 6.4/14). The significance of these findings is discussed in the context of the literature in Chapter 7, Section 7.4.2.

Table 6.4/14. Comparison of responses for the PSI and AB groups to questions pertaining to emotional response and attachment to the languages

Group	Responses to questions on emotional response and attachment to the languages (freq and %)			
	If possible, would you revert to one of your two strongest languages when tired/upset?			
	No	L1/A	L2/B	Unsure
PSI	53 (29.4%)	82 (45.6%)	25 (13.9%)	19 (10.6%)
AB	65 (31.1%)	106 (50.7%)	18 (8.6%)	20 (9.6%)
	Do you feel that words carry the same weight in your two strongest languages (in particular, swear words and words such as "love" and "hate")?			
	Equal	L1/A more weight	L2/B more weight	Unsure
PSI	63 (35.0%)	69 (38.3%)	21 (11.7%)	27 (15.0%)
AB	77 (36.8%)	76 (36.4%)	18 (8.6%)	38 (18.2%)
	Do you feel a greater attachment towards one of your strongest languages over the other?			
	No	To L1/A	To L2/B	Unsure
PSI	66 (36.7%)	80 (44.4%)	19 (10.6%)	14 (7.8%)
AB	78 (37.3%)	84 (40.2%)	26 (12.4%)	21 (10.0%)

Finally, the responses of the PSI group to the questions concerning self-ratings of proficiency in their languages were considered, and compared to the responses given by the AB group. Table 6.4/15 on the next page sets out the results for proficiency self-ratings in each language relative to each other, in the categories of command of registers, gaps in vocabulary and writing.

Table 6.4/15. Self-ratings of proficiency in the strongest languages relative to each other (by category) of the PSI and AB groups

Group	Self-ratings in the two languages relative to each other across difference categories (freq and %)			
	Do you feel that your command of registers is equal in both of your strongest languages, or better in one language than the other?			
	Equal	**Better in L1/A**	**Better in L2/B**	**Unsure**
PSI	69 (38.3%)	74 (41.1%)	24 (13.3%)	13 (7.2%)
AB	58 (27.6%)	140 (66.7%)	2 (1.0%)	10 (4.8%)
	Do you have fewer gaps in vocabulary in one of your strongest languages compared with the other?			
	Equal	**Fewer in L1/A**	**Fewer in L2/B**	**Unsure**
PSI	35 (19.4%)	88 (48.9%)	35 (19.4%)	18 (10.0%)
AB	58 (27.8%)	126 (60.3%)	11 (5.3%)	14 (6.7%)
	Do you write equally well/just as easily in both of your strongest languages?			
	Equal	**Better in L1/A**	**Better in L2/B**	**Unsure**
PSI	75 (41.7%)	73 (40.6%)	25 (13.9%)	6 (3.3%)
AB	73 (35.1%)	123 (59.1%)	5 (2.4%)	7 (3.4%)

With regard to command of registers, we see that PSI respondents were split almost evenly between those who felt that the L1 is stronger (41.1%) and those who felt that both languages are equal (38.3%), with a much smaller percentage considering the L2 to be the strongest language (13.3%; see Table 6.4/15). In terms of gaps in vocabulary, PSI respondents generally felt that that L1 is stronger in this regard (48.4%), with an equal number of respondents (19.4%) indicating that either both languages are equal or that they have fewer gaps in language L2 (see Table 6.4/15). In the writing category, the response patterns were very similar for those observed for command of registers, with the majority of PSI respondents split almost equally between those who felt that the L1 is stronger (40.6%) and those who considered both languages to be equal (41.7%), with a minority choosing L2 as their stronger language in writing (13.9%; see Table 6.4/15). Overall, these findings suggest that PSI respondents generally feel that the L1 is stronger than the L2, however, a substantial proportion of the group consider both languages to be equal, in particular in terms of command of registers and writing. Comparing the responses of the PSI group with those of the AB group, we observe that there is a greater distance in relative proficiency scores for languages A and B in the AB group compared with L1 and L2 in the PSI group (see Table 6.4/15). Specifically, in all three categories considered, more respondents within the AB group felt that language A was their strongest languages, compared with the figures for L1 within the PSI group; fewer respondents within the AB group gave preference to language B compared with the same figures for the L2 within the PSI group (see Table 6.4/15). These findings suggest that the PSI

respondents perceive their two strongest languages to be closer in terms of proficiency compared with the AB group, with respect to the categories considered. This finding may be a manifestation of the influence of the L2 as the dominant linguistic environment of the PSI group (see Chapter 7, Section 7.4.2).

Table 6.4/16 below presents the results for the PSI and AB groups to the questions concerning self-ratings in each language relative to a monolingual standard.

Table 6.4/16. Self-ratings of proficiency relative to an average monolingual standard in each language (by category) of the PSI and AB groups

Group	**Self-ratings in each language relative to a monolingual standard across different categories (freq and %)**		
	Richness of vocabulary in L1/A		
	Weaker	**Same**	**Stronger**
PSI	12 (6.7%)	68 (37.8%)	93 (51.7%)
AB	3 (1.4%)	57 (27.4%)	148 (71.2%)
	Richness of vocabulary in L2/B		
	Weaker	**Same**	**Stronger**
PSI	34 (18.9%)	78 (43.3%)	52 (28.9%)
AB	31 (15.7%)	102 (51.5%)	65 (32.8%)
	Instinctive/native comprehension in L1/A		
	Weaker	**Same**	**Stronger**
PSI	6 (3.3%)	73 (40.6%)	96 (53.5%)
AB	1 (0.5%)	74 (36.3%)	129 (63.2%)
	Instinctive/native comprehension in L2/B		
	Weaker	**Same**	**Stronger**
PSI	37 (20.6%)	90 (50.0%)	38 (21.1%)
AB	33 (16.9%)	109 (55.9%)	53 (27.2%)
	Pragmatic/cultural competence in L1/A		
	Weaker	**Same**	**Stronger**
PSI	12 (6.7%)	70 (38.9%)	94 (52.2%)
AB	3 (1.4%)	71 (34.1%)	134 (64.4%)
	Pragmatic/cultural competence in L2B		
	Weaker	**Same**	**Stronger**
PSI	28 (15.6%)	77 (42.8%)	57 (31.7%)
AB	37 (18.7%)	88 (44.4%)	73 (36.9%)

The following general observations can be made about the PSI group on the basis of the above responses. The findings for the L1 in all three categories – richness of vocabulary, native comprehension, pragmatic/cultural competence – are very similar, with just over half of PSI respondents rating the L1 as stronger than the monolingual standard (51.7%, 53.5% and 52.2% in the three categories respectively), and around 40% rating this language as being equal to the monolingual standard in each category (37.8%, 40.6% and 38.9% respectively; see Table 6.4/16). Only a small minority of PSI respondents (a maximum of 6.7%) felt that the L1 was weaker than the monolingual standard in any of the categories (see Table 6.4/16). The response patterns for the L2 were similar to each other in all three categories considered, but differed to those observed for the L1. In this case, the greatest proportion of respondents felt that the L2 is equal to the monolingual standard (51.5%, 55.9% and 42.8% in the three categories respectively), with under a third of respondents rating the language as being stronger than the monolingual standard (28.9%, 21.1% and 31.7% in the three categories respectively), with 15-20% of respondents rating the language as being weaker (18.9%, 20.6% and 15.6% respectively; see Table 6.4/16). These findings suggest that the PSI group are generally more confident in the L1 compared with the L2. This seems to be the case in particular with respect to instinctive/native comprehension, where the least number of PSI respondents rated the language as being stronger, and the greatest felt that it was weaker than the monolingual standard (see Table 6.4/16). On the whole, however, both languages are generally considered to be at least equal to the monolingual standard in all three categories by the PSI respondents.

Comparing the findings for the PSI group with those for the AB group, we see that, in the case of languages L1 and A, a higher percentage of AB respondents tended to rate A as being above the monolingual standard, compared with the same figure for the L1 among PSI respondents, and a lower percentage of the AB group rated A as being below the monolingual standard, compared with the same figure for the L1 in the PSI group (see Table 6.4/16). This was observed in all three categories, suggesting that, on the whole, AB respondents display a greater degree of confidence in their strongest language than PSI respondents. The same pattern was observed for languages B and L2 in the categories of richness of vocabulary and native comprehension (see Table 6.4/16). However, with respect to pragmatic/cultural competence, while the responses for the two groups followed the same pattern in the "same" and "stronger" response categories, a slightly higher percentage of AB respondents rated language B as being below the monolingual standard, compared with the same figure for the L2 within the PSI group (18.7% and 15.6% respectively; see Table 6.4/16). On the whole, however, the responses concerning the L2 for the two groups suggest that the AB group exhibit a greater degree of confidence in their second language compared with the PSI group. Possible explanations for these findings include the slightly higher age of SLA

observed within the PSI group compared with the AB group, as well as the dominant linguistic environment (L2) of the PSI group. This, as well as the other trends observed, are explained in more detail and discussed in light of the literature in Chapter 7, Section 7.4.

7. Discussion

In this Chapter, the findings presented in Chapter 6 are discussed in light of the literature on bilingualism and interpreting surveyed in the first part of the dissertation, in order to address the research questions set and determine whether the results support the hypotheses put forward. The structure of the ensuing discussion is determined by the four main research questions outlined in Chapter 5, which are addressed in order. Therefore, the discussion is divided into four main sections as follows: a general overview of the characteristics of interpreters as bilinguals; an investigation of the findings pertaining to the AIIC AA and AB groups, and the implications of these results within the wider context of bilingualism; an inquiry into self-ascribed mother tongue identity among AA and AB respondents, and whether this corresponds to externally-ascribed identity as represented by the AIIC A and B classifications; an investigation of the differences between PSI and conference interpreters as bilinguals, as represented by the NRPSI and AIIC AB groups, and the implications of these findings for bilingualism more generally.

7.1 Interpreters as a group of highly proficient bilinguals

A look at the results for the three populations of interpreters presented in Chapter 6 reveals that, while the responses of the AIIC AB and PSI groups exhibit similar patterns with respect to many of the biographical and attitudinal factors considered, the AIIC AA group is set apart from these two populations in terms of both linguistic biographies and attitudes. The nature of and reasons for these observed differences are discussed in Section 7.2. However, the findings reveal that there are nonetheless some characteristics that are common to all groups, and which can be taken to describe professional interpreters as bilinguals at a global level. These main properties are outlined below, divided into the categories of biographies and attitudes/perceptions.

7.1.1 Biographical factors and language use

It was first of all observed that all three groups can be characterised by the fact that one of their current strongest languages was acquired before the other, and this language also tended to dominate as the language mostly spoken at home during childhood for all three groups (A1 within the AA group; A within the AB group; L1 within the PSI group), although this was the case to a lesser degree within the AA group (see Section 7.2). As hypothesised, the findings revealed that, on average, respondents from all three groups started learning their second language before puberty, with the highest average age of SLA of 11 years observed among the PSI respondents. This corresponds to the predictions of the literature on the incidence of a sensitive period for second language acquisition, and the strong negative correlation observed between age of SLA and degree of attainment in a second language (see Chapter 2). At the same time, respondents from all three

groups exhibited individual variation with respect to age of SLA, with a range from 0 – 18 years observed for the AA group, and 0 – 30 years for both the AB and PSI groups. This finding is as expected and is in line with the predictions of the DST view of second language development, which postulates that variation is to be expected at the individual level. With respect to language use in later life, two important characteristics were identified that pertain to all three groups. Firstly, as hypothesised, only a minority of respondents from all three groups were exposed exclusively to their first language as the language of higher education (a maximum of a third of respondents, observed within the PSI and AB groups; this figure was lower among the AA group). With respect to attainment in a second language, this finding suggests that exposure to the second language in the context of higher education plays an important role in the attainment of the level of proficiency in this language required of interpreters, including command of different registers and cultural knowledge. Secondly, it was found that all three groups were characterised by the tendency to use both languages more or less equally on a daily basis for a number of non-professional activities, regardless of the dominant language of their country of residence. The specific language use categories in which the majority of respondents from all groups reported using both of their strongest languages equally were: reading, writing, socialising and using the internet. What is not known is whether this extensive use of both languages in everyday life is a conscious choice or a natural consequence of this level of bilingualism, and whether it is a necessary condition for the maintenance of both languages at the high standard required of interpreters.

Several interpretations of the above finding can be proposed on the basis of the literature. On the one hand, it is reasonable to suppose that, in addition to objective circumstances (e.g. work requirements, country of residence, family circle) language use among bilinguals in later life is influenced by attitude towards the languages in question. In particular, Chapter 2 discussed examples of bilinguals choosing not to use certain languages due to negative attitudes towards them, and vice versa. Furthermore, the studies looking at emotional response towards their languages among bilinguals conducted by Dewaele (2004, 2008; see Chapter 2) found a link between L2 proficiency and perception of the emotional force of words in the L2. It is possible, therefore, that bilinguals with such high levels of proficiency in both languages as that required of interpreters feel a strong emotional attachment towards both languages, with in turn induces them to use both languages in daily life (consciously or unconsciously). This idea is explored further in Section 7.2, which looks at the findings for the AA and AB groups. Another possible interpretation is that interpreters make a conscious effort to use both languages in domains outside of work on a daily basis solely for professional reasons, i.e. to maintain the languages at the level required to succeed as interpreters. However, such an interpretation does not appear to be in line with the findings on motivation discussed below, as it was found that interpreters' motivation to maintain their languages is not purely professional in the majority of cases (see Section 7.1.2). It is also possible that this daily use of both languages is simply a consequence of the interpreters' high

bilingual proficiency in their two languages, and occurs naturally without conscious effort. More information is needed from the respondents about their daily language use habits, as well as their motivations for this, in order to interpret the findings with more confidence.

7.1.2 Attitudes and perceptions

As hypothesised, the majority of respondents from all three groups reported awareness of a language maintenance effort, required to keep both of their languages at their present high standard. This is in line with Thiéry's (1975) findings for the AIIC AA group, as well as the prediction of the DMM (Herdina and Jessner, 2002) that language maintenance, as well as acquisition, requires effort (see Chapter 3). It appears also that interpreters consciously make this effort, as suggested by the fact that almost all respondents from the three groups indicated that they seek to fill gaps in their linguistic knowledge when they notice them. This corresponds to expectations, as it was proposed in Chapter 4 that interpreters are characterised by a strong motivation to maintain their working languages at a high standard, at least for professional reasons. However, further investigation of respondents' motivation to maintain their languages revealed that this motivation is not entirely professional, with the majority of all three groups indicating (1) that they would continue to make the effort to maintain both languages at their present high standard even if not working as professional interpreters, and (2) that their motivation for filling gaps in linguistic knowledge is not purely professional. While the questions pertaining to the nature of language maintenance motivation among interpreters are limited, the responses obtained suggest that interpreters can be characterised by instrumental as well as integrative motivation (see Chapter 2, Section 2.2 (6)) to maintain and/or continue to improve their languages.

It was further observed, although this was not one of the hypotheses originally put forward, that the majority of interpreters from all groups surveyed demonstrated awareness of cross-linguistic interference between their strongest languages, with a minority of respondents (less than a third) in each group reporting that they do not notice interference in either language. This finding could be explained by the fact that, as professional linguists who are required to function at a high level in monolingual mode (Grosjean, 2008; see Chapter 2), keeping their languages free from interference as far as possible, interpreters are therefore sensitively aware of cross-linguistic interference and its direction. The next hypotheses concerns the behaviour of the populations with respect to relative attachment/emotional response to their two strongest languages. Indeed, comparing the responses for each of the groups' strongest languages, the findings seem to confirm the hypothesis that respondents are likely to demonstrate a greater attachment/emotional response to their first language (the language most associated with childhood), compared with their second language. It was found that all three groups favoured their first language (A1 within the AA group; A within the AB group; L1 within the PSI group) over their second language (A2, B and L2 respectively) in all

three categories of language preference when tired/emotionally upset, relative weight of words and special attachment. Given that subsequent factors affecting language use and/or experiences in the language(s) (e.g. country of residence; social/family circle etc.) were not controlled for and differed among respondents, these findings suggest that, as predicted by the literature, emotional attachment to a bilingual's languages is influenced most strongly by the childhood linguistic environment. That having been said, it was also observed that a substantial proportion of respondents from all three groups rated both languages as being equal in the three categories outlined above, and this figure was particularly high within the AA group. Possible conditions that contribute to equal attachment to the two languages are analysed in more detail in the subsequent discussion of the findings for the AA and AB groups.

Finally, it was proposed that interpreters would tend to rate their first language as being stronger than their second language, in particular in terms of speech production, regardless of subsequent language use/exposure. This was based on Paradis' (2004) argument that processing in the first language is more automatic than that in the second language, resulting in more stable performance. As a general trend, this was indeed found to be the case, with greater numbers of respondents within each group rating their first language as stronger than their second language in the categories of command of registers, gaps in vocabulary and writing. At the same time, while this overall trend was observed among all three groups, there were nonetheless important differences between the three populations, with the AA group in particular exhibiting response patterns that set it apart from the other two populations (see Section 7.2 below for details). Finally, with respect to respondents' self-ratings relative to an average monolingual standard, it was found that the majority of interpreters from all three groups tended to rate both languages as being at least equal to this standard in terms of richness of vocabulary, instinctive/native comprehension and pragmatic/cultural competence. These results could be explained by the fact that interpreters use their languages in a variety of domains and contexts and must, as indicated in Chapter 4, be able to communicate across cultures, grasping the meaning or idea of an utterance in order to convey the speaker's intention (in accordance with Seleskovitch's *theorie du sens*; see Chapter 4). It is therefore reasonable that interpreters as a population of bilinguals are characterised by confidence in both of their languages, tending to rate both as being at least equal to an average native monolingual standard, at least with respect to certain skills.

The foregoing focused on the similarities between the three groups of interpreters surveyed, identifying some general characteristics that pertain to all three. The broad properties outlined below can, on the basis of the findings obtained, be taken to characterise interpreters with two active working languages as a group of bilinguals in the most general sense, regardless of language classification or habitual interpreting setting. However, the responses uncovered important differences between groups, and it is these differences and their context, discussed below, that are

believed to be the most revealing in terms of both the bilingualism of interpreters, and individual bilingualism more generally.

7.2 True bilingualism and the AIIC AA and AB classifications

This section of the discussion examines the findings for the AA and AB groups in light of the literature, the implications of these findings for bilingualism, as well as the exploring in more detail the true bilingualism definition itself. The subsections set out below correspond to the three parts of research question 2, with sections (i) and (ii) of part (a) addressed at the same time (see Chapter 5, Section 5.1.1).

7.2.1 Comparison of AIIC AA and AB groups and implications for bilingualism

The results revealed differences between the AA and AB groups, both in terms of biographical factors and attitudes and perception. Therefore, on the whole, the findings appear to support Thiéry's (1975) observations that true bilinguals – AIIC AA interpreters – are indeed a population of bilinguals that are set apart from other highly proficient bilinguals by a number of characteristics that are unique to this group. In particular, childhood linguistic factors apparently play an important role in the development of this kind of bilingualism, which in turn have a bearing on the group's attitudes and perceptions. The specific distinctions between the AA and AB groups are discussed below.

It was first of all noted that the majority of AA respondents consider both of their languages to be mother tongues (85.4%), while this was the case for only a minority of AB respondents (13.2%), suggesting that external perceptions of native and non-native proficiency and/or identity tend to correspond to the bilinguals' own perceptions. The characteristics of the subgroups of respondents from both groups where this was not the case are analysed in detail in Section 7.3 below. Turning to the first hypothesis concerning expected differences between the AA and AB groups with respect of age of SLA and other childhood linguistic environment factors, the findings appear to be fully in line with expectations and the predictions of the literature. In particular, a lower mean age of SLA was observed among the AA group, compared with the AB group (4.3 and 8.6 years respectively). What is more, this difference was found to be statistically significant, representing a medium sized effect. This finding is in line with the literature on the role played by age of acquisition in the degree of proficiency attained in a second language, suggesting that age of SLA is an important predictor of ultimate proficiency attained. However, in accordance with DST principles, individual variation was observed within both groups in terms of age of SLA: the range for SLA was found to be 0 – 18 years among the AA group, and 0 – 30 years among the AB group. If the AIIC AA language classification is taken to correspond to native-like proficiency in two languages, then the

above findings suggest that it is possible to attain this level of proficiency in two languages even if one of the languages is acquired after puberty. This is in line with the findings of Bongaerts et al. (2000) that there is no critical period for SLA, even in the case of accent (see Chapter 2 for details). The findings also correspond to the Larsen-Freeman's claim that, while the language system is sensitively dependent on its initial conditions (in this case, the age of acquisition of the languages), it is not forever bound by these conditions (see Larsen-Freeman, 1997; Larsen-Freeman and Cameron, 2008; Chapter 3). However, this does not contradict DeKeyser's (2013) contention that native-like attainment in a second language is less likely after puberty, since it was observed that, with the actual range of SLA for the AA group ranged from 0 – 18 years, the majority of respondents fell within the 0 – 8 year range. It was also found that, while the majority of both the AA and AB groups reported that they acquired one of their languages before the other (A1 within the AA group, A within the AB group), the proportion of respondents who acquired both languages simultaneously from birth was substantially larger among the AA group compared with the AB group (27.1% and 1.9% respectively).

In addition to differences in terms of age of SLA, the AA and AB groups were also found to differ with respect to relative exposure to their two strongest languages in childhood, in all categories considered. As hypothesised, the results revealed that the two strongest languages within the AA group tended to be more evenly represented in childhood compared with the AB group, who were predominantly exposed to language A. These group-level differences in relative exposure to the two strongest languages in childhood were observed in all three categories of "home", "street" and "school", identified as key by Thiery (1975) (see Chapter 4). Another important difference observed between the two groups was that a much larger proportion of AA respondents relocated to a different country during childhood compared with AB respondents (64.6% and 26.4% respectively). While this relocation does not necessarily imply a change in linguistic environment, it is reasonable to suppose that it did in most cases, given the higher incidence of both languages as the languages of school education and country of residence in childhood among the AA group compared with the AB group. This finding is in line with Thiery's (1975) conclusion that, in children, true bilingualism is the result of chance or exceptional circumstances. These findings taken together support the predictions of the literature on the importance of the role of age and context of language acquisition among bilinguals in determining subsequent proficiency levels attained in the languages. At the same time, while the trends observed at group level were as expected, there were nonetheless individual differences. This gives rise to the potential further research question of why, if there are AB interpreters with childhood linguistic environments similar to those of the AA group in terms of relative exposure to the two languages and age of acquisition, did they not obtain an AA classification in both languages? Are the differences more subtle distinctions in childhood linguistic environment that are not captured by the present questionnaire, is it a matter of other factors (e.g. motivation, attitude, subsequent language use), or

does the difference pertain specifically to interpreting rather than bilingualism? Conversely, what is different about those AA interpreters whose childhood linguistic environment was more typical of the AB group, and yet they are still classified as having two native languages? Further information is needed to investigate these questions, and suggestions for future inquiry along these lines are given in Chapter 8.

The AA and AB groups were next compared in terms of language use and exposure in later life. In the category of higher education, perhaps surprisingly, it was found that a greater number of AB respondents were exposed to both of their languages in this context, compared with AA respondents (50.7% and 39.1%). This suggests that, as postulated by Thiéry (1975), with respect to true bilingualism, in the majority of cases, everything is determined in childhood. In other words, even if one subsequently uses both languages at a high level, such as in an academic setting, without this initial foundation in childhood, one may not be considered a true bilingual in accordance with the definition. With respect to the dominant linguistic environment of respondents' country of residence, this was found to be mixed within both groups, and it can be supposed that the country of residence is determined by work commitments or other circumstances.

Respondents were also asked to indicate the language(s) they are exposed to or use the most on a daily basis. It was observed that, while the answer to this question appeared to be influenced by the dominant language(s) of the country of residence among both groups, the answers were not identical: instead, a substantially higher percentage of respondents within both the AA and AB groups indicated that they are exposed to both languages equally on a daily basis. These figures were almost identical for the AA and AB groups (almost a third within each) suggesting that, at least with regard to subjective perceptions, the AA respondents are not exposed to/do not use their two languages more on a daily basis compared with AB respondents. This finding was echoed by the results of the comparison of daily language use across different categories, namely: reading, writing, TV, radio, socialising and the internet. It was found that the majority of respondents from both groups use both languages for reading, writing, socialising and viewing internet pages/using social media, with the responses spread more evenly across different response options in the TV and radio categories, but a greater incidence of use of both languages was not generally observed among the AA respondents. This was found to be the case only in the categories of writing and socialising, with more AA respondents reporting that the use both languages on a daily basis for these activities compared with AB respondents. These two language use categories are associated with more active use of the languages, and it is possible that this increased active use of both languages on a daily basis is an important distinguishing characteristic of the AA group. In other words, while the results for daily language use for the two groups do not shed any light on the necessary/sufficient conditions for the maintenance of two languages at the native-like level, as both AA and AB groups tend to use their two languages extensively in everyday life, the findings

suggest that the type of language use (active/passive) may play a greater role than extent. In any event, questions arise as to whether native-like competence in two languages requires a different kind of language use (e.g. more extensive; active as opposed to passive) to maintain than simply a high level of competence in two languages, or if any such observed differences are a consequence of this degree of bilingual proficiency.

With regard to language use in the context of interpreting, the responses were in line with reasonable expectations on the basis of what is known about conference interpreting and directionality (see Chapter 4). It was found that a greater percentage of AA respondents interpret into both of their languages equally compared with the AB group, who tend to interpret mostly into language A. A greater proportion of AA respondents also reported no preference in terms of interpreting direction, whereas AB respondents tended to favour interpreting into their native language. With regard to perceptions of the relative importance of interpreting and linguistic skill, no major differences were observed between the two groups, with respondents from both groups tending to consider both to be equally important, closely followed by interpreting skill, and only a minority from each group choosing linguistic skill. Interestingly, the latter figure was slightly lower among the AA group compared with AB group (8.5% and 11.5% respectively). Thus, it appears that the special status of the double A classification does not influence interpreters' perceptions in this regard. Comparing the number of respondents in each group who also translate, it was found that this figure was substantially higher within the AB group than among the AA group (70.6% and 47.9% respectively). This could be explained by the fact that, as indicated in Chapter 4, conference interpreters usually work into their A language, AA interpreters therefore have more interpreting opportunities than their AB colleagues (at least in international institutions, as opposed to the freelance market where the retour is more common), and thus do not need to carry out translation work. It was further found that, of those AB interpreters who also translate, half (50.7%) indicated that they translate into both their A and B languages. This is interesting because it is generally expected that translators work into their native language(s) only. Depending on the type of translation carried out, and the standards set, it may be that these AB interpreters are indistinguishable from monolinguals in writing in both of their languages (i.e. they can be considered true bilinguals in writing). If this is the case, the finding supports Thiéry's (1975) claim that true bilingualism in writing does not necessarily correspond to true bilingualism.

The AA and AB groups were next compared in terms of their attitudes, perceptions and self-ratings of proficiency in their two languages, and several hypotheses were put forward in this regard on the basis of the literature. In particular, it was postulated that a lower percentage of the AA group than the AB group would report that language maintenance requires conscious effort, that AA respondents would tend to feel an equal attachment to both of their languages, whereas the AB group would be characterised by a stronger attachment to language A, and that AA respondents

would demonstrate higher levels of non-professional (integrative) motivation to maintain their two languages. The responses obtained from the two groups appear to support these hypotheses, although the observed differences were slight in some cases. First of all, it was indeed found that slightly more AB respondents than AA respondents felt that maintaining both languages at the present high standard requires a degree of conscious effort (73.7% and 68.8% respectively), and this trend was reversed among those who felt that it does not. Furthermore, a greater proportion of AA respondents than AB respondents believed that maintaining both languages at this standard would be possible without working as a professional interpreter (45.8% and 31.1% respectively). Taken together, these findings imply that, compared with the AB group, the AA respondents are less likely to consider that the maintenance of both languages requires conscious work to maintain. As proposed in Chapter 5, one explanation for this could be the earlier average age of SLA, greater exposure to both languages in childhood and tendency to have acquired both by immersion observed within the AA group, resulting in more automatic processing in the two languages (Paradis, 2004). In other words, this foundation acquired in childhood means that both languages within the AA group remain more resistant to change in linguistic environment, levels of use/disuse of the two in later life. On the other hand, it is also possible that a consequence of having two native languages (the AA classification) is increased active use of both in everyday life, without the application of conscious effort (as observed above, the AA respondents tended to use both languages in the active use categories of socialising and writing to a greater extent than AB respondents). Therefore, it may be that, for AA respondents, language maintenance is something that is perceived as occurring naturally, and would happen regardless of professional activity, whereas AB interpreters are more likely to feel that they are making a conscious effort to keep both languages at their present high standard.

With respect to the nature of the two groups' motivation to maintain their languages, the findings are also in line with expectations. It was observed that a greater proportion of AA than AB respondents believe that they would still make the effort to maintain both languages at their present high standard even if not working as interpreters (59.6% and 50.5% respectively). Also, a higher proportion of the AA group than the AB group reported that their motivation for filling gaps in linguistic knowledge is not purely professional (80.9% and 70.5% respectively). Taken together, these responses suggest that the AA group does tend to be characterised by higher levels of non-professional motivation to maintain both languages than the AB group. As explained in Chapter 5, this hypothesis was based on the expectation that the AA group would tend to demonstrate a more equal attachment to both languages compared with the AB group, and the connection between attitude and motivation (for SLA and language maintenance) documented in the literature (see Chapter 2). The expectations for attitude/attachment appear to have been confirmed by the responses obtained. It was indeed found that a greater percentage of AA than AB respondents reported that they do not feel a greater attachment to one language over the other (50.0% and

37.3% respectively), and that words carry the same weight in both languages (60.4% and 36.8% respectively). Within the AB group, on the other hand, language A dominated in both cases. Additionally, a greater proportion of AA than AB respondents indicated that they do not have a language preference when tired or upset (41.7% and 31.1% respectively), whereas the AB group again favoured language A. However, while this last question was initially intended to be a measure of emotional attachment, it is possible that this is not in fact the case, as some respondents clarified in the additional comments that language preference in this context is influenced by the interlocutor or topic. Nonetheless, on the basis of the responses to the questions concerning attachment to the languages and perception of the weight (emotional force) of words in the two languages, it can be concluded that the AA group is characterised by a more equal attachment to the two languages compared with the AB group. Therefore, the findings for attitude/attachment to the two languages provide a possible explanation for the findings concerning language maintenance motivation in both groups. In other words, as a consequence of the more equal attachment to the languages observed within the AA group compared with the AB group, it is more important to AA respondents to maintain both languages at a high standard for personal reasons than it is for the AB group.

Hypotheses were also advanced with respect to awareness of language dominance shifts and perceptions of the direction of cross-linguistic interference within the two groups. The findings for the AA and AB groups in both cases appear to be in line with expectations. First of all, it was found that a greater proportion of AA than AB respondents feel that language dominance fluctuates between their two strongest languages (50.0% and 37.3% respectively). This overall trend was observed without controlling for external factors, such as dominant linguistic environment or language(s) respondents work into the most. Therefore, it can be concluded that, regardless of changes in external linguistic environment, AA respondents are characterised by a greater awareness of shifts in dominance between their two languages compared with AB respondents. This prediction was made in Chapter 5 on the basis of the closer proximity (with respect to relative competence) of the two languages within the AA group compared with the AB group. In accordance with the predictions of the DST approach to second language development, this closer proximity of the languages in terms of relative competence within the AA group means that less external input is needed to shift the language system to a different state, such as to a state where the relative strength of the languages changes (see Chapter 3; Larsen-Freeman and Cameron, 2008). On this basis, it is reasonable to expect that shifts in language dominance would occur more frequently within the AA group than within the AB group, as more subtle changes in the external linguistic environment (e.g. simply reading or socialising more in one of the languages) are required to bring about such shifts within the AA group. Additionally, respondents from both groups demonstrated similar levels of awareness of the circumstances that lead to these fluctuations in language dominance. In other words, they were aware of the influence of external environmental

factors on internal ones (relative competence in the languages). This is in line with the DST view of bilingualism, that the language system is never in a static state, but rather it continually evolves and changes due to the influence of contextual factors (see Chapter 3 for details).

With regard to the direction of cross-linguistic interference (in terms of speech production) as perceived by respondents, the findings demonstrated that, as anticipated, the AA group were more likely to view interference as being bi-directional, whereas the AB group tended to feel that language A exerted a greater degree of influence on language B. Again, these results were observed without controlling for other factors that have a bearing on cross-linguistic interference and its direction, such as language use and exposure. The implication for bilingualism more generally, therefore, is that relative competence in the two languages and/or the age and context of SLA contribute the most to perceptions of dominance shifts and direction of interference, since differences were observed between the AA and AB groups without controlling for any other factors. Additionally, the finding that the majority of AA respondents reported that they do make unnatural utterances in one or both languages due to the influence of the other language appears to support Grosjean's (1989) claim that the bilingual language system is different in nature to the monolingual system (see Chapter 2), and hence is not reducible to "multiple monolingualism", regardless of the level of competence attained in each language (Herdina & Jessner, 2002; see Chapter 3).

Finally the two groups were compared in terms of self-ratings of proficiency in their strongest languages, relative to each other and relative to an average monolingual standard. This latter category was intended to measure confidence in the languages in question. On the basis of the literature on the correspondence between external ratings of bilingual proficiency and self-ratings (Hamers and Blanc, 2000; see Chapter 2), it was hypothesised that the AA group would tend to view both languages as being more or less equal, whereas the AB groups would be more likely to regard language A as being stronger than language B. This was indeed found to be the case, with a greater proportion of AA respondents than AB respondents rating both languages as being equal in the three categories of command of registers, number of gaps in vocabulary and writing (64.6% and 27.6 percent respectively; 52.1% and 27.8% respectively; 60.4% and 35.1% respectively). While both groups tended to rate their first language as being stronger than their second language in all three categories (i.e. language A1 in the AA group, language A in the AB group), the difference between languages was less pronounced within the AA group. It is notable that these results were observed without controlling for other variables, such as language(s) of higher education and current dominant linguistic environment. This suggests again that, while it has been demonstrated that other contextual factors contribute to proficiency levels in the languages (see Chapter 2), age and context of SLA play the biggest role, at least with respect to self-ratings.

In terms of respondents' self-ratings relative to an average monolingual standard in the categories of richness of vocabulary, instinctive/native comprehension and pragmatic/cultural competence, similar patterns to the above were observed within the AA and AB groups. That is, AA respondents tended to give similar ratings for both of their languages, whereas AB interpreters consistently gave higher scores to language A than to language B in all three categories. An additional observation, which was not anticipated, was that AB respondents tended to rate their first language (A) as stronger than AA respondents rated either of their languages (A1, A2). Language B, on the other hand was rated by AB respondents as weaker relative to the ratings given by AA respondents to each of their languages. The first finding is perhaps surprising, given that languages A1, A2 in the AA group and language A in the AB group all have the same AIIC language classification (i.e. they are all considered to be native languages). At the same time, it was noted in Chapter 2 that there is a high degree of variation in terms of language competence even within monolingual populations, and therefore defining a language as "native" does not imply that some set standard has been attained in this language.

The finding that, at least in terms of subjective perceptions, the AA group can be characterised by two languages of about the same proficiency (which is perceived to be more or less equal to the monolingual standard), and the AB group by two languages with differing levels of proficiency – one very strong language (above the monolingual standard) and one weaker language (B) may be explained in terms of the DST view of bilingualism. The explanation is similar to that proposed by the DMM (Herdina and Jessner, 2002) for Grosjean's domain specificity principle (see Chapter 3). According to the DMM, domain specificity emerges as a consequence of the principle of economy of effort (Zipf's law; see also Larsen-Freeman and Cameron, 2008), as such a system is more stable and requires less effort to maintain than an all-purpose fully-fledged language system (Herdina and Jessner, 2002). It is possible that such a compensatory mechanism also applies to relative competence in two languages. Consequently, languages A1, A2 in the AA group are generally ranked below language A (AB group), since maintaining two languages at the higher standard attributed to language A in the AB group would require too much effort. If the communicative needs (DMM, see Chapter 3) of the individual can be met by maintaining both languages at a slightly lower standard, there is no reason to expend additional effort to maintain the languages at a higher level. Language A in the AB group, however, can be maintained at a higher relative standard due to the lower relative ranking of language B. On the other hand, if the above-described findings are viewed in terms of language confidence rather than actual proficiency, it can be concluded that having one clear native language results in greater confidence in that language, compared to cases where two native languages are present.

7.2.2 The true bilingualism definition and the AIIC AA classification

This section explores the questions pertaining specifically to the true bilingualism definition (Thiéry, 1975) and AIIC AA respondents' attitudes towards it, as well as the relationship between true bilingualism and other notions, such as mother tongue identity in two languages. Several hypotheses were proposed in this regard. First of all, it was anticipated that the majority of AIIC AA respondents would identify themselves as true bilinguals, as both the double A classification and Thiéry's definition concern external perceptions of mother tongue competence (identity) in two languages. This was indeed found to be the case, with 91.7% of AA respondents agreeing that they are true bilinguals. Indeed, as explained in Chapter 6, Section 6.2.2, following an examination of the reasons given for their answer by respondents who did not consider themselves to be true bilinguals, two of the reasons given do not prevent their authors from being classed as true bilinguals according to the definition. Consequently, the actual proportion of AA respondents who can be taken to be true bilinguals is 95.8%. Interestingly, one respondent commented that "….usually, people tend to doubt my abilities in "the other" language and cultural environment, the "foreign" one" (see Section 6.2.2 for full details). This corresponds to the point raised by Grosjean (2015) on biculturalism and others' perceptions of this phenomenon: in particular, he noted that people often find it hard to accept that biculturals are members of both cultures – invariably, they are seen as being one or the other, but not both (see Chapter 2).

Respondents were also asked to indicate whether they believe that the AIIC AA classification is equivalent to the true bilingualism definition proposed by Thiéry. While the majority of the AA group considered this to be the case (72.9%), it is notable that this figure is lower than the percentage of respondents who would class themselves as true bilinguals. The questionnaire did not expressly ask respondents who did not feel that the true bilingualism definition corresponds to the AIIC AA classification to give reasons for this. However, one respondent did provide clarifications in the additional comments at the end of the questionnaire, suggesting that the AA classification is a stronger concept that true bilingualism, and refers to "someone who is taken to be one of them by the members of two different linguistic communities, *at exactly the same* social and cultural level". Such a position appears to contradict the findings, i.e. that all respondents are in possession of the AIIC AA classification, yet not all would describe themselves as true bilinguals, which implies that true bilingualism is the more demanding definition of the two. In light of this, a possible explanation for the finding that not all respondents believe that the true bilingualism definition corresponds to the AIIC AA classification is that some respondents may have interpreted Thiéry's definition as implying bilingual balance. This is supported by a comment made by one of the respondents, who indicated that s/he does consider her/himself to be a true bilingual because "I have greater difficulty as concerns speed and concordance in one of the two languages". As pointed

out by Thiéry, however, true bilingualism does suggest that there must be some kind of balance between the two languages, or that such a state is even possible (see Chapter 4).

It was next hypothesised that the true bilingualism definition is not necessarily equivalent to the idea of having two mother tongues because, as admitted by Thiéry himself (1975; see Chapter 4), his definition only addresses the objective component of bilingualism (others' perceptions), and does not take into consideration subjective ideas about proficiency and/or identity in the two languages. The notion of a mother tongue, on the other hand, has certain emotional connotations (see Chapter 2), and includes the subjective component. The findings appear to support this hypothesis: while the majority of respondents agreed that both of their A languages are mother tongues (85.4%), there was nonetheless a subgroup who did not necessarily agree that this is the case. This suggests that the idea of having two mother tongues is stronger than the AIIC AA classification. Furthermore, it was observed that, of those respondents who did not indicate that both of their A languages are mother tongues, a number (42.9%; 3 respondents) nonetheless considered themselves to be true bilinguals (see Chapter 6, Section 6.2.3 (1) for details). This implies that the idea of having two mother tongues is a stronger notion that true bilingualism. This suggests that, in view of the emotional connotation of the term "mother tongue", for a language to be considered by an individual as a mother tongue, there needs to be some kind of emotional connection and/or childhood associations with the language in question, in addition to high proficiency in the two languages.

With regard to mother tongue identity in two languages, AA respondents were additionally asked whether they feel that both A languages were mother tongues in childhood. While the majority of respondents indicated that this was the case, the number who felt that it was not was found to be equal to almost a third of respondents (31.3%). It is notable that no respondents selected the Unsure response category when asked about the situation in childhood, suggesting that perceptions of mother tongue competence/identity in childhood are more clear-cut compared to adulthood (10.4% of respondents were unsure whether their A languages are currently both mother tongues). Respondents who did not feel that both of their A languages were mother tongues in childhood were asked to indicate the age at which they achieved this level of competence in both languages and what led to it. The average age at which this level of competence was attained in both languages is 19.7 years, with a range from 12 to 30 years. The reasons given for this were either a change in language(s) of education or linguistic environment of the country of residence, with only one participant giving a difference reason, namely "extensive reading, the practice of translation". No respondents cited interpreting as the reason for the shift in competence. Taken together, these findings suggest that respondents in the AA group are aware of shifts in competence in their A languages over the lifespan, and the circumstances that led to these changes. The finding that almost a third of AA respondents did not feel that both of their A languages were mother tongues in

childhood, as well as the fairly high mean age at which mother tongue competence was attained (i.e. several years after puberty) indicates that the AIIC AA classification is not necessarily accompanied by mother tongue competence in childhood, at least with respect to subjective perceptions. This is in line with the DST view of bilingualism as a system that undergoes constant change under the influence of contextual factors.

Finally, the relationship between true bilingualism as defined by Thiéry and true bilingualism in writing (i.e. being indistinguishable from a native monolingual speaker in both languages in writing) was explored further. As expected, the majority of AA respondents considered themselves to be true bilinguals in writing (72.9%). This figure was found to be even higher among those AA respondents who also identified themselves as true bilinguals (77.3%). It can therefore be concluded that, while Thiéry's definition refers to oral competence in the languages only, true bilingualism does tend to be accompanied by the same proficiency in writing, at least with respect to respondents' perceptions. However, one does not necessarily imply the other. In particular, we recall that it was observed in Section 7.2.1 above that a substantial proportion of AB interpreters reported that they translate into both their A and B languages, suggesting that they are indistinguishable in these languages in writing, but not in speech (at least according to the AIIC classification).

7.2.3 AIIC AA interpreters who obtained their AA classification at a later date

As anticipated on the basis of Thiéry's (1975) original findings, a subgroup of AA respondents (14.6%; 7 respondents in total) was identified who were awarded their AA classification after joining AIIC. The proportion of AA respondents with this experience is similar to that observed by Thiéry (see Chapter 4). A number of hypotheses were proposed regarding the characteristics of this subgroup and how it is likely to differ from the main group of AA respondents. However, as explained below, these hypotheses were generally not confirmed by the findings; indeed, the results were at times the opposite of what was expected. It should be noted that, given the small size of the population of AA interpreters who were awarded their double A classification at a later date, it is not necessarily possible to generalise on the basis of these findings. At the same time, the present investigation of the characteristics of this particularly interesting group has made it possible to test some preliminary hypotheses and suggest further directions for research.

It was first of all observed that obtaining the AA classification at a later date had no bearing on perceptions of mother tongue identity/competence in the two A languages, either at the time of completion of the questionnaire or in childhood. Indeed, a higher proportion of the subgroup of AA respondents who obtained their classification at a later date (hereinafter referred to as the "AA Later" group) indicated that both of their A languages were mother tongues in childhood, compared

with the rest of the AA group. Furthermore, whether the AA classification was awarded upon joining AIIC or subsequently appeared to have no impact on respondents' tendency to identify themselves as true bilinguals. It was found that 100% of the "AA Later" group consider themselves to be true bilinguals. The hypotheses that the "AA Later" group would be characterised by a higher age of SLA than the rest of the AA group, and a less equal exposure to both languages in childhood did not find confirmation in the results obtained. The mean ages of SLA were found to be virtually identical for both groups (4.4 years for "AA Later" and 4.3 years for the rest of the AA group), and the two groups exhibited similar patterns of relative exposure to the two languages in childhood (see Chapter 6, Section 6.2.3 (2) for details). Therefore, these findings contradict the hypothesis that a possible reason to the later acquisition of the AA classification is down to a later age of acquisition of the language originally classed as a B, and/or less exposure to this language in childhood in general. The findings do, however, appear to support Thiéry's (1975) argument that, in the case of true bilingualism (the AA classification), everything is determined in childhood. In other words, a language may become less active due to disuse in later life, however, if the foundation of sufficient exposure to that language in childhood is in place, it may subsequently be reactivated with intensive use, such as interpreting. On the other hand, while the present questionnaire failed to reveal differences in the childhood linguistic environment of the "AA Later" group compared with the main group, it is possible that the information obtained as part of the present study is too general, and a more detailed investigation is required in order to uncover subtle differences.

It was further proposed that the "AA Later" group may differ from the rest of the AA group with respect to the languages of higher education, in particular, that the former would be less likely to have been exposed to both languages in this setting. However, this was not found to be the case. In fact, the results showed that a greater proportion of "AA Later" respondents were exposed to both A languages in the context of higher education, compared with the rest of the AA group. The two groups also exhibited very similar response patterns for language use and exposure at the time of completion of the questionnaire (see Chapter 6, Section 6.2.3 (2) for details). Therefore, the data obtained as part of the present survey does not make it possible to identify any differences in language use/exposure in later life that could account for the AA classification being awarded at a later date. If any such differences exist between the groups, a more fine-grained analysis is needed to reveal them.

A comparison of the responses of the "AA Later" group with those of the main AA group with respect to attitudes and perceptions revealed some mixed results as regards the proposed hypotheses. The hypothesis that "AA Later" respondents would tend to exhibit a greater attachment/emotional response to one of their languages over the other, whereas the rest of the AA group would be more likely to rate both languages as being equal in the corresponding questions, was not supported by the findings. Indeed, the opposite was found to be true, with a greater

proportion of "AA Later" respondents rating both A languages as being equal in all three questions intended to measure attachment/emotional response (language preference when tired/upset, weight of words, special attachment) compared with the main AA group (see Chapter 6, Section 6.2.3 (2) for details). While this finding goes against the expectations outlined in Chapter 5, it is not surprising with the earlier observations regarding the similar ages of SLA and childhood linguistic environments of the two groups. However, the hypothesis that the two groups are likely to differ with respect to self-ratings of proficiency in the two languages, as well as language confidence (as represented by the self-ratings in each language relative to a monolingual standard), was found to be in line with some of the trends observed. Specifically, it was found that, with respect to certain language use categories at least, respondents within the "AA Later" group tended to rate the A1 as being slightly stronger than the A2, whereas the rest of the AA respondents were more likely to consider both languages as equal. This finding is in line with expectations. Furthermore, it was observed that, with regard to some of the aspects of language use considered, the "AA Later" group tended to display slightly lower confidence levels compared with the rest of the AA respondents (see Chapter 6, Section 6.2.3 (2) for details). This result was also in line with expectations. Taken together, the findings concerning differences in self-ratings of proficiency between the two groups could be interpreted as the presence of a link between external and subjective perceptions of proficiency. However, it is not clear is whether the fact that, according to external perceptions (AIIC classifications), one language was initially rated below the other affected "AA Later" respondents' perceptions of relative proficiency and/or confidence in their languages, giving rise to the observed differences.

In addition, although this did not form part of the hypotheses formulated in Chapter 5, the responses given by the two groups to some of the other questions were also compared, in particular with respect to awareness of language maintenance effort, motivation, perceptions of fluctuations in language dominance and cross-linguistic interference. Differences between the groups were observed in terms of perceptions of language maintenance effort, with a smaller proportion of "AA Later" respondents considering that language maintenance requires conscious effort, compared with the rest of the AA group (57.1% and 70.7% respectively). Secondly, it was found that a substantially larger proportion of "AA Later" respondents felt that language dominance does not fluctuate between their two A languages, compared with the main group (71.4% and 34.1% respectively). In the remaining categories of questions, the two groups either exhibited very similar response patterns, or the findings were inconclusive (see Chapter 6, Section 6.2.3 (2)). The finding regarding awareness of language maintenance effort appears to contradict what could reasonably be expected, i.e. that the "AA Later" group would tend to exhibit greater awareness of the effort required to maintain both languages, given that some degree of effort/increased language use was likely to have been required to bring the two languages to AA standard for this group of respondents. The result concerning awareness of shifts in language dominance, on the other hand,

could be interpreted as being in line with reasonable expectations, if it is supposed that the languages within the "AA Later" group are not as close (in terms of relative competence) as within the rest of the AA group, However, as previously stated, given the small sample size, it is difficult to infer too much from these findings. What can be concluded on the basis of the fact that some of the AA interpreters were awarded their AA classification at a later date is that the language system does appear behave in accordance with DST principles. In the case of the "AA Later" group, it appears as though their language system had stabilised at AB level (which could be considered an attractor or steady state), however, as a result of increased use of the B language in a professional interpreting context, the language system entered a new state.

7.3 Self-ascribed and externally-ascribed mother tongue identity in two languages

This section takes a closer look at the subgroups of AA and AB respondents whose own perceptions of mother tongue identity in their languages do not correspond to external perceptions, as represented by the AIIC AA and AB classifications. In the first part, the characteristics of the subgroup of AA respondents who do not feel that they have two mother tongues are investigated and compared with the main AA group, while the second part investigates the subgroup of AB respondents who do consider both of their languages to be mother tongues. The aim of the ensuing discussion is to understand which factors appear to have the most impact on shaping self-ascribed mother tongue identity and the relationships, if at any, between such subjective perceptions of identity and bilinguals' attitudes towards their languages.

7.3.1 AIIC AA interpreters who do not consider that they have two mother tongues

As anticipated, while the majority of AA respondents did agree that both of their A languages are mother tongues, indicating that self-ascribed native speaker identity tends to correspond to that which has been ascribed by others, a small subgroup of AA interpreters who do not necessarily feel that this is the case was identified (14.6%, 7 respondents; see Chapter 6, Section 6.2.3 (1) for details). While the small size of the population means that generalisations cannot necessarily be made on the basis of these results, it is nonetheless informative to examine the characteristics of this group in light of the predictions of the literature, in order to explore preliminary hypotheses. It was first considered whether those AA interpreters who did not state that both of their A languages are mother tongues (referred to as the "Not Two MTs" group) were more or less likely to report that both languages were mother tongues in childhood than the rest of the AA group. It was found that a lower percentage of "Not Two MTs" respondents indicated that both A languages were mother tongues in childhood compared with the main group (28.6% and 75.6% respectively). This overall trend is in line with expectations, as it was anticipated that childhood environmental factors would have a bearing on perceptions of identity/competence in adulthood. At the same time, the finding

that there were respondents within the "Not Two MTs" group who felt that both A languages were mother tongues in childhood suggests that the presence of two mother tongues in childhood does not necessarily translate into the same situation in adulthood (at least with regard to subjective perceptions). This is in line with Thiéry's (1975) argument that true bilingualism in childhood is the result of external circumstances, whereas in adulthood this state requires a conscious effort to maintain. On this basis, Thiéry argues that there are numerous cases of childhood true bilingualism, but very few adult true bilinguals (*ibid)*. Furthermore, the findings indicate that perceptions of native and non-native identity shift over the lifespan.

On the basis of the literature on bilingualism surveyed in Chapter 2, it was hypothesised that, compared with the rest of the AA group, the "Not Two MTs" group would be characterised by a higher average age of SLA and less equal exposure to both languages in childhood. The findings appear to confirm these hypothesis, with some substantial differences observed between the two groups. First of all, the mean age of SLA among the "Not Two MTs" group was found to be 8 years, and 3.7 years for the main AA group (note that that mean age of SLA for the "Not Two MTs" group is closer to that observed for the AB group than it is to the main AA group). While this difference in means was not found to be statistically significant, it did represent a fairly large effect (see Appendix II). Although, as noted above, the size of the "Not Two MTs" group is small (n = 7), it is striking that, even at this small scale the mean age of SLA is more than twice that of respondents who do feel that they have two mother tongues. This finding in in line with the literature both on the impact of childhood linguistic factors on identity in adulthood. At the same time, it was observed that the age range of SLA within the "Not Two MTs" group was 0 – 18 years. This suggests that, while an earlier age of SLA appears to be associated with subsequent perceptions of native/non-native identity, native speaker identity in two languages is not an immediate consequence of the acquisition of both languages at a very early age.

With respect to other childhood linguistic environment factors considered in the questionnaire, the response patterns exhibited by the two groups were in line with expectations (see Chapter 6, Section 6.2.3 (1) for details). In particular, the "Not Two MTs" group was characterised by the fact that the A1 was the language of the home for 6 out of the 7 respondents, with the remaining respondent indicating that another language (not the A1 or A2) was the language mostly spoken at home during childhood. While the differences in relative exposure to the languages in the categories of school and country of residence also followed the expected pattern, these differences were not as striking as those observed for languages of the home. These observations suggest that, in terms of shaping mother tongue identity, it is the home that plays the biggest role. This finding is in line with the additional emotional connotations of the term "mother tongue", and the literature suggesting that context of acquisition/exposure influences emotional response to the language in question (see Chapter 2 for details). In addition, a marked difference was observed between the two

groups in terms of the proportion of respondents who relocated to a different country in childhood. This was the case for 28.6% of the "Not Two MTs" group, and for 70.7% of the main AA group. This finding mirrors the differences observed between the AA and AB groups suggesting that, while more information is needed on the changes in linguistic/cultural environment that accompany this relocation, such major life events in childhood are significant not only in terms of shaping linguistic proficiency (as perceived by others), but also the bilinguals' own perceptions of identity.

While, as previously noted, the size of the population of AA respondents who do not feel that both of their A languages are mother tongues is small, the degree to which the patterns of language exposure in childhood and age of SLA compared to the rest of the AA group follow the predictions of the literature is striking. What is more, these differences are observed between two subgroups of a population who are, by definition, considered by others to have two mother tongues. These findings imply two main things. Firstly, that perceptions of mother tongue identity or competence – depending on how one views the idea of having two mother tongues – are strongly influenced by the childhood linguistic environment and the age of SLA. A lower age of SLA and more equal representation of both languages in childhood appears to be linked with the tendency to consider both languages mother tongues. Secondly, it seems that these differences in terms of exposure to the two A languages in childhood do not necessarily have an impact on external perceptions of mother tongue competence in both languages, as all respondents have the AA classification. This gives rise to the question of why, despite the differences in childhood linguistic environment observed between the two groups, which mirror the differences observed between the AA and AB groups described earlier, are the "Not Two MTs" group considered by others to have two native languages (i.e. they were awarded the AA classification), while AB respondents are not?

The next hypothesis proposed in Chapter 5 concerns differences in emotional attachment to the two languages between the groups. On the basis of the literature, it was suggested that those AA respondents who consider both languages to be mother tongues would report more equal attachment to their languages, compared with the "Not Two MTs" group. The findings for the two groups were in line with expectations, and it was indeed observed that a greater proportion of the "Not Two MTs" group felt a special attachment towards the A1 compared with the rest of the AA group (57.1% and 29.3% respectively). However, the findings concerning the relative weight of words in the two languages appeared to directly contradict expectations: it was observed that the majority of the "Not Two MTs" group reported that words carry equal weight in both of their A languages (85.7%), whereas this figure was lower among the rest of the AA group (56.1%). While this latter finding seems to contradict the predictions of the literature that perceptions of the emotional force of words in a given language are influenced by the childhood linguistic environment, it must also be noted that other contextual factors are also at play. In particular, Dewaele (2004, 2008; see Chapter 2 for details) found that factors such as the language of the

country of residence, length of residence and relative proficiency in the language(s) also influences the perception of the emotional force of words in that language. It is therefore possible that the findings reflect the contribution of other factors, and are not necessarily indicative of the absence of a link between childhood linguistic factors/identity and perception of the emotional force of words (in particular, in view of the small size of the "Not Two MTs" group).

While no hypotheses had been put forward in this regard, the two groups were additionally compared in terms of other aspects covered by the questionnaire. The most notable differences observed between the groups and their possible implications are outlined below. With regard to language use in the context of interpreting, it was found that respondents from the "Not Two MTs" group tend to interpret mostly into either the A2 (language least associated with childhood) or both languages (42.9% in each response category), with only one respondent interpreting mostly into the A1. This result suggests that intensive active use of the A2 or both languages does not necessarily result in both languages being identified as mother tongues by the bilingual, which may point to the presence of an additional, emotional, component inherent in the notion of a mother tongue. In terms of attitudes and perceptions, a difference was observed between the two groups with regard to awareness of language maintenance effort, and the results mirrored the differences between the AA and AB groups described above. Specifically, the "Not Two MTs" group appear to be aware to a greater extent of the conscious effort required to maintain their two A languages at the present high standard compared with the rest of the AA group (85.7% and 65.9% respectively). These results appear to be in line with the predictions of the literature, in view of the earlier age of SLA and more equal exposure to both languages in childhood of the main AA group compared with the "Not Two MTs" group (see Section 7.2.1 above for analogous argument in the AA/AB comparison). It was further observed that respondents from the "Not Two MTs" group appear to exhibit a slightly lower level of non-professional motivation to maintain both languages at their current high standard compared with the rest of the AA group (see Chapter 6, Section 6.2.3 (1) for details). This observation is in line with what can be expected on the basis of the literature review, that seeing a language as a mother tongue may increase the individual's motivation to maintain that language for personal, rather than purely practical, reasons.

Finally, differences were found between the groups in terms of self-ratings of proficiency in each language. A comparison of the responses to the questions concerning self-rating in the languages relative to each other suggests that respondents from the "Not Two MTs" group are less likely to rate both languages as being equal in terms of competence, compared with the rest of the AA group (see Chapter 6, Section 6.2.3 (1)). With respect to self-ratings in the two languages relative to a monolingual standard (taken to be a marker of language confidence), findings suggest that those AA respondents who feel that both languages are mother tongues have slightly higher confidence in both languages when it comes to active use (richness of vocabulary) compared with the "Not Two

MTs" group, whereas confidence in passive language use is around the same in both groups (see Chapter 6, Section 6.2.3 (1)). Both of the above findings are in line with what can reasonably be expected, in view of the differences in mean age of SLA and relative exposure to the two languages in childhood between the groups.

7.3.2 AIIC AB interpreters who consider that they do have two mother tongues

A subgroup of AB respondents was identified in Chapter 6 who consider both of their strongest working languages to be mother tongues (13.2%, 28 respondents; see Chapter 6, Section 6.3.3 for details). This finding is in line with expectations, as the majority of AB respondents feel that they have one mother tongue (language A), suggesting that self-ascribed native speaker identity generally corresponds to that which has been ascribed by others (as represented by the AB classification). At the same time, as predicted by the literature, this is not always the case. On the basis of the literature reviewed in Chapter 2 on the influence of age and context of SLA on bilinguals' identity and attitudes towards their languages, it was hypothesised that the subgroup of AB respondents who feel that both languages are mother tongues (referred to as the "AB Two MTs" group) are likely to be characterised by a lower mean age of SLA than the rest of the AB group, as well as more equal exposure to both languages in childhood. A comparison of the responses for the two groups appears to confirm both of these hypotheses. In particular, a lower mean age of SLA of 4.8 years was observed within the "AB Two MTs" group, compared with 9.2 years for the rest of the AB group. This difference was found to be statistically significant, representing a medium sized effect (see Appendix IV for details). We note also that the mean age of SLA for the "AB Two MTs" group is very close to that of the AA group (see Chapter 6 for details).

Furthermore, a comparison of the relative exposure to the two languages in childhood for the two groups was in line with expectations. Specifically, while both groups reported being predominantly exposed to language A in childhood across the main childhood linguistic environment categories of "home", "street" and "school", this dominance was less pronounced among the "AB Two MTs" group (see Chapter 6, Section 6.3.3). A particularly large difference was observed between the number of respondents in each group who reported that both languages were spoken in the home during childhood: 28.6% of the "AB Two MTs" group indicated that this was the case, compared with just 2.8% of the rest of the AB group. Taken together, these findings suggest that the most important factors in shaping self-ascribed identity are the age of SLA and the language(s) associated with the home during childhood. This is in line with the literature on the influence the context of language acquisition on subsequent attitudes/emotional response towards that language (see Chapter 2). In particular, a key consideration appears to be whether a language was acquired/used in an emotionally neutral setting (e.g. school), or a setting that, on the contrary, is associated with a greater emotional response (e.g. the home).

With regard to emotional attachment to the languages, for the same reasons as those set out in Section 7.3.1 above, it was hypothesised that the "AB Two MTs" group would tend to exhibit a more equal attachment towards their two languages compared with the rest of the AB group. The findings for the two groups were in line with expectations, and it was indeed observed that a higher proportion of "AB Two MTs" respondents reported an equal attachment to both languages, while the AB group was characterised by a greater attachment towards language A. The same pattern was observed for perception of the emotional force of words (word weight) in the two languages (see Chapter 6, Section 6.3.3). These results correspond to the general trends observed for the subgroup of AA respondents who do not feel that they have two mother tongues, described earlier. Taken together, the findings are indicative of a connection between childhood linguistic factors and emotional response/attachment towards the language(s), as well as the additional emotional component inherent in identifying a language as a mother tongue.

While hypotheses had not been put forward with regard to any other potential differences between the "AB Two MTs" group and the main AB group, the populations were additionally compared in terms of other attitudinal and biographical factors. Some of the main, potentially significant, differences are discussed below. First of all, it was observed that a slightly lower proportion of the "AB Two MTs" group felt that language maintenance requires conscious effort, compared with the rest of the AB group (67.9% and 74.4% respectively). In view of the lower age of SLA and more equal exposure to both languages in childhood observed among the "AB Two MTs" group compared with main AB group, it may be interpreted as being in favour of the earlier hypothesis that perceptions of language maintenance effort are influenced by the childhood linguistic environment (see comparison of AA and AB groups for a similar argument; Section 7.2.1). The findings comparing levels of non-professional motivation of the two groups were ambiguous, with different trend observed in the two questions intended to measure this factor, i.e. whether respondents would continue to make the effort to maintain both languages if not working as interpreters, and whether their motivation for filling gaps in linguistic knowledge is purely professional (see Chapter 6, Section 6.3.3 for details). It is worth noting that, according to the findings set out in Section 6.3.2 of Chapter 6, the AA group is set apart by the highest levels of non-professional motivation to maintain both languages in both cases.

Finally, some differences were observed between the "AB Two MTs" group and the main AB group in terms of self-ratings of proficiency in the two languages, both relative to each other and relative to a monolingual standard. In the first case, while it was found that both groups tended to rate language A as the stronger of the two languages in all three categories considered, respondents from the "AB Two MTs" group were slightly more likely to regard both languages as being equal, compared with those AB interpreters who feel that they have one mother tongue (see Chapter 6,

Section 6.3.3 for details). In the second case, if self-ratings relative to a monolingual standard are taken to be a marker of language confidence, a comparison of the two groups' responses suggests that AB interpreters who have one mother tongue feel a greater confidence in language A compared with the "AB Two MTs" group in the categories of richness of vocabulary and native comprehension. However, confidence in language B was found to be slightly higher among the "AB Two MTs" group compared with the main AB group in the same categories. As regards pragmatic/cultural competence, while it was observed that both groups tended to exhibit more confidence in language A compared with language B, confidence in both languages overall in this category was higher among the "AB Two MTs" group compared with the rest of the AB group (see Chapter 6, Section 6.3.3 for details). Overall, the findings described above are in line with what can reasonably be expected on the basis of the literature. The observation that "AB Two MTs" respondents are slightly more likely to regard both languages as being equal in terms of relative competence compared with the main AB group can be anticipated on the basis of the age of SLA and childhood linguistic environment differences between the groups. Similarly, the trends observed with respect to self-ratings relative to a monolingual standard mirror the results for the AA and AB groups (Section 7.2.1).

7.4 Comparison of PSI and AB conference interpreters as bilinguals

This Section addresses the final research question formulated in Chapter 5, concerning the differences between groups of PSIs and conference interpreters as bilinguals. The conference interpreters are represented by the AIIC AB group; the AIIC AA group is not included in this comparison since this population appears to be set apart by a number of characteristics, and is therefore not considered to be representative of conference interpreters in general. As we have seen in Chapter 6, the size of the PSI and AIIC AB groups is comparable (180 and 212 respondents respectively; see Section 6.1.2).

7.4.1 Biographical factors and language use

As explained in Chapter 5, it was not expected that the PSI and AB groups would differ greatly as bilinguals with respect to biographical factors. However, on the basis of what is known about UK-based PSIs (see Chapter 4), it was anticipated that this group would tend to have the L2 (English) as the dominant linguistic environment of the country of residence, whereas no such trend has been observed for the AB group (see AA/AB comparison, Chapter 6, Section 6.3). On this basis, it was proposed that some differences may be observed between the PSI and AB groups in terms of attitudinal factors and self-ratings due to the influence of this factor. A comparison of the responses for the two groups appears to be in line with these general hypotheses.

It was first of all noted that a similar proportion of PSI respondents as AB respondents consider one of their languages (L1) to be their mother tongue (86.7% and 84.4% respectively). Therefore, like the AB group, the PSIs can be characterised in general by the presence of one distinct mother tongue, which is also the first language spoken in the majority of cases. Comparing the mean ages of SLA for the two groups, it was found that this was slightly higher at 11 years among the PSI group, compared with 8.6 years among the AB group. While this difference in means was found to be statistically significant, it represents a fairly small effect (see Section 6.4.1). Therefore, although it was observed that the PSI respondents tended to have acquired their second language slightly later than the AB respondents, this difference was not as great as that observed between the AB and AA groups (see Chapter 6, Section 6.3). The range of age of SLA was found to be the same for both the PSI and AB groups (0 – 30 years). With respect to relative exposure to the two languages in childhood, the PSI and AB groups exhibited very similar patterns, with the overwhelming majority of both groups exposed predominantly to the first language (L1, A respectively) in all components of childhood linguistic environment considered, although this dominance was slightly less pronounced among the AB group (see Section 6.4.1 for details). As regards the number of respondents who relocated to a different country during childhood, the overall trend within both groups was the same, with the majority reporting that this was not the case, although the percentage of respondents who did relocate was higher among the AB group compared with the PSI group (26.4% and 11.7% respectively). On the whole, it can be concluded that both groups of interpreters have similar childhood linguistic environments in terms of the relative exposure to their two strongest languages, as well as comparable ages of SLA.

As regards language use and exposure in later life, as anticipated, the biggest difference between the two groups was in terms of the dominant linguistic environment of the country of residence. In the case of the overwhelming majority of PSI respondents, this was found to be the L2 (85.0%), while the AB group was more equally split between the various response categories (see Section 6.4.1 for details). With respect to self-reported daily language use for various activities, however, similar patterns were observed within both groups in most of the categories considered. Specifically, the majority of respondents from both the PSI and AB groups reported using both of their languages equally for reading, writing, socialising and the internet. Language L2 was the most popular choice among PSIs in the TV and radio categories, which is likely to be a consequence of the language of the country of residence (see Section 6.4.1 for details). Therefore, it can be concluded that, while the language of the country of residence affects language use and exposure, both PSIs and AB interpreters tend to use both languages on a daily basis for a variety of activities, which are not necessarily related to professional requirements. However, it is not known whether this is a conscious effort on the part of the interpreters in order to maintain both languages, or a consequence of their bilingualism.

Some differences were observed between the two groups in terms of language use in a professional context (translation and interpreters), which are likely to be a consequence of the specificities of conference and public service interpreting. In particular, it was found that a higher percentage of PSIs than AB interpreters reported that they interpret into both of their languages equally, and also that they have no preference as regards interpreting direction (see Section 6.4.1). These findings are in line with reasonable expectations, as the nature of PSI interpreting is generally bi-directional, while conference interpreting tends to be monologic (see Chapter 4). In terms of perceptions of the relative importance of interpreting and linguistic skill in the practice of interpreting, both groups exhibited similar response patterns, with the largest proportion of each indicating that both are equally important, closely followed by interpreting skill. However, the proportion of PSIs who rated linguistic skill as being more important was almost double that observed within the AB group (19.4% and 11.5% respectively). This finding could, again, be down to the fact that PSI mostly takes the form of short consecutive interpreting, whereas conference interpreting is mostly in the simultaneous mode, or long consecutive. The latter two types of interpreting arguably require more interpreting-specific skills, such as the development of special cognitive and other skills (working memory, note-taking, split attention etc.; see Chapter 4 for details). As regards translation work, it was found that over 90% of PSIs also work as translators – the highest percentage out of all of the populations of interpreters considered here (see Section 6.4.1). This is not surprising, given the nature of PSI work: for example, as part of an assignment PSIs may be required to translate documents, such as witness statements or other information. Indeed, the DPSI exam includes two written translation components. It was also observed that, similarly to the AB group, just over half of PSIs indicated that they translate into both languages (see Section 6.4.1).

7.4.2 Attitudes and perceptions

A comparison of the PSI and AB groups' responses to the questions concerning language maintenance effort and motivation revealed that the groups were generally very similar in terms of their views (see Section 6.4.2). In particular, perceptions of language maintenance effort were virtually the same among both groups of respondents. This is in line with reasonable expectations, given the very similar childhood linguistic environments of the two populations. In view of the fact that the main difference between the PSI and AB groups in terms of biographical factors is the dominant linguistic environment of the country of residence, which is mixed in the AB group, but skewed towards the L2 in the PSI group, the finding of almost identical perceptions of language maintenance effort among the groups suggests that this factor is influenced mostly by childhood linguistic factors (age and context of acquisition), and to a lesser degree by subsequent language exposure. This appears to be in line with the findings for the AA and AB groups and the hypothesis that the effort required to maintain the languages is influenced by the age of acquisition and degree of exposure in childhood (see Chapter 5, Section 5.1.2, Question 2 for details). The findings

concerning the nature of the PSI and AB groups' motivation to maintain their languages, however, appear to be ambiguous. Specifically, while it was found that a slightly higher proportion of PSI than AB respondents indicated that they would make the effort to maintain both languages at their present high standard if not working as interpreters, a considerably higher percentage of PSIs than AB respondents stated that their motivation for filling gaps in linguistic knowledge was purely professional (see Chapter 6, Section 6.4.2 for details). It is therefore difficult to reach any kind of preliminary conclusions regarding the nature of language maintenance motivation within the two groups, and further information is needed. The reasons for the observed differences in response to the latter question are also unclear.

Differences were observed between the PSI and AB groups in terms of their perceptions of fluctuations in language dominance and direction of cross-linguistic interference between their two strongest languages. It is argued below that these differences are due to the influence of the L2 as the dominant linguistic environment of the PSI group, and as such may be considered evidence of the effect of the external contextual factor of linguistic environment on bilinguals' attitudes and perceptions. Firstly, it was observed that a slightly higher proportion of PSI than AB respondents felt that language dominance fluctuates between their two languages (45.6% and 37.3% respectively; see Section 6.4.2 for details). Initially, this result may seem surprising, in view of the findings for the AA group (recall that 50.0% of AA respondents were aware of language dominance shifts between their languages; see Chapter 6, Section 6.3 for details). Indeed, with regard to the AA/AB comparison, it was hypothesised that AA interpreters are likely to demonstrate greater awareness of language dominance shifts than AB interpreters, due to the increased proximity (in terms of relative competence) of their two languages (see Chapter 5, Section 5.1.2). As we saw in Chapter 2, the literature on bilingualism points to a strong negative correlation between the level of proficiency attained in a language and age of SLA. Thus, given the slightly lower mean age of SLA of the AB group compared with the PSI group, it could reasonably be expected that the languages of the AB group would be closer (in terms of relative competence) than those of the PSIs. As a consequence, if differences were to be observed between these groups with respect to awareness of fluctuations in language dominance, it would be reasonable to suppose that this awareness would be slightly higher among AB respondents than the PSIs. However, a possible explanation for the apparently contradictory finding is that, as a result of extensive (see Chapter 4) exposure to the L2, language L1 within the PSI group has undergone attrition, whereas L2 proficiency has improved, bringing the two languages closer together (in terms of relative competence) at a group level, compared with the AB population. It may therefore be concluded this greater proximity of the two languages (with respect to relative competence) has given rise to the observed differences in terms of awareness of language dominance shifts between the PSI and AB groups.

Secondly, differences between the AB and PSI groups were found with respect to the perceived direction of cross-linguistic interference (unnatural utterances made in a language due to the influence of the other language). In particular, while the proportions of respondents from the two groups who felt that interference occurs in neither language or in both equally were comparable (see Section 6.4.2 for details), the two groups were characterised by opposite trends in terms of interference in each of their languages separately. Specifically, while more PSI respondents reported interference in the L1 than in the L2 (30.6% and 15.6% respectively; Section 6.4.2), a greater proportion of AB respondents felt that interference occurs in language A rather than in language B (15.7% and 30.0% respectively; see Section 6.4.2). Once again, given that languages L1 and A are the first languages spoken by PSI and AB respondents, as well as the similar childhood linguistic environments and mean ages of SLA of the two groups, this observed difference in the groups' perceptions of the direction of cross-linguistic interference is likely to be due to the influence of the L2 as the dominant linguistic environment of the PSI group. Thus, the AB group behaves as anticipated, reporting that the influence of their second language on their first language is stronger than in the other direction. The PSIs, on the other hand, as a consequence of increased and prolonged exposure to their second language, notice the L2 exerting a greater influence on the L1. With regard to more general implications for bilingualism, the above two findings could be taken as evidence of the influence of external contextual factors on perceptions. In other words, with respect to subjective perceptions at least, the findings are in line with the DST ("embedded") view of second language development (see Chapter 3 for details).

As regards the questions concerning emotional response/attachment towards the two languages, the PSI and AB groups again exhibited very similar response patterns. However, the differences that were observed between the groups point to the influence of external contextual factors (age and context of acquisition, dominant language of the country of residence) on bilinguals' attitudes. First of all, while it was found that the largest proportion of both the PSI and AB groups indicated that they would revert to their first language (L1, A) if possible when tired/upset, with a minority of both groups choosing their second language (L2, B), some subtle differences were observed between the groups. Namely, the proportion of respondents who chose their first language was lower among the PSIs than the AB group (45.6% and 50.7% respectively; see Chapter 6, Section 6.4.2), the proportion who chose their second language was higher among PSIs than AB interpreters (13.9% and 8.6% respectively; see Chapter 6, Section 6.4.2). In view of the main biographical differences observed between the two groups (i.e. a slightly lower mean age of SLA among the AB group compared with the PSIs, and the increased exposure of the PSI group to the L2 as the current dominant linguistic environment), it is likely that the question regarding language preference when tired/upset does not actually measure emotional attachment as originally intended (see Section 7.2.1 above, where this was also noted), but possibly ease of expression in a language, particularly when under stress. This is based on the literature surveyed in Chapter 2, according to

which emotional attachment to a language is most greatly influenced of the age and context of SLA. Consequently, in light of the biographical differences observed between the PSI and AB groups, had this question measured attachment to the languages, a higher proportion of PSIs than AB interpreters would have chosen the first language as the language preferred when tired/upset, and the trend would have been reversed for the second language. The fact that this was not the case, and that the main characteristic that distinguishes the PSIs from the AB group is the increased, prolonged exposure to the L2 as their linguistic environment, suggests that this factor influenced the PSI group's responses. That is, as a result of this increased exposure to the L2, ease of expression in the L1 may have decreased (e.g. in terms of lexical availability; see Paradis, 2004), while it may have improved in the L2. Thus, respondents' language choice when tired/upset appears to be influenced not by a special emotional attachment to the language, but by how easily they are able to express themselves in that language. Such an interpretation explains both the general observation that the first language was the most popular choice among both groups, as well as the slight differences in language preference observed between the two groups.

Secondly, it was observed that, while both the PSI and AB groups gave similar responses to the question concerning perceptions of the relative weight of words in their two languages, with both groups split more or less evenly between those who felt that words in the L1 carry more weight (38.3% for PSI, 36.4% for AB; see Chapter 6, Section 6.4.2) and those who perceived this as being equal in both languages (35.0% for PSI, 36.8% for AB; see Chapter 6, Section 6.4.2), some subtle differences were found between the groups. We note from the foregoing that the percentage of PSI respondents who felt that words carry more weight in the first language is higher among the PSIs than the AB group, but the same trend was observed for the second language also – a slightly higher percentage of PSIs indicated that words carry more weight in the second language than AB respondents (11.7% and 8.6% respectively; see Chapter 6, Section 6.4.2). These results seem to be in line with the literature surveyed in Chapter 2, in particular Dewaele's (2004; 2008) findings that bilinguals' perceptions of the emotional force of words in their languages are influenced both by the age and context of SLA, as well as, in the case of the second language, the extent and duration of exposure to this language. Finally, with respect to a greater attachment to one language over the other, while both groups again exhibited similar trends (see Chapter 6, Section 6.4.2), the PSI group was characterised by a higher level of attachment to the first language than the AB group (44.4% and 40.2% respectively; see Chapter 6, Section 6.4.2), and a slightly lower level of attachment to the second language compared with AB respondents (10.6% and 12.4% respectively). On the basis of the literature, there are two possible (not necessarily mutually exclusive) explanations for the observed differences between the groups. The first is the influence of age of SLA and childhood linguistic environment. That is, the slightly higher age of SLA among the PSIs, as well as slightly greater exposure to the first language in childhood among this group (compared with the AB respondents) has resulted in a greater attachment towards the L1, and a

slightly lower attachment towards the L2 (see Chapter 2). Another possibility is the impact of prolonged exposure to the L2 (residence in an L2-speaking country) on the attitudes of the PSI group towards their languages. In particular, in one of the studies discussed in Chapter 2, Prescher (2007) found that, as the duration of immigration increased, the more the migrants tried to return to their original identity and language. In other words, the L1 becomes more important, and attachment to this language increases with time spent in the L2 environment. Both explanations are plausible, and warrant further investigation, for example, by controlling for country of residence and length of residence among the AB population and seeing whether they exhibit the same patterns as the PSIs with respect to language attachment.

A comparison of the PSI and AB groups' self-ratings of proficiency in their languages, both relative to each other and relative to a monolingual standard (language confidence) also revealed differences between the groups that could be attributed to the influence of the L2 as the dominant linguistic environment of the PSI group. In terms of self-rating of relative proficiency in the two languages, it was found that PSIs tend to perceive their two strongest languages as being closer in terms of proficiency compared with the AB group, in the three categories of command of registers, number of gaps in vocabulary and writing (see Chapter 6, Section 6.4.2 for full details). Specifically, the first language was selected by a lower percentage of the PSI respondents compared with the AB group, while the second language was selected by a greater percentage of PSI than AB respondents (see Chapter 6, Section 6.4.2 for figures). These findings suggest that, as a consequence of prolonged exposure to the L2 as the dominant language of the country of residence, PSI respondents' perceptions of proficiency in their first language were affected negatively, but positively in their second language. The AB group, on the other hand, was not characterised by a single dominant linguistic environment, and therefore their self-ratings of proficiency in their languages were influenced, at a group level, by childhood linguistic factors and age of SLA. Again, this hypothesis could be tested further by controlling for language of the country of residence and length of residence within the AB group, and seeing if those AB respondents who have been predominantly exposed to their second language for a prolonged period of time tend to exhibit the same response patterns in the three self-ratings categories as the PSIs.

As regards self-ratings relative to a monolingual standard in the categories of richness of vocabulary, instinctive/native comprehension and pragmatic cultural competence, which are taken to be a marker of language confidence, it was found that, on the whole, PSI respondents tended to feel more confident in the L1 compared with the L2 (see Chapter 6, Section 6.4.2 for full details). However, both languages tended to be perceived as being at least equal to the monolingual standards in the three categories considered. Comparing the findings for those of the AB group, it was observed that, overall, the PSIs exhibited a lower level of confidence in their first language than AB respondents, as well as a lower level of confidence in their second language than AB

interpreters (see Chapter 6, Section 6.4.2). At first glance, these findings may appear to be counter-intuitive. While the lower confidence of the PSIs in their first language than that of the AB group could reasonably be explained as a consequence of first language attrition due to prolonged exposure to the second among the PSIs, the lower confidence in the second language observed in the PSI group runs counter to expectations. In other words, it is reasonable to expect that bilinguals who have spent a long time living in their L2 environment would feel increased confidence in this language. However, it is also possible that, at a group level, living for a prolonged period of time in the L2-speaking community may have the opposite effect on language confidence. That is, being surrounded by (monolingual) native speakers of the L2 may raise the bilinguals' own standards with respect to their L2 performance, and possibly make them more aware of the fact that their L2 use differs from that of monolingual natives. Consequently, bilinguals' confidence in their L2 may be negatively impacted (note that this does not necessarily correspond to actual L2 proficiency, which is likely to increase with prolonged exposure to the L2). This hypothesis may warrant further investigation, by controlling for country of residence and length of residence among the AB and PSI respondents and examining the impact of these factors on language confidence. This and other questions for further research identified as a result of the present study are discussed in the next Chapter.

8. Conclusion

The final Chapter of the dissertation summarises what are considered to be the main findings of the study and outlines potential avenues for further inquiry, pertaining both to interpreting and bilingualism. The strengths and limitations of the study are also discussed.

8.1 Summary of key findings

The main findings obtained as part of the study are set out below, themed according to the research questions identified in Chapter 5 (Section 5.1.1).

8.1.1 Interpreters as highly proficient bilinguals

Several general observations can be made on the basis of a comparison of all three populations of interpreters surveyed. First of all, it is noted that the group that stands out from the three, in terms of both biographical and attitudinal factors, is the population of AIIC AA interpreters. Meanwhile, the AIIC AB and PSI groups exhibited similar response patterns. This suggests that, as argued by Thiéry (1975), AIIC AA interpreters, or "true bilinguals", are indeed a group of bilinguals that are set apart from other highly proficient bilinguals by a number of properties that appear to be unique to them (the specific characteristics of the AA group and their implications are discussed in Section 8.1.2 below). On the other hand, controlling for interpreting setting (PSI or conference; as represented by the AIIC AB and UK PSI groups) does not reveal major differences between groups as bilinguals.

Nevertheless, it can be concluded that there are some characteristics that appear to be common to all interpreters with two strongest working languages, irrespective of setting or AIIC AA/AB language classification. These include: a tendency to have acquired both languages before puberty; a tendency to use both languages on a daily basis for a range of activities that are not necessarily related to professional activity, socialising in particular, irrespective of the dominant language of the country of residence; awareness of language maintenance as a conscious effort; awareness of cross-linguistic interference between the two strongest languages; both professional and non-professional (instrumental and integrative; see Chapter 2) motivation to maintain the languages at a high standard; a degree of confidence in both languages (i.e. both languages are considered to be at least equal to the native monolingual standard). These findings are in line with the literature on bilingualism and the factors that influence bilingual proficiency (see Chapter 7, Section 7.1 for details). Furthermore, it was observed that the behaviour of all three groups with respect to relationships between external contextual factors (biographies) and attitudes and perceptions was in line with the predictions of the literature. In particular, the findings suggest that attachment towards

the languages, as well as the perception of the emotional force of words, are largely influenced by childhood linguistic factors (age of acquisition, relative exposure to the languages in childhood). Similarly, the childhood linguistic environment appears to exert the greatest influence on respondents' self-ratings of proficiency in their languages, as well as confidence in the languages (see Chapter 7, Section 7.1 for details). Despite these trends at a group level, individual differences were observed between respondents in all three groups (e.g. with respect to age of SLA), which is in line with DST principles (see Chapter 3).

8.1.2 Characteristics of AIIC AA interpreters and their implications

As noted above, differences were observed between the AIIC AA and AB groups, in terms of both biographical factors and attitudes and perceptions, suggesting that AA interpreters are, as argued by Thiéry (1975), a group of bilinguals with a unique set of properties. Before the specific differences observed between the AA and AB respondents are addressed, it is worth noting that the fact that the groups were found to differ as bilinguals is important in itself, in view of how an A language is distinguished from a B language. Recall that, as explained in Chapter 4, an AIIC member's language is classified as an A if listeners (peers) have the impression that it is the speaker's native language; otherwise, the language can only be classed as a B. Note that a B language in the context of professional conference interpreting is also of a very high standard, in view of the demands of the profession (see Chapter 4). In this context, the decision whether a language is native (A) or not (B) is taken intuitively; indeed, as pointed out by Valdés and Angelelli (2003), in the context of interpreting, expectations of interpreters' bilingual competence are often based in assumptions, as opposed to more rigorous definitions or categorisations. Therefore, the finding that AA and AB interpreters differ as bilinguals can be taken as indicative of the human ability to intuitively grasp the difference between a native and non-native language. It is this quality that "distinguishes a native speaker from someone who speaks the language beautifully for a foreigner" Thiéry's (1975), a quality which seemingly evades definition or measurement (see Chapter 2). We note also that the difference between an A and a B language is not as simple as a case of the presence or absence of a foreign accent in the language. This is based on the following findings of the present study and Thiéry's (1975) investigation of true bilingualism: (i) a small number of AA respondents did not consider themselves to be true bilinguals due to the presence of a slight accent in one of the languages, and (ii) a number of AA respondents were initially classed as AB upon joining AIIC, and only achieved the AA classification at a later date. Finding (i) implies that the presence of a slight foreign accent does not necessarily dispel the impression that the language in question is the speaker's native language. Finding (ii) may imply the same as (i), or may be indicative of the fact that the absence of an accent is not a sufficient condition for an A classification.

It was found that the AA respondents are set apart from the AB respondents as a group of bilinguals by the following characteristics: (1) a much greater tendency to identify as having two mother tongues; (2) a significantly lower mean age of SLA, and a smaller age range for SLA; (3) more equal representation of the two languages in childhood, and a greater tendency to have changed country of residence in childhood; (4) a slightly greater tendency to use both languages actively (for socialising, writing) in everyday life; (5) a slightly lower tendency to perceive language maintenance as requiring conscious effort; (6) a slightly higher level of non-professional (integrative) motivation to maintain both languages at a high standard; (7) more equal attachment to the two strongest languages; (8) a greater awareness of dominance shifts between the two languages; (9) a tendency to perceive cross-linguistic interference as being bi-directional, in contrast with the AB interpreters, who tend to view this as occurring mostly from A to B; (10) a greater tendency to regard both languages as being equal in terms of relative proficiency; (11) in terms of language confidence, as measured by self-ratings of proficiency relative to a monolingual standard, the AA group is characterised by two languages in which they have about the same confidence (both are perceived to be more or less equal to the monolingual standard), while the AB group exhibits a very high level of confidence in the A language (taken to be above the monolingual standard) and a lower level of confidence in the B language (see Chapter 7, Section 7.2 for details).

If the AA classification is taken to correspond to native-like competence in two languages, the above-listed differences between the AA and AB respondents have important implications for the study of bilingualism more generally. Finding (1) suggests that, as predicted by the literature, self-ascribed native speaker identity tends to correspond with that which has been ascribed by others (although, as discussed in Section 8.1.3 below, this is not always the case). Findings (2) and (3) can be interpreted as the conditions that are favourable for the development of native-like competence in two languages. In particular, the findings confirm the predictions of the literature regarding the important role played by age and context of language acquisition in determining subsequent proficiency in the languages among bilinguals (see Chapter 2). At the same time, individual variation was observed within the AA group with respect to both age of SLA, which ranged from 0 to 18 years, as well as childhood linguistic environment. This is in line with DST principles (see Chapter 3), and also DeKeyser's (2013) assertion that, while there is a strong negative correlation between the age of L2 acquisition and many aspects of grammar and pronunciation, there some individuals do pass for native speakers, despite learning the language in later life (see Chapter 2). The finding that some of the AA interpreters acquired their second A language after puberty can be taken as evidence against the presence of a critical period for SLA, although it does appear that the likelihood of attaining native-like competence in a second language decreases with age. What is more, individual variation with respect to age of SLA and childhood linguistic environment was also observed among the AB interpreters, with some respondents from this group exhibiting similar

characteristics to those of the AA group (see Chapter 7, Section 7.2 for details). This finding implies that, while certain conditions in childhood appear to favour the development of native-like competence in two languages, there are no factors that can be considered necessary and/or sufficient for this to occur. Examining the findings from a DST perspective, it can be said that, while the bilingual language system is sensitively dependent on its initial conditions, it is not forever determined by these conditions, and there will always be variation at the individual level (see Chapter 3).

Finding (4) represents a preliminary conclusion, based on the limited assessment of daily language use among respondents. However, as pointed out in Chapter 7 (Section 7.2.1), the observation that AA interpreters appear to use both languages actively to a greater extent than AB interpreters in their daily life raises important questions as to the kind of language use associated with maintaining native-like competence in two languages, and whether there are any necessary and/or sufficient conditions for this to be possible. As indicated in the preceding Chapter (Section 7.2.1), finding (5) may be explained on the basis of Paradis' (2004) argument that processing in the first language (i.e. a language acquired at an early age and by immersion) is more automatic than that in the second language (typically acquired at a later age and by formal instruction). This greater automaticity results in performance that is more stable and resilient to change. Given that AA respondents typically acquired both languages before the age of 5 and by immersion (see Chapter 6), the finding that this group perceives language maintenance as requiring conscious effort to a lesser degree than AB respondents makes sense in this context. At the same time, it is possible that having two native languages is naturally accompanied by more extensive use of both languages in daily life (for example, in a social setting, as observed here), and this extensive use is not perceived as conscious effort (see Section 7.2.1). In any event, the foregoing points to the presence of group-level differences in perceptions of language maintenance effort between populations of bilinguals characterised by differing relative proficiency levels in their languages.

As argued in Chapter 7 (Section 7.2.1), in view of the connection between attitude and motivation in SLD (see Chapter 2 for details), it can be supposed on the basis of the literature that findings (6) and (7) are related. In other words, it is proposed that the finding of more equal attachment to both languages among the AA group has influenced this group's integrative motivation to maintain both languages at their present high standard. Taken separately, the finding of a more equal attachment to both languages among the AA group compared with the AB group, as well as AA respondents' greater tendency to perceive the emotional force of words (weight of words) as being equal in both languages, is in line with the literature and suggests that these two attitudinal factors are most strongly influenced by the childhood linguistic environment (see Chapter 2; Chapter 7, Section 7.2.1). Finding (8) was observed without controlling for the influence of other contextual factors, such as the main language of the country of residence or language use, and as such suggests that

AA respondents experience more shifts in language dominance between their languages compared with AB respondents, regardless of their external environment. This finding was anticipated on the basis of the DST literature surveyed in Chapter 3, and explained as being a consequence of the greater proximity of the languages in terms of relative competence within the AA group compared with the AB group (see Section 7.2.1 for details). Finding (9) was again observed without controlling for other factors that have a bearing on cross-linguistic interference and its direction, such as language use and exposure, which suggests that these trends are typical of the AA and AB groups, irrespective of their specific context at a given time. The fact that the majority of AA respondents reported making unnatural utterances in one or both of their languages due to the influence of the other language appears to support Grosjean's (1989) claim that bilinguals are not two monolinguals in one person (see Chapter 2), regardless of the level of competence attained in the languages. It is also worth noting that the presence of this cross-linguistic interference among the AA group does not appear to influence external perceptions of native competence; if the converse were true, these interpreters would not have been awarded the AA classification.

Findings (10) and (11) concern respondents' self-ratings of proficiency in their two strongest languages, relative to each other and relative to an average monolingual standard respectively. The latter is taken to be a marker of confidence in each language. The observation that AA respondents are more likely to view both languages as being equal in terms of proficiency, compared with AB respondents who favour language A, suggests, first of all, that self-ratings of bilingual proficiency tend to correspond to external ratings (see Chapter 2; Chapter 7, Section 7.2.1). Furthermore, these results were observed without controlling for other factors that influence relative proficiency levels in each language (e.g. language(s) of higher education, dominant linguistic environment). Given that subsequent language use/exposure varied among the AA and AB respondents, while strong trends were observed with respect to childhood linguistic factors and age of SLA, the results suggest that age and context of SLA have the biggest impact on bilinguals' self-ratings of proficiency in their languages, as well as language confidence. Finding (11) also appears to imply that having one distinct native language results in greater confidence in that language, compared with those bilinguals who have two native languages, or where the distinction between native and foreign is less clear-cut. If finding (11) is interpreted not in terms of language confidence, but instead is taken to signify that, at least in terms of subjective perceptions, the AA group can be characterised by two languages of about the same proficiency, while the AB group is characterised by one very strong language and one weaker language, this result can be viewed as corresponding to the DST principle of economy of effort (Herdina and Jessner, 2002; Larsen-Freeman and Cameron, 2008; see Chapter 7, Section 7.2.1 for details and explanation).

More generally, the comparison of the AA and AB groups and the main trends observed point to the existence of relationships between external and internal contextual factors within the bilingual

language system. This can be taken as evidence in support of the DST view of bilingualism, according to which second language development can only be understood as unfolding in context ("embedded" approach), where all subsystems are interconnected (see Chapter 3). Other findings pertaining to the AA group also appear to support the view that bilingualism behaves like a dynamic system, in particular, with respect to the principle of continuous temporal evolution. Evidence in support of this was observed both in terms of subjective and objective (external) perceptions. With regard to the former, it was found that perceptions of mother tongue competence/identity in childhood did not necessarily correspond to those in later life, which is indicative of shifting perceptions of identity and/or competence over the life span (see Chapter 7, Section 7.2.2 for details). With respect to the latter, it was observed, in line with Thiéry's (1975) findings, that a subgroup of AA respondents were awarded their AA classification at a later date, and not immediately upon joining AIIC (i.e. they were originally classed as AB). This finding is in line with the DST view of the bilingual language system as undergoing continuous change under the influence of contextual factors. In other words, in the case of the subgroup of AA interpreters who obtained their double A classification at a later date, it appears as though their language system had stabilised at AB level (an attractor or steady state; see Chapter 3), however, as a result of increased use of the B language in a professional context, the system entered a new state, in which both languages are considered native by others.

The above-mentioned subgroup of AA interpreters who obtained their AA classification at a later date is considered to be a particularly interesting group, the study of which may provide important insights into individual bilingualism. For example, insights may be gained into such aspects as why certain individuals are able to achieve native-like proficiency into two languages, whereas others are not, and what the most important factors are in determining ultimate attainment in a second language (and maintenance of the first). As part of the present study, the characteristics of the subgroup of AA respondents who obtained their AA classification later were investigated further, and compared with the rest of the AA group. Given the small size of the population (n = 7), it is not possible to generalise on the basis of this inquiry; at the same time, the comparison made it possible to test some preliminary hypotheses. It was found that the majority of the hypotheses advanced in Chapter 5 were not confirmed by the findings (see Chapter 7, Section 7.2.3 for details). In particular, whether the AA classification was obtained at a later date or not appeared to have no relationship to mother tongue identity in two languages, at present or in childhood, or to whether respondents tended to consider themselves true bilinguals as defined by Thiéry (1975). Furthermore, no differences were observed in terms of age of SLA and relative exposure to the two languages in childhood between the groups. This observation could be interpreted as being in support of Thiéry's claim that, in the case of the AIIC AA classification/true bilingualism, everything is determined in childhood, and it is this foundation that plays the most important role in whether the bilingual is considered to have two native languages in later life. At the same time, it is

noted that a more fine-grained analysis is needed to capture differences in exposure to the two languages in childhood, which was not possible on the basis of the data obtained as part of the present study (see Section 8.2 below for suggestions of alternative methodology). As regards attitudes and perceptions of the subgroup of AA respondents who were awarded their AA classification later, the small sample size made it difficult to reach reliable conclusions (see Section 7.2.3). It was tentatively concluded that the observed slight differences in language confidence/self-ratings of proficiency between the groups (see Section 7.2.3 for details) may be indicative of a link between external and subjective perceptions of proficiency, although further information is needed to determine whether such differences in perceptions are due to the influence of external proficiency ratings (see Section 8.2 below).

Finally, some observations can be made regarding the implications of Thiéry's (1975) true bilingualism definition and AA respondents' perceptions of it. While almost all AA respondents indicated that they consider themselves to be true bilinguals, a lower proportion of the group felt that the AA classification and Thiéry's definition were equivalent (91.7% and 72.9% respectively; see Section 7.2.2 for details). On the basis of additional comments received from respondents, as well as Thiéry's original findings, a possible explanation for this was the suggestion that some respondents interpreted the true bilingualism definition as implying bilingual balance (see Section 7.2.2 for details). The relationship between mother tongue identity in two languages (at present and in childhood) and true bilingualism was also considered. It was found that, with respect to subjective perceptions at least, true bilingualism is not always accompanied by the presence of two mother tongues in childhood. The findings also suggest that identifying as having two mother tongues is a stronger concept than true bilingualism (see Section 7.2.2). This observation is in line with reasonable expectations, given that true bilingualism addresses the external/objective component of bilingual identity only, whereas the idea of the mother tongue has certain emotional connotations, and implies a degree of emotional attachment to the language(s) (see Chapter 2; Section 7.2.2). It was additionally found that, while true bilingualism does tend to be accompanied by true bilingualism in writing, at least according to subjective perceptions, this is not always the case, and one does not necessarily imply the other (see Chapter 7, Sections 7.2.2, 7.2.1).

8.1.3 Factors associated with self-ascribed mother tongue identity in two languages

An examination of the responses of the AIIC AA and AB groups revealed the presence of a subgroup of respondents within each group whose own perceptions of mother tongue identity in their languages were not in line with external perceptions. Specifically, 14.6% (7 respondents) of the AA group did not feel confident that both of their A languages are mother tongues, while 13.2% (28 respondents) of the AB group indicated that they consider both languages to be mother tongues (see Section 7.3). These findings imply that, while self-ascribed native speaker identity does tend to

correspond to that which has been ascribed by others (as represented by the AIIC A and B classifications), this is not always the case. The characteristics of the above anomalous subgroups of AA and AB respondents were compared with the main group in each case, in order to determine which factors appear to be the most important in shaping self-ascribed mother tongue identity, and whether the groups exhibit differences with respect to attitudinal factors. It is noted that, in view of the small size of the population of AA respondents who do not consider both languages to be mother tongues, it is not necessarily possible to generalise on the basis of these findings, however, the comparison did provide the opportunity to test some preliminary hypotheses. Overall, in the case of both the AA and AB groups, the investigation of the responses of the subgroups whose self-ascribed identity did not correspond to identity ascribed by others were in line with expectations based on the literature and the proposed hypotheses (see Section 7.3; Chapter 5).

The first key finding is that differences in childhood linguistic environment, including mean age of SLA, were observed between the anomalous subgroups and the main groups in both the AA and AB cases. Specifically, AA respondents who did not necessarily feel that both languages are mother tongues had a higher mean age of SLA than the main AA group (8 years and 3.7 years respectively), and less equal exposure to both languages in childhood than the main group, in particular in the setting of the home, where the first language dominated in 6 out of 7 cases (see Section 7.3.1). The opposite trend was observed for the subgroup of AB respondents who considered both languages to be mother tongues, i.e. this subgroup had a lower mean age of SLA than the main AB group (4.8 years and 9.2 years respectively) and was characterised by more equal exposure to the two languages in childhood compared with the main AB group, with the greatest difference observed in the setting of the home. Taken together, the findings correspond to the predictions of the literature, that age and context of acquisition are highly influential in terms of shaping identity/emotional response to the languages (if the concept of the mother tongue is assumed to carry emotional connotations). The findings for both groups suggest that a key consideration in this respect appears to be whether a language was acquired/used in an emotionally neutral setting (e.g. school), or a setting that, on the contrary, is associated with a greater emotional response (e.g. the home), which is in line with the literature surveyed in Chapter 2. The conclusion regarding emotional attachment is also supported by the findings comparing relative attachment to the languages between the anomalous subgroups and the main groups. Specifically, it was found that AA respondents who do not necessarily consider both languages to be mother tongues had a greater attachment to A1 (the first language) compared with the main group (see Section 7.3.1). The opposite trend was observed among AB respondents who do consider both languages to be mother tongues, i.e. this subgroup was characterised by a more equal attachment to both languages compared with the main AB group, which in turn exhibited a greater attachment to language A (see Section 7.3.2 for details).

Differences were observed between the anomalous subgroups and the main groups in both the AA and AB cases, which largely reflected the influence of the difference in age of SLA and childhood linguistic environment as predicted by the literature (see Section 7.3 for full details). In particular, it was observed that the response patterns of the subgroup of AB respondents who consider both languages to be mother tongues tended to mirror those of the full AA group (see Section 7.3.2). In view of these similarities, the question arises of what it is that makes the subgroup of AB respondents who feel that both languages are mother tongues different from the AA group, i.e. why is it that their languages are not considered native by external reviewers, at least in the context of interpreting? Conversely, it could be asked why is it that AA respondents who do not necessarily consider both languages to be mother tongues are considered to have two native languages by others, in spite of the observed differences in the key areas of age of SLA and childhood linguistic environment with the main AA group? These questions, among others, are discussed in more detail in Section 8.2. Finally, the finding of differences in terms of both biographical and attitudinal factors between groups of bilinguals whose self-ascribed identity in both languages does not correspond to that ascribed by others highlights the complex nature of bilingualism, the numerous factors at play and the non-linear relationships between proficiency, identity, subjective and external perceptions.

8.1.4 Implications of the comparison of the AIIC AB and PSI groups for bilingualism

The comparison of the AB and PSI groups as bilinguals revealed the groups to be largely similar in terms of biographical factors, attitudes and perceptions (see Chapter 7, Section 7.4 for details). However, an important difference was observed between the groups with respect to the dominant linguistic environment of the country of residence, which was mixed for the AB respondents, but predominantly the L2 among the PSI group (see Section 7.4.1). In view of the largely similar childhood linguistic conditions and mean ages of SLA of the two groups, it was argued in Chapter 7 that the differences in attitudes/perceptions that were observed between the groups were indicative of the influence of the external factor of linguistic environment on bilinguals' subjective perceptions. In other words, the comparison of the AB and PSI groups as bilinguals made it possible to isolate the factor of dominant linguistic environment and examine its impact on internal environmental factors, and to advance hypotheses on the basis of the literature. Before turning to the specific trends observed, it is worth noting that the finding of possible relationships between the external contextual factor of language of the country of residence and internal l factors (attitudes and perceptions) is in itself important, as it supports the DST approach to SLD, emphasising the importance of contextual factors in the study of bilingualism.

The main differences in attitudes and perceptions observed between the PSI and AB groups were in the following areas: (1) perceptions of fluctuations in language dominance; (2) perceptions of the

direction of cross-linguist interference; (3) aspects of emotional response/attachment to the languages; (4) self-ratings of proficiency in the languages, both relative to each other and relative to a monolingual standard (language confidence). As regards finding (1), it was observed that a slightly higher proportion of PSI than AB respondents felt that language dominance fluctuates between their two languages (see Section 7.4.2). As previously argued in the context of the AA/AB comparison (see Chapter 7, Section 7.2.1), a greater awareness of language dominance shifts is taken to be indicative of greater proximity (in terms of relative competence) of the two languages. In view of the slightly lower mean age of SLA observed among the AB group compared with the PSI group, it was proposed that the observed difference between the PSI and AB groups with respect to awareness of language dominance fluctuations is a consequence of the PSI group's increased exposure to the L2. Specifically, it was hypothesised that language L1 within the PSI group has undergone attrition, whereas L2 proficiency has improved, bringing the two languages closer together (in terms of relative competence) at a group level, compared with the AB interpreters. This, in turn, resulted in the increased awareness of fluctuations in language dominance observed among the PSI group.

Finding (2) is particularly striking, as it seems to be directly indicative of the influence of the language of the country of residence on bilinguals' perceptions of cross-linguistic interference. It was found that, while the AB group reported that the influence of their second language on their first language is stronger than in the other direction, the PSI group exhibited the reverse trend, tending to view interference as occurring in the L2→L1 direction (see Section 7.4.2 for details). As regards finding (3), the differences observed between the groups in these categories were more subtle, but potentially indicative of important relationships between factors. The results pertaining to the perception of the emotional force of words (words weight) were in line with the literature (e.g. Dewaele, 2004; 2008), suggesting that bilinguals' perceptions in this regard are influenced both by the age and context of SLA, as well as, in the case of the second language, the extent and duration of exposure to this language (see Section 7.4.2 for details). A comparison of the groups' responses to the question on language attachment showed that the PSI group tended to exhibit a greater attachment to their first language compared with the AB group, and a lower level of attachment to their second language than the AB interpreters (see Section 7.4.2 for figures). Two possible, not necessarily mutually exclusive, explanations for these findings were proposed. Namely, that the observed trends are due to the slight differences in age of SLA/childhood linguistic environment among the PSI and AB groups, and/or the impact of prolonged exposure to the L2 among the PSIs. In the first case, the PSIs are characterised by a slightly higher mean age of SLA, and slightly greater exposure to the first language in childhood, compared with the AB group which, on the basis of the literature, may have resulted in the observed differences in language attachment. In the second case, it has been found by Prescher (2007) that among L1-speaking migrants living in their L2 environment, as length of residence in the L2 country increased, so did

the migrants' desire to return to their original L1 identity and languages. Therefore, prolonged residence in the L2 linguistic community may also have contributed to the differences in language attachment observed between the groups (see Section 7.4.2)

Finding (4) gave rise to two main observations. Firstly, with regard to self-ratings of relative proficiency in the two languages, it was observed that PSIs tend to perceive their two strongest languages as being closer in terms of proficiency compared with the AB group, in the three categories of command of registers, number of gaps in vocabulary and writing. Secondly, it was observed that, overall, the PSIs exhibited a lower level of confidence in their first language than AB interpreters, as well as a lower level of confidence in their second language than AB interpreters (see Section 7.4.2 for details). The first observation can be taken as a pointing to the greater proximity in terms of relative competence of the two languages within the PSI group, as argued in the context of finding (1) above. The second result may initially appear counter-intuitive. That is, while a decrease in L1 confidence among the PSIs may be expected due to prolonged exposure to the L2 linguistic environment, a decrease in L2 confidence seems to go against expectations. However, as argued in Chapter 7 (Section 7.4.2), it is possible that being surrounded by (monolingual) native speakers of the L2 may raise the bilinguals' own standards with respect to their L2 performance, and possibly make them more aware of the fact that their L2 use differs from that of monolingual natives, negatively impacting L2 confidence. It must be noted these self-ratings do not necessarily correspond to actual L2 proficiency, which is likely to increase with prolonged exposure to the L2. Overall, the comparison of the AB and PSI groups has given rise to several new hypotheses, which were not anticipated at the start of the study. Suggestions for how these preliminary explanations could be tested further are given in the next section.

8.2 Directions for future research

The present study and analysis of findings has raised some additional questions, helping to identify potential areas for further investigation, some of which have already been mentioned briefly in this and the preceding Chapter. These are divided below into the broad categories of questions pertaining to the AIIC AA and AB groups, and further questions raised by the AB/PSI comparison.

8.2.1 Questions pertaining to the AIIC AA and AB groups

The following list of further questions is by no means exhaustive, and it is proposed that the AIIC register of interpreters with associated language classifications – effectively, a list of highly proficient bilinguals with relative proficiency ratings in each language – is a valuable resource for the study of individual bilingualism (and multilingualism). The main directions set out below are questions that have arisen directly as a consequence of the results obtained in the present study.

(1) The necessary and/or sufficient conditions for native-like attainment in two languages

The comparison of the AA and AB groups conducted as part of the present study revealed differences with respect to the age and context of language acquisition between the two groups. This general observation emphasises the importance of the role played by exposure to the languages in childhood and the age of acquisition in determining subsequent bilingual proficiency. However, the information collected as part of the present study simplifies the childhood linguistic environment into several main components (see Chapter 5), and therefore potentially important differences between the groups may have been missed. In particular, it was found that some AB respondents had similar childhood linguistic conditions as the AA group (e.g. the subgroup of AB respondents who consider both languages to be mother tongues), and vice versa. This raises the question of why are some bilinguals considered to have two native languages whereas others or not, in spite of similar childhood linguistic conditions? Conversely, why do some AA interpreters with childhood linguistic environments that are more typical of the AB group still obtain the AA classification?

Several explanations are possible, such as more subtle differences in childhood linguistic environment, which were not picked up by the questionnaire; differences in subsequent language use/exposure, which were not picked up by the questionnaire; differences in motivation to acquire/maintain two languages at native-like standard; a result of individual variation. On the other hand, it is possible that the AA and AB classifications are connected to conference interpreting rather than bilingualism (something alluded to by Thiéry (1975) in his justification for including interpreters with major international languages only in his study; see Chapter 4). These questions could be investigated further by means of more detailed questionnaires, making a more fine-grained analysis of the differences between groups possible, and/or by conducting in-depth interviews with anomalous groups of respondents (i.e. those AA and AB interpreters whose ages of SLA and childhood linguistic environments are not typical of the main group).

(2) The necessarily and/or sufficient conditions for the maintenance of two languages at native-like standard

The comparison of the AA and AB groups revealed some differences in self-reported daily language use in a non-professional setting, in particular, it was observed that AA respondents tend to use both languages actively (for socialising, writing) on a daily basis to a greater extent than AB interpreters. However, similarly to (1) above, the data on language use collected as part of the present study represents a simplification. Consequently, it was not possible to reach more definite conclusions as to the presence or nature of language use differences between the groups. This question could be investigated further by collecting more detailed information about AA and AB

interpreters' use of both languages in everyday life. A related question is, if differences in language use outside the professional setting are indeed observed between AA and AB interpreters, the extent to which these differences are the result of a conscious effort (e.g. the decision to use both languages actively daily in order to maintain them at a native-like level) on the part of the interpreters. To this end, interviews could be conducted with interpreters from each group, in order to gain further insight into their perceptions of language maintenance effort and the conscious/unconscious decisions behind language use.

(3) A closer look at differences in motivation and attitude between the AA and AB groups

The findings of the present study revealed differences between the AA and AB groups in terms of levels of non-professional (integrative) motivation to maintain both languages, as well as emotional attachment to their languages. However, for practical reasons (see Chapter 5), the number of questions that addressed these aspects of the bilinguals' internal environment were limited. Therefore, the observed differences in motivation and attitude/attachment to the languages between the groups warrant further investigation. This could be done by means of detailed questionnaires designed for this purpose, such as the survey used by Cherciov (2011) in her exploration of the role of attitude in first language attrition. Additionally, a more thorough investigation of differences in emotional attachment to the languages could be accompanied by a more detailed analysis of respondents' childhood linguistic environment, in order to determine which factors, if any, appear to be particularly influential in shaping subsequent emotional attachment to the languages.

(4) A closer look at AA respondents who were awarded their double A classification at a later date

The results of the study revealed that there is a subgroup of AA interpreters who were initially classed as AB upon joining AIIC, and obtained their AA classification at a later date. The responses of this subgroup were analysed in more detail and compared with those of the main AA group. However, the majority of the hypotheses advanced were not confirmed, and differences between the groups were generally not observed. At the same time, it is proposed that a more detailed study of this subgroup of AA interpreters may provide insights into such aspects of bilingualism as the factors that influence ultimate L2 attainment, the relationships between external and subjective perceptions of bilingual proficiency/identity, and the conditions/effort required to bring a language originally considered foreign to a native-like standard. Additionally, it could be explored whether the shift in external perceptions of the two languages in the context of interpreting (i.e. "upgrade" from AB to AA classification) tends to be accompanied by a similar change outside this setting. In other words, whether the respondents' two languages were considered native by members (non-interpreters) of both linguistic communities even when they were classed as AB in the sphere of

conference interpreting, of whether external perceptions outside interpreting underwent a similar shift. Such a study could be conducted by means of in-depth semi-structured interviews with the participants.

(5) Self-ratings of proficiency among AA and AB interpreters: perceptions vs. reality

Differences in self-ratings of bilingual proficiency were observed among the AA and AB groups, both in the languages relative to each other and relative to a monolingual standard ("language confidence"). Some experimental data could be collected in order to investigate the extent to which such subjective perceptions of proficiency in each language are in line with objective findings. In particular, with respect to richness of vocabulary, the ratings attributed by AB respondents to their A language were higher than those attributed by AA respondents to either of their languages (A1, A2), whereas language B in the AB group seemed to be ranked slightly below the AA groups' languages (see Chapter 6, Section 6.3 for details). Thus, an experiment could be conducted to measure lexical richness of the AA and AB groups in each language. An example of a study looking at lexical richness among highly proficient bilinguals is described by Treffers-Daller (2011), and such an approach could be adopted in the case of the AA and AB groups. The experimental findings would then be compared with respondents' own perceptions of lexical richness in their languages. Such a comparison would not only provide insights into the degree to which the interpreters' own perceptions correspond with objective data, but also into what the AIIC A and B language classifications correspond to in practice, and the language dominance patterns among AA and AB interpreters. Furthermore, the hypothesis advanced in Chapter 7 (Section 7.2.1) that, in accordance with the DST principle of economy of effort, the AA groups' languages are maintained at a similar standard, while language A in the AB group is maintained at a slightly higher standard than this, with language B in the AB group at a slightly lower standard, could be tested using the empirical data obtained.

8.2.2 Questions raised by the comparison of the PSI and AIIC AB groups

The comparison of the AB and PSI groups gave rise to some important questions, in particular, with respect to the influence of the factor of dominant linguistic environment on bilinguals' attitudes and perceptions. Hypotheses were proposed with respect to the impact of the language of the country of residence on the following: perceptions of fluctuations in language dominance; perceptions of the direction of cross-linguistic interference; emotional attachment to the languages; self-ratings of proficiency/confidence in the languages (see Section 8.1.4 above for details). However, these hypotheses are based on a general comparison of the AB and PSI groups, without controlling for important contextual factors such as length of residence in the present linguistic community. Therefore, in order to investigate the above hypotheses further, more information is

needed from the participants with regard to language(s) of the country of residence and length of residence, as well as childhood linguistic environment factors. Controlling more carefully for these conditions among the participants would make it possible to examine in more detail the impact of the isolated factor of dominant linguistic environment (language of the country of residence), as well as length of residence, on attitudes and perceptions. For example, such an investigation could look into the effect of the length of residence in an L2-speaking country on attachment to the languages among L1-speaking migrants, and test the hypotheses that attachment to the L1 increases, while attachment to the L2 decreases, as length of residence increases (see Section 8.1.4 above, and also Prescher (2007), discussed in Chapter 2). The advantage of using interpreters in such a study is that it is then possible to control for at least some of the other important factors, as some things are already known about this group of bilinguals (e.g. the presence of strong motivation to maintain the languages), and these can be taken as being more or less constant within the group (see Chapter 3, Section 3.4.2; Chapter 4, Section 4.3).

In light of the foregoing, it is proposed that the PSI group is a valuable population for the study of first language attrition among L1-speaking migrants living in their L2 environment. As argued in Chapter 3, given the large number of interacting factors in second language development, in studies looking to isolate and examine the influence of a specific factor (e.g. attitude, motivation) on an aspect of bilingualism, it is important to choose the population carefully so as to reduce the contribution of other factors. That is, select a population of bilinguals in which some of the other variables can be taken as being more or less constant at a group level (see Chapter 3, Section 3.4.2 for details). An example of such a study could be an investigation that is methodologically similar to Cherciov's (2011) inquiry into the role of attitude on first language attrition among L1-speaking migrants living in their L2 linguistic community, but involving PSIs (with additional selection criteria to control for factors such as length of residence, age of migration etc.) An investigation of this kind may make it possible to better isolate and study the effect of the factor of attitude on L1 attrition among highly proficient bilinguals. In addition, as noted in Chapter 2, it has been observed by some researchers (e.g. Isurin, 2007; Laufer, 2003) that the effect of living in the L2 environment for a prolonged period of time is such, that L1 attrition occurs in spite of strong motivation to avoid it, and despite regular use of the L1. This finding could be tested further with PSIs as the population of bilinguals, as this group is characterised by a high level of motivation to maintain the L1 in its "pure" form, due to professional requirements, as well as intensive regular use of the language in a variety of contexts. Furthermore, if any participants are found to be particularly successful at counteracting the effects of extensive exposure to the L2 on the L1, this group could be studied further, for example, through in-depth interviews, in order to better understand which conditions are the most important in terms of preserving the integrity of the L1 among migrants living in their L2 environment.

8.3 Strengths and limitations of the study

On the whole, the present study can be considered successful, as the information gathered from respondents was sufficient to enable the investigation of the research questions set. In particular, it is noted that a large volume of data has been obtained from all of the populations of interest, suggesting that the research topic and questionnaire managed to draw respondents' attention and arouse their interest. In addition, the questionnaire was able to cover a wide range of different factors, while maintaining a balance between questionnaire length and response rate. Finally, an analysis of the findings obtained as part of the study has made it possible to not only explore the original research questions and hypotheses, but has revealed potential avenues for further investigation, and yielded new hypotheses.

That said, the study has a number of shortcomings, some of which are regarded as necessary compromises, whereas others would need to be remedied if the study were to be repeated. In the first case, as has already been noted at various points in Chapters 7 and 8 of the dissertation, much of the data obtained represents a simplification. For example, respondents' childhood linguistic environment has been taken to consist of the three main components of the home, country of residence and primary school; relative daily language use was measured using only a limited number of categories; factors such as motivation or emotional attachment to the languages were measured using a limited number of questions. However, as pointed out in Chapter 5, a compromise had to be reached between the level of detail included in the questionnaire and its overall length, to ensure both sufficient information and an adequate response rate. In the second case, there were some shortcomings in the formulation of the questions, which were not picked up on during the pilot run of the questionnaire. For example, the questions concerning respondents' countries of birth and current residence (Q1.2-3/AA/AB/PSI) were actually intended to establish the dominant linguistic environment in terms of respondents' two strongest languages (i.e. L1, L2, both or neither). However, at the time of writing the questionnaire, countries with two official languages were not taken into account (Canada, Belgium etc.) Therefore, valuable information was lost in these cases, as the linguistic environment had to be coded as "missing" or "unclear". Similarly, the formulation of the questions concerning relocation to a different country in childhood made it difficult to track the change in linguistic environment, and consequently the responses were presented as non-language specific. Meanwhile, certain questions included in the questionnaire did not yield any useful information, and were subsequently discarded from the final analysis (e.g. Qs 4.4-6/AA/AB/PSI on interpreting; the question pertaining to respondents' nationality).

Despite the limitations of the questionnaire, it is believed that the present study has made a contribution to the literature at the intersection of interpreting and bilingualism, making steps towards answering some of the questions raised by Thiéry's (1975) inquiry into true bilingualism,

as well as those identified by Valdés and Angelelli (2003). In addition, it is hoped that the present study has served to bring attention to the potential of the AIIC register of interpreters with associated classifications as a valuable resource for bilingualism research, in particular in view of the difficulties involved in measuring bilingual proficiency. Finally, it is also hoped that the study has managed to highlight the fact that research on interpreting and bilingualism need not be focused on conference interpreters only; the inclusion in such studies of interpreters who specialise in other settings, such as the public services, would serve to enrich and broaden the scope of the research.

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Appendix I

Questionnaires: AIIC AA, AIIC AB and PSI groups

Questionnaire: AIIC Interpreters (A-A)

Section 1: Personal Details

1. Age:

2. Country(ies) of residence:

3. Country of birth:

4. Nationality(ies):

5. Nationality(ies) at birth:

Questionnaire: AIIC Interpreters (A-A)

Section 2: AIIC classification

1. Language combination (with AIIC classification):

A Languages:

B Languages:

C Languages:

2. Interpreting experience (years):

3. Date of joining AIIC:

4. Original classification upon joining:

A Languages:

B Languages:

C Languages:

5. Date A-A classification obtained (if different from above):

6. According to the AIIC definition, an "A" language is the mother tongue, or a language strictly equivalent to the mother tongue.

Would you agree that you have two mother tongues?

- ◯ Yes
- ◯ No
- ◯ Unsure

7. The concept of "true bilingualism" has been defined as follows (Thiéry, 1975):

"A true bilingual is someone who is taken to be one of them by the members of two different linguistic communities, at roughly the same social and cultural level".

Do you feel that you are a "true" bilingual in the sense of Thiéry's definition?

- ◯ Yes
- ◯ No
- ◯ Unsure

8. If you answered "no" to the above, why would you say this is?

Questionnaire: AIIC Interpreters (A-A)

9. Do you feel that Thiéry's definition corresponds to the AIIC A-A classification?

- ◯ Yes
- ◯ No
- ◯ Unsure

Questionnaire: AIIC Interpreters (A-A)

Section 3: Linguistic background

1. First language spoken:

2. Language spoken by mother:

3. Language spoken by father:

4. At what age did you start learning your second A language?

5. Language mostly spoken at home during childhood (here, "childhood" is taken to be approximately the period from 0-12 years):

6. Did you relocate to a different country during childhood?

- ◯ Yes
- ◯ No

7. If you answered "yes" to the above, please specify the country and your age when you relocated:

8. Please specify your language(s) of education:

Primary

Secondary

Higher

9. Would you say that both of your A languages were "mother tongues" in childhood?

- ◯ Yes
- ◯ No
- ◯ Unsure

10. If not, at approximately what age would you say you attained this level of competence in both languages and what led to it?

Questionnaire: AIIC Interpreters (A-A)

Section 4: Present linguistic and professional situation

1. Which of your A languages do you mostly interpret into?

2. Which direction do you prefer to interpret into (if you have a preference)?

3. If you have a preferred direction, is this because (feel free to tick more than one answer):

- [ ] Performance in this direction is more stable / less prone to error
- [ ] I get less tired / can interpret for longer periods in this direction
- [ ] Comprehension is easier in this direction
- [ ] Lexical availability is better in this direction
- [ ] I feel more confident interpreting in this direction

Other (please specify)

4. In your opinion, to what extent is performance quality affected by interpreting skill or experience, and to what extent does it depend on linguistic skill?

- ◯ Quality is mostly down to interpreting skill/experience
- ◯ Both are important, but interpreting skill is more so
- ◯ Both are equally important
- ◯ Both are important, but linguistic skill is more so
- ◯ Quality is mostly down to linguistic skill

Other (please specify)

5. Do you do any translation work?

- ◯ Yes
- ◯ No

6. If yes, which language(s) do you translate into?

Questionnaire: AIIC Interpreters (A-A)

7. If you live in a country where one of your A languages (A1) is spoken, do you regularly spend time in a country where your other A language (A2) is spoken?

- ◯ Yes - live between A1 and A2-speaking countries
- ◯ Yes - regularly visit A2-speaking country
- ◯ No - mostly stay in A1-speaking country
- ◯ N/A - do not live in A1 or A2-speaking country

8. Please indicate which of your A languages you do the following in on a daily basis (please put "both" if both languages are used and "neither" if neither is one used):

Read	
Write	
Watch TV	
Listen to the radio	
Socialise	
View internet pages/social networking sites	

9. Which language do you generally use more, or are more exposed to, on a daily basis?

10. Would you say that maintaining two A languages requires a degree of conscious effort?

- ◯ Yes
- ◯ No
- ◯ Unsure

11. If you were not working as a professional interpreter, do you believe that you would still make an effort to maintain your two current A languages at such a high level?

- ◯ Yes
- ◯ No
- ◯ Unsure

12. If you were not working as a professional interpreter, do you believe that it would be possible to maintain both of your A languages at such a high level without the professional motivation/level of exposure to the languages that stems from the profession?

- ◯ Yes
- ◯ No
- ◯ Unsure

Questionnaire: AIIC Interpreters (A-A)

13. Do you consciously seek to fill any gaps in your linguistic knowledge when you notice them?

- ◯ Yes
- ◯ No
- ◯ Unsure

14. If yes, is your motivation for this purely professional?

- ◯ Yes
- ◯ No
- ◯ Unsure

Questionnaire: AIIC Interpreters (A-A)

Section 5: Attitudes and perceptions

1. Do you feel that language dominance fluctuates between your two A languages?

- ◯ Yes
- ◯ No
- ◯ Unsure

2. If you feel that language dominance does fluctuate, when does this occur (e.g. if you move country, work into one of the languages for a long time, or simply read more in one of the languages)?

3. For the purpose of the remaining questions, please label your two current A languages as "Language A1" and "Language A2" by entering them in the boxes below:

Language A1

Language A2

4. When you feel tired or emotionally upset, is there one language you would naturally revert to if possible?

- ◯ Yes, Language A1
- ◯ Yes, Language A2
- ◯ No
- ◯ Unsure

5. Do you feel that words carry the same "weight" in both of your A languages (in particular, swear words, words such as "hate" and "love")?

- ◯ Yes
- ◯ No, Language A1 words carry more weight
- ◯ No, Language A2 words carry more weight
- ◯ Unsure

6. Do you feel any special attachment to one of the languages over the other?

- ◯ Yes, Language A1
- ◯ Yes, Language A2
- ◯ No
- ◯ Unsure

Questionnaire: AIIC Interpreters (A-A)

7. Would you say that your command of registers in your two A languages is:

- ◯ Equal
- ◯ Better in Language A1
- ◯ Better in Language A2
- ◯ Unsure

8. Would you say that you have more gaps in vocabulary in one of your A languages?

- ◯ Yes, in Language A1
- ◯ Yes, in Language A2
- ◯ No
- ◯ Unsure

9. Do you feel that you write equally well/easily in both of your A languages?

- ◯ Yes
- ◯ No, better in Language A1
- ◯ No, better in Language A2
- ◯ Unsure

10. Do you believe that in writing you are indistinguishable from a monolingual in your A languages?

- ◯ Yes, in both languages
- ◯ In Language A1 only
- ◯ In Language A2 only
- ◯ In neither language
- ◯ Unsure

11. Compared to a monolingual of roughly the same cultural level/educational level, how do you think you compare (in each of your A languages) in terms of richness of vocabulary:

	Stronger overall	About the same	Weaker overall
Language A1	☐	☐	☐
Language A2	☐	☐	☐

12. Compared to a monolingual of roughly the same cultural level/educational level, how do you think you compare (in each of your A languages) in terms of instinctive "native" understanding:

	Stronger overall	About the same	Weaker overall
Language A1	☐	☐	☐
Language A2	☐	☐	☐

Questionnaire: AIIC Interpreters (A-A)

13. Compared to a monolingual of roughly the same cultural level/educational level, how do you think you compare (in each of your A languages) in terms of pragmatic competence/cultural awareness:

	Stronger overall	About the same	Weaker overall
Language A1	☐	☐	☐
Language A2	☐	☐	☐

14. Do you ever notice yourself making utterances in your current strongest working languages which sound unnatural due to being influenced by the other language?

- ◯ No, in neither language
- ◯ Yes, in language A1 only
- ◯ Yes, in language A2 only
- ◯ Yes, in both languages, but more frequently in Language A1
- ◯ Yes, in both languages, but more frequently in Language A2
- ◯ Yes, in both languages, with about the same frequency
- ◯ Unsure

15. Please feel free to add any additional comments.

Questionnaire: AIIC Interpreters (A-A)

1. Please enter your email if you would like to receive an electronic copy of the research project once it is complete:

2. If you have entered you email above, would you object to possibly being contacted by the researcher regarding another aspect of the project?

- ◯ Yes
- ◯ No

Questionnaire: AIIC Interpreters

Section 1: Personal Details

1. Age:

2. Country(ies) of residence:

3. Country of birth:

4. Nationality(ies):

5. Nationality(ies) at birth:

Questionnaire: AIIC Interpreters

Section 2: Bilingualism

1. Language combination (with AIIC classification):

A Languages:

B Languages:

C Languages:

2. Which of the above would you say are your two current strongest working languages?

3. Which language would you class as your "mother tongue" or "native language"? If you feel that this applies to more than one language, please list the languages this applies to.

4. Is the language indicated above also your current strongest language?

- ◯ Yes
- ◯ No
- ◯ Unsure

Questionnaire: AIIC Interpreters

Section 3: Linguistic background

1. First language spoken:

2. Language spoken by mother:

3. Language spoken by father:

4. At what age did you start learning the foreign language which is currently your strongest foreign language?

5. Language mostly spoken at home during childhood (here, "childhood" is taken to be approximately the period from 0-12 years):

6. Did you relocate to a different country during childhood?

- ◯ Yes
- ◯ No

7. If you answered "yes" to the above, please specify the country and your age when you relocated:

8. Please specify your language(s) of education:

Primary

Secondary

Higher

Questionnaire: AIIC Interpreters

Section 4: Present linguistic and professional situation

1. Interpreting experience (years/months):

2. Which language combinations are you required to use the most during interpreting assignments?

3. Which language would you say you interpret into the most?

4. Which direction do you prefer to interpret into (if you have a preference)?

5. If you have a preferred direction, is this because (feel free to tick more than one answer):

- ☐ Performance in this direction is more stable / less prone to error
- ☐ I get less tired / can interpret for longer periods in this direction
- ☐ Comprehension is easier in this direction
- ☐ Lexical availability is better in this direction
- ☐ I feel more confident interpreting in this direction

Other (please specify)

6. In your opinion, to what extent is performance quality affected by interpreting skill or experience, and to what extent does it depend on linguistic skill?

- ○ Quality is mostly down to interpreting skill/experience
- ○ Both are important, but interpreting skill is more so
- ○ Both are equally important
- ○ Both are important, but linguistic skill is more so
- ○ Quality is mostly down to linguistic skill

Other (please specify)

Questionnaire: AIIC Interpreters

7. Do you do any translation work?

- ◯ Yes
- ◯ No

8. If yes, which language(s) do you translate into?

9. Please indicate which of your two strongest working languages you do the following in on a daily basis (please put "both" if both languages are used and "neither" if neither is one used):

Read	
Write	
Watch TV	
Listen to the radio	
Socialise	
View internet pages/social networking sites	

10. Which language do you generally use more, or are more exposed to, on a daily basis?

11. Would you say that maintaining your two strongest languages at such a high level requires a degree of conscious effort?

- ◯ Yes
- ◯ No
- ◯ Unsure

12. If you were not working as a professional interpreter, do you believe that you would still make an effort to maintain your two current strongest working languages at such a high level?

- ◯ Yes
- ◯ No
- ◯ Unsure

Questionnaire: AIIC Interpreters

13. If you were not working as a professional interpreter, do you believe that it would be possible to maintain both of your current strongest working languages at such a high level without the professional motivation/level of exposure to the languages that stems from the profession?

- ◯ Yes
- ◯ No
- ◯ Unsure

14. Do you consciously seek to fill any gaps in your linguistic knowledge when you notice them?

- ◯ Yes
- ◯ No
- ◯ Unsure

15. If yes, is your motivation for this purely professional?

- ◯ Yes
- ◯ No
- ◯ Unsure

Questionnaire: AIIC Interpreters

Section 5: Attitudes and perceptions

1. Do you feel that language dominance fluctuates between your two current strongest working languages?

- ◯ Yes
- ◯ No
- ◯ Unsure

2. If you feel that language dominance does fluctuate, when does this occur (e.g. if you move country, work into one of the languages for a long time, or simply read more in one of the languages)?

3. For the purpose of the remaining questions, please label your two current strongest working languages as "Language 1" and "Language 2" by entering them in the boxes below:

Language 1

Language 2

4. When you feel tired or emotionally upset, is there one language you would naturally revert to if possible?

- ◯ Yes, Language 1
- ◯ Yes, Language 2
- ◯ No
- ◯ Unsure

5. Do you feel that words carry the same "weight" in both of your current strongest working languages (in particular, swear words, words such as "hate" and "love")?

- ◯ Yes
- ◯ No, Language 1 words carry more weight
- ◯ No, Language 2 words carry more weight
- ◯ Unsure

6. Do you feel any special attachment to one of the languages over the other?

- ◯ Yes, Language 1
- ◯ Yes, Language 2
- ◯ No
- ◯ Unsure

Questionnaire: AIIC Interpreters

7. Would you say that your command of registers in your current strongest working languages is:

- ◯ Equal
- ◯ Better in Language 1
- ◯ Better in Language 2
- ◯ Unsure

8. Would you say that you have more gaps in vocabulary in one of your current strongest working languages?

- ◯ Yes, in Language 1
- ◯ Yes, in Language 2
- ◯ No
- ◯ Unsure

9. Do you feel that you write equally well/easily in both of your current strongest working languages?

- ◯ Yes
- ◯ No, better in Language 1
- ◯ No, better in Language 2
- ◯ Unsure

10. Compared to a monolingual of roughly the same cultural level/educational level, how do you think you compare (in each of your current strongest working languages) in terms of richness of vocabulary:

	Stronger overall	About the same	Weaker overall
Language 1	☐	☐	☐
Language 2	☐	☐	☐

11. Compared to a monolingual of roughly the same cultural level/educational level, how do you think you compare (in each of your current strongest working languages) in terms of instinctive "native" understanding:

	Stronger overall	About the same	Weaker overall
Language 1	☐	☐	☐
Language 2	☐	☐	☐

12. Compared to a monolingual of roughly the same cultural level/educational level, how do you think you compare (in each of your current strongest working languages) in terms of pragmatic competence/cultural awareness:

	Stronger overall	About the same	Weaker overall
Language 1	☐	☐	☐
Language 2	☐	☐	☐

Questionnaire: AIIC Interpreters

13. Do you ever notice yourself making utterances in your current strongest working languages which sound unnatural due to being influenced by the other language?

- ◯ No, in neither language
- ◯ Yes, in Language 1 only
- ◯ Yes, in Language 2 only
- ◯ Yes, in both languages, but more frequently in Language 1
- ◯ Yes, in both languages, but more frequently in Language 2
- ◯ Yes, in both languages, with about the same frequency
- ◯ Unsure

14. Please feel free to add any additional comments.

Questionnaire: AIIC Interpreters

1. Please enter your email if you would like to receive an electronic copy of the research project once it is complete:

2. If you have entered you email above, would you object to possibly being contacted by the researcher regarding another aspect of the project?

- ◯ Yes
- ◯ No

Questionnaire: Public Service Interpreters

Section 1: Personal Details

1. Age:

2. Country(ies) of residence:

3. Country of birth:

4. Nationality(ies):

5. Nationality(ies) at birth:

Questionnaire: Public Service Interpreters

Section 2: Bilingualism

1. What are your working languages?

2. Which of the above are your two strongest languages?

3. Which language would you class as your "mother tongue" or "native language"? If you feel that this applies to both languages, please put "both" (and "neither" for neither language)

4. Is the language indicated above also your current strongest language?

- ◯ Yes
- ◯ No
- ◯ Unsure

Questionnaire: Public Service Interpreters

Section 3: Linguistic background

1. First language spoken:

2. Language spoken by mother:

3. Language spoken by father:

4. At what age did you start learning the foreign language which is currently your strongest foreign language?

5. Language mostly spoken at home during childhood (here, "childhood" is taken to be approximately the period from 0-12 years):

6. Did you relocate to a different country during childhood?

- ◯ Yes
- ◯ No

7. If you answered "yes" to the above, please specify the country and your age when you relocated:

8. Please specify your language(s) of education:

Primary	
Secondary	
Higher	

Questionnaire: Public Service Interpreters

Section 4: Present linguistic and professional situation

1. Interpreting experience (years/months):

2. Which language combinations are you required to use the most during interpreting assignments?

3. Which language would you say you interpret into the most?

4. Which direction do you prefer to interpret into (if you have a preference)?

5. If you have a preferred direction, is this because (feel free to tick more than one answer):

- ☐ Performance in this direction is more stable / less prone to error
- ☐ I get less tired / can interpret for longer periods in this direction
- ☐ Comprehension is easier in this direction
- ☐ Lexical availability is better in this direction
- ☐ I feel more confident interpreting in this direction

Other (please specify)

6. In your opinion, to what extent is performance quality affected by interpreting skill or experience, and to what extent does it depend on linguistic skill?

- ◯ Quality is mostly down to interpreting skill/experience
- ◯ Both are important, but interpreting skill is more so
- ◯ Both are equally important
- ◯ Both are important, but linguistic skill is more so
- ◯ Quality is mostly down to linguistic skill

Other (please specify)

Questionnaire: Public Service Interpreters

7. Do you do any translation work?

- ◯ Yes
- ◯ No

8. If yes, which language(s) do you translate into?

9. Please indicate which of your two strongest working languages you do the following in on a daily basis (please put "both" if both languages are used and "neither" if neither is one used):

Read	
Write	
Watch TV	
Listen to the radio	
Socialise	
View internet pages/social networking sites	

10. Which language do you generally use more, or are more exposed to, on a daily basis?

11. Would you say that maintaining your two strongest languages at such a high level requires a degree of conscious effort?

- ◯ Yes
- ◯ No
- ◯ Unsure

12. If you were not working as a professional interpreter, do you believe that you would still make an effort to maintain your two current strongest working languages at such a high level?

- ◯ Yes
- ◯ No
- ◯ Unsure

Questionnaire: Public Service Interpreters

13. If you were not working as a professional interpreter, do you believe that it would be possible to maintain both of your current strongest working languages at such a high level without the professional motivation/level of exposure to the languages that stems from the profession?

- ◯ Yes
- ◯ No
- ◯ Unsure

14. Do you consciously seek to fill any gaps in your linguistic knowledge when you notice them?

- ◯ Yes
- ◯ No
- ◯ Unsure

15. If yes, is your motivation for this purely professional?

- ◯ Yes
- ◯ No
- ◯ Unsure

Questionnaire: Public Service Interpreters

Section 5: Attitudes and perceptions

1. Do you feel that language dominance fluctuates between your two current strongest working languages?

- ◯ Yes
- ◯ No
- ◯ Unsure

2. If you feel that language dominance does fluctuate, when does this occur (e.g. if you move country, work into one of the languages for a long time, or simply read more in one of the languages)?

3. For the purpose of the remaining questions, please label your two current strongest working languages as "Language 1" and "Language 2" by entering them in the boxes below:

Language 1

Language 2

4. When you feel tired or emotionally upset, is there one language you would naturally revert to if possible?

- ◯ Yes, Language 1
- ◯ Yes, Language 2
- ◯ No
- ◯ Unsure

5. Do you feel that words carry the same "weight" in both of your current strongest working languages (in particular, swear words, words such as "hate" and "love")?

- ◯ Yes
- ◯ No, Language 1 words carry more weight
- ◯ No, Language 2 words carry more weight
- ◯ Unsure

6. Do you feel any special attachment to one of the languages over the other?

- ◯ Yes, Language 1
- ◯ Yes, Language 2
- ◯ No
- ◯ Unsure

Questionnaire: Public Service Interpreters

7. Would you say that your command of registers in your current strongest working languages is:

- ◯ Equal
- ◯ Better in Language 1
- ◯ Better in Language 2
- ◯ Unsure

8. Would you say that you have more gaps in vocabulary in one of your current strongest working languages?

- ◯ Yes, in Language 1
- ◯ Yes, in Language 2
- ◯ No
- ◯ Unsure

9. Do you feel that you write equally well/easily in both of your current strongest working languages?

- ◯ Yes
- ◯ No, better in Language 1
- ◯ No, better in Language 2
- ◯ Unsure

10. Compared to a monolingual of roughly the same cultural level/educational level, how do you think you compare (in each of your current strongest working languages) in terms of richness of vocabulary:

	Stronger overall	About the same	Weaker overall
Language 1	☐	☐	☐
Language 2	☐	☐	☐

11. Compared to a monolingual of roughly the same cultural level/educational level, how do you think you compare (in each of your current strongest working languages) in terms of instinctive "native" understanding:

	Stronger overall	About the same	Weaker overall
Language 1	☐	☐	☐
Language 2	☐	☐	☐

12. Compared to a monolingual of roughly the same cultural level/educational level, how do you think you compare (in each of your current strongest working languages) in terms of pragmatic competence/cultural awareness:

	Stronger overall	About the same	Weaker overall
Language 1	☐	☐	☐
Language 2	☐	☐	☐

Questionnaire: Public Service Interpreters

13. Do you ever notice yourself making utterances in your current strongest working languages which sound unnatural due to being influenced by the other language?

- ◯ No, in neither language
- ◯ Yes, in Language 1 only
- ◯ Yes, in Language 2 only
- ◯ Yes, in both languages, but more frequently in Language 1
- ◯ Yes, in both languages, but more frequently in Language 2
- ◯ Yes, in both languages, with about the same frequency
- ◯ Unsure

14. Please feel free to add any additional comments.

Questionnaire: Public Service Interpreters

1. Please enter your email if you would like to receive an electronic copy of the research project once it is complete:

2. If you have entered you email above, would you object to possibly being contacted by the researcher regarding another aspect of the project?

- ◯ Yes
- ◯ No

Appendix II

Comparison of responses given by the subgroup of AIIC AA interpreters who do not consider both A languages to be mother tongues[1] ("Not Two MTs" group) with those of the rest of the AA group ("Two MTs" group).

(1) Age of SLA:

Table II.1. Comparison of mean age of SLA in years for the Not Two MTs and Two MTs groups

Group	No. in group	Mean age SLA (years)	Std. Deviation
Two MTs	40	3.65	3.779
Not Two MTs	7	8.00	8.246

The range for age of SLA for the Not Two MTs group was found to be 0 – 18 years.

An independent samples t-test showed that the difference in mean ages of SLA between the two groups is not significant, however, it does represent a fairly large effect:
t(6.448) = -1.371, p = .216 (SE = 3.174); r = 0.475.

(2) Mother tongue competence in childhood and true bilingualism:

Table II.2. Responses of the Not Two MTs and Two MTs groups to the questions of whether both A languages were mother tongues in childhood and whether respondents consider themselves to be true bilinguals

Group	Questions and responses (freq and %)		
	Were both of your A languages mother tongues in childhood?		
	Yes	No	Unsure
Two MTs	31 (75.6%)	10 (24.4%)	0
Not Two MTs	2 (28.6%)	5 (71.4%)	0
	Are you a true bilingual in accordance with the definition?		
	Yes	No	Unsure
Two MTs	41 (100.0%)	0	0
Not Two MTs	3 (42.9%)	1 (14.3%)	3 (42.9%)

1 Those AIIC AA respondents who answered No or Unsure to Q2/6/AA.

(3) Childhood linguistic environment and languages of primary and secondary education:

Table II.3. Comparison of childhood linguistic environment (by category) and language(s) of primary and secondary education for the Not Two MTs and Two MTs groups

Group	Childhood linguistic environment/education category and responses (freq and %)			
	First language(s) spoken			
	A1	A2	Both	Other
Two MTs	27 (65.9%)	0	13 (31.7%)	1 (2.4%)
Not Two MTs	5 (71.4%)	0	0	2 (28.6%)
	Mother's language(s)			
	A1	A2	Both	Other
Two MTs	22 (53.7%)	11 (26.8%)	5 (12.2%)	3 (7.3%)
Not Two MTs	5 (71.4%)	0	1 (14.3%)	1 (14.3%)
	Father's language(s)			
	A1	A2	Both	Other
Two MTs	28 (68.3%)	6 (14.6%)	7 (17.1%)	0
Not Two MTs	3 (42.9%)	3 (42.9%)	0	1 (14.3%)
	Language(s) mostly spoken in the home during childhood			
	A1	A2	Both	Other
Two MTs	24 (58.5%)	3 (7.3%)	14 (34.1%)	0
Not Two MTs	6 (85.7%)	0	0	1 (14.3%)
	Childhood linguistic environment (country)			
	A1	A2	Both	Other/Unclear
Two MTs	8 (19.5%)	11 (26.8%)	17 (41.5%)	5 (12.2%)
Not Two MTs	5 (71.4%)	1 (14.3%)	1 (14.3%)	0
	Language(s) of primary education			
	A1	A2	Both	Other
Two MTs	14 (35.9%)	11 (28.2%)	14 (35.9%)	0
Not Two MTs	6 (85.7%)	1 (14.3%)	0	0
	Language(s) of secondary education			
	A1	A2	Both	Other
Two MTs	7 (17.9%)	14 (35.9%)	18 (46.2%)	0
Not Two MTs	4 (57.1%)	1 (14.3%)	2 (28.6%)	0

Table II.4. Comparison of responses of the Not Two MTs and Two MTs groups to the question of whether they relocated to a different country in childhood

Group	Did you relocate to a different country during childhood? (freq and %)	
	Yes	No
Two MTs	29 (70.7%)	12 (29.3%)
Not Two MTs	2 (28.6%)	5 (71.4%)

(4) Language(s) of higher education:

Table II.5. Comparison of language(s) of higher education for the Not Two MTs and Two MTs groups

Group	Language(s) of higher education (freq and %)			
	A1	A2	Both	Other
Two MTs	5 (12.8%)	15 (38.5%)	17 (43.6%)	2 (5.1%)
Not Two MTs	2 (28.6%)	4 (57.1%)	1 (14.3%)	0

(5) Present linguistic environment and language use:

Table II.6. Comparison of present linguistic environment for the Not Two MTs and Two MTs groups

Group	Present linguistic environment (freq and %)			
	Dominant language(s) of country of residence			
	A1	A2	Both	Other
Two MTs	8 (21.1%)	23 (60.5%)	2 (5.3%)	5 (13.2%)
Not Two MTs	2 (28.6%)	4 (57.1%)	1 (14.3%)	0
	Language(s) exposed to the most on a daily basis			
	A1	A2	Both	Other
Two MTs	12 (29.3%)	19 (46.3%)	9 (22.0%)	1 (2.4%)
Not Two MTs	2 (28.6%)	3 (42.9%)	2 (28.6%)	0

Table II.7. Comparison of self-reported daily language use (by category) for the Not Two MTs and Two MTs groups

Group	Language use category and responses (freq and %)			
	Reading			
	A1	A2	Both	Neither
Two MTs	8 (19.5%)	1 (2.4%)	32 (78.0%)	0
Not Two MTs	2 (28.6%)	1 (14.3%)	3 (42.9%)	1 (14.3%)
	Writing			
	A1	A2	Both	Neither
Two MTs	2 (4.9%)	1 (2.4%)	37 (90.2%)	1 (2.4%)
Not Two MTs	0	2 (28.6%)	5 (71.4%)	0
	Watching TV			
	A1	A2	Both	Neither
Two MTs	6 (14.6%)	6 (14.6%)	21 (51.2%)	8 (19.5%)
Not Two MTs	2 (28.6%)	1 (14.3%)	2 (28.6%)	2 (28.6%)
	Listening to the radio			
	A1	A2	Both	Neither
Two MTs	6 (14.6%)	16 (39.0%)	15 (36.6%)	4 (9.8%)
Not Two MTs	2 (28.6%)	2 (28.6%)	1 (14.3%)	2 (28.6%)

	Socialising			
	A1	**A2**	**Both**	**Neither**
Two MTs	4 (9.8%)	7 (17.1%)	30 (73.2%)	0
Not Two MTs	1 (14.3%)	1 (14.3%)	5 (71.4%)	0
	Using the internet			
	A1	**A2**	**Both**	**Neither**
Two MTs	6 (14.6%)	3 (7.3%)	30 (73.2%)	2 (4.9%)
Not Two MTs	1 (14.3%)	0	5 (71.4%)	1 (14.3%)

(6) Interpreting and translation:

Table II.8. Comparison of responses for the Not Two MTs and Two MTs groups to questions pertaining to interpreting

Group	**Responses to questions concerning interpreting (freq and %)**		
	Language(s) you mostly interpret into:		
	A1	**A2**	**Both**
Two MTs	14 (34.1%)	11 (26.8%)	16 (39.0%)
Not Two MTs	1 (14.3%)	3 (42.9%)	3 (42.9%)
	Preferred interpreting direction		
	A1	**A2**	**No preference**
Two MTs	6 (16.7%)	7 (19.4%)	23 (63.9%)
Not Two MTs	3 (42.9%)	2 (28.6%)	2 (28.6%)
	What is more important: interpreting skill or linguistic skill?		
	Interpreting skill	**Linguistic skill**	**Both equally important**
Two MTs	16 (40.0%)	4 (10.0%)	20 (50.0%)
Not Two MTs	0	0	7 (100.0%)

Table II.9. Number of respondents from the Not Two MTs and Two MTs groups who also carry out translation work

Group	**Do you do any translation work? (freq and %)**	
	Yes	**No**
Two MTs	19 (46.3%)	22 (53.7%)
Not Two MTs	4 (57.1%)	3 (42.9%)

Table II.10. Languages respondents from the Not Two MTs and Two MTs groups mostly translate into

Group	**Language(s) you mostly translate into (freq and %):**		
	A1	**A2**	**Both**
Two MTs	4 (21.1%)	2 (10.5%)	13 (68.4%)
Not Two MTs	2 (50.0%)	1 (25.0%)	1 (25.0%)

(7) Language maintenance effort and motivation:

Table II.11. Comparison of responses for the Not Two MTs and Two MTs groups to questions pertaining to language maintenance effort and motivation

Group	Responses to questions on language maintenance effort and motivation (freq and %)		
	Do you feel that maintaining your two A languages at their present high standard requires a degree of conscious effort?		
	Yes	No	Unsure
Two MTs	27 (65.9%)	12 (29.3%)	2 (4.9%)
Not Two MTs	6 (85.7%)	1 (14.3%)	0
	Would you make the effort to maintain both of your A languages at their present high standard if not working as a professional interpreter?		
	Yes	No	Unsure
Two MTs	25 (62.5%)	5 (12.5%)	10 (25.0%)
Not Two MTs	3 (42.9%)	2 (28.6%)	2 (28.6%)
	Would it be possible to maintain both of your A languages at their present high standard if not working as a professional interpreter?		
	Yes	No	Unsure
Two MTs	19 (46.3%)	8 (19.5%)	14 (34.1%)
Not Two MTs	3 (42.9%)	4 (57.1%)	0
	Do you seek to fill gaps in your linguistic knowledge when you notice them?		
	Yes	No	Unsure
Two MTs	39 (95.1%)	1 (2.4%)	1 (2.4%)
Not Two MTs	7 (100%)	0	0
	Is your motivation for filling gaps in linguistic knowledge purely professional?		
	Yes	No	Unsure
Two MTs	4 (10.0%)	34 (85.0%)	2 (5.0%)
Not Two MTs	3 (42.9%)	4 (57.1%)	0

(8) Awareness of fluctuations in language dominance and cross-linguistic interference:

Table II.12. Responses of the Not Two MTs and Two MTs groups to the question of whether language dominance is perceived to fluctuate between their A languages

Group	Do you feel that language dominance fluctuates between your two A languages? (freq and %)		
	Yes	No	Unsure
Two MTs	19 (46.3%)	17 (41.5%)	5 (12.2%)
Not Two MTs	5 (71.4%)	2 (28.6%)	0

Table II.13. Comparison of responses for the Not Two MTs and Two MTs groups to the question pertaining to perceptions of non-linguistic interference between the A languages

Group	Do you notice yourself making unnatural utterances in either of your two A languages due to the influence of the other language? (freq and %)				
	In neither	**Mostly in A1**	**Mostly in A2**	**In both equally**	**Unsure**
Two MTs	12 (29.3%)	6 (14.6%)	4 (9.8%)	13 (31.7%)	6 (14.6%)
Not Two MTs	2 (28.6%)	1 (14.3%)	1 (14.3%)	2 (28.6%)	1 (14.3%)

(9) Emotional response and attachment to the languages:

Table II.14. Comparison of responses for the Not Two MTs and Two MTs groups to questions pertaining to emotional response and attachment to the languages

Group	Responses to questions on emotional response and attachment to the languages (freq and %)			
	If possible, would you revert to one of your two A languages when tired/upset?			
	No	**A1**	**A2**	**Unsure**
Two MTs	18 (43.9%)	13 (31.7%)	5 (12.2%)	5 (12.2%)
Not Two MTs	2 (28.6%)	3 (42.9%)	0	2 (28.6%)
	Do you feel that words carry the same weight in your two A languages (in particular, swear words and words such as "love" and "hate")?			
	Equal	**A1 more weight**	**A2 more weight**	**Unsure**
Two MTs	23 (56.1%)	8 (19.5%)	3 (7.3%)	7 (17.1%)
Not Two MTs	6 (85.7%)	1 (14.3%)	0	0
	Do you feel a greater attachment towards one of your A languages over the other?			
	No	**To A1**	**To A2**	**Unsure**
Two MTs	21 (51.2%)	12 (29.3%)	2 (4.9%)	6 (14.6%)
Not Two MTs	3 (42.9%)	4 (57.1%)	0	0

(10) Self-ratings of proficiency in the two strongest languages:

Table II.15. Self-ratings of proficiency in the A languages relative to each other (by category) of the Not Two MTs and Two MTs groups

Group	Self-ratings in the two languages relative to each other across difference categories (freq and %)			
	Do you feel that your command of registers is equal in both of your A languages, or better in one language than the other?			
	Equal	**Better in A1**	**Better in A2**	**Unsure**
Two MTs	29 (70.7%)	5 (12.2%)	2 (4.9%)	5 (12.2%)
Not Two MTs	2 (28.6%)	3 (42.9%)	1 (14.3%)	1 (14.3%)
	Do you have fewer gaps in vocabulary in one of your A languages compared with the other?			
	Equal	**Fewer in A1**	**Fewer in A2**	**Unsure**
Two MTs	23 (56.1%)	6 (14.6%)	5 (12.2%)	7 (17.1%)
Not Two MTs	2 (28.6%)	4 (57.1%)	0	1 (14.3%)
	Do you write equally well/just as easily in both of your A languages?			
	Equal	**Better in A1**	**Better in A2**	**Unsure**
Two MTs	29 (70.7%)	5 (12.2%)	5 (12.2%)	2 (4.9%)
Not Two MTs	0	5 (71.4%)	1 (14.3%)	1 (14.3%)
	Are you indistinguishable from a monolingual in writing in both of your A languages?			
	Yes – in both	**In A1 only**	**In A2 only**	**Unsure**
Two MTs	32 (78.0%)	3 (7.3%)	0	6 (14.6%)
Not Two MTs	3 (42.9%)	2 (28.6%)	1 (14.3%)	1 (14.3%)

Table II.16. Self-ratings of proficiency relative to an average monolingual standard in each language (by category) of the Not Two MTs and Two MTs groups

Group	Self-ratings in each language relative to a monolingual standard across different categories (freq and %)		
	Richness of vocabulary in A1		
	Weaker	**Same**	**Stronger**
Two MTs	2 (4.9%)	19 (46.3%)	20 (48.8%)
Not Two MTs	1 (14.3%)	4 (57.1%)	2 (28.6%)
	Richness of vocabulary in A2		
	Weaker	**Same**	**Stronger**
Two MTs	1 (2.4%)	20 (48.8%)	20 (48.8%)
Not Two MTs	0	5 (71.4%)	2 (28.6%)
	Instinctive/native comprehension in A1		
	Weaker	**Same**	**Stronger**
Two MTs	2 (4.9%)	27 (65.9%)	12 (29.3%)
Not Two MTs	0	5 (71.4%)	2 (28.6%)
	Instinctive/native comprehension in A2		
	Weaker	**Same**	**Stronger**
Two MTs	0	28 (68.3%)	13 (31.7%)
Not Two MTs	0	5 (71.4%)	2 (28.6%)
	Pragmatic/cultural competence in A1		
	Weaker	**Same**	**Stronger**
Two MTs	2 (5.0%)	32 (80.0%)	6 (15.0%)
Not Two MTs	0	3 (42.9%)	4 (57.1%)
	Pragmatic/cultural competence in A2		
	Weaker	**Same**	**Stronger**
Two MTs	1 (2.4%)	31 (75.6%)	9 (22.0%)
Not Two MTs	0	4 (57.1%)	3 (42.9%)

Appendix III

Comparison of responses given by the subgroup of AIIC AA interpreters who were awarded their AA classification after joining AIIC ("AA Later" group) with those of the rest of the AA group ("AA Same Date" group).

(1) Age of SLA:

Table III.1. Comparison of mean age of SLA in years for the AA Later and AA Same Date groups

Group	No. in group	Mean age SLA (years)	Std. Deviation
AA Same Date	40	4.28	3.779
AA Later	7	4.43	8.246

An independent samples t-test showed that the difference in mean ages of SLA between the two groups is not significant and represents a negligible effect: t(45) = -.077, p = . 939 (SE = 2.005); r = .011.

(2) Mother tongue competence in childhood and true bilingualism:

Table III.2. Responses of the AA Later and AA Same Date groups to the questions pertaining to mother tongue competence and true bilingualism

Group	Questions and responses (freq and %)		
	Were both of your A languages mother tongues in childhood?		
	Yes	No	Unsure
AA Same Date	27 (65.9%)	14 (34.1%)	0
AA Later	6 (85.7%)	1 (14.3%)	0
	Do you consider both of your A languages to be mother tongues?		
	Yes	No	Unsure
AA Same Date	35 (85.4%)	1 (2.4%)	5 (12.2%)
AA Later	6 (85.7%)	1 (14.3%)	0
	Are you a true bilingual in accordance with the definition?		
	Yes	No	Unsure
AA Same Date	37 (90.2%)	1 (2.4%)	3 (7.3%)
AA Later	7 (100.0%)	0	0

(3) Childhood linguistic environment and languages of primary and secondary education:

Table III.3. Comparison of childhood linguistic environment (by category) and language(s) of primary and secondary education for the AA Later and AA Same Date groups

Group	Childhood linguistic environment/education category and responses (freq and %)			
	First language(s) spoken			
	A1	A2	Both	Other
AA Same Date	27 (65.9%)	0	12 (29.3%)	2 (4.9%)
AA Later	5 (71.4%)	0	1 (14.3%)	1 (14.3%)
	Mother's language(s)			
	A1	A2	Both	Other
AA Same Date	25 (61.0%)	8 (19.5%)	5 (12.2%)	3 (7.3%)
AA Later	2 (28.6%)	3 (42.9%)	1 (14.3%)	1 (14.3%)
	Father's language(s)			
	A1	A2	Both	Other
AA Same Date	26 (63.4%)	8 (19.5%)	6 (14.6%)	1 (2.4%)
AA Later	5 (71.4%)	1 (14.3%)	1 (14.3%)	0
	Language(s) mostly spoken in the home during childhood			
	A1	A2	Both	Other
AA Same Date	26 (63.4%)	2 (4.9%)	12 (29.3%)	1 (2.4%)
AA Later	4 (57.1%)	1 (14.3%)	2 (28.6%)	0
	Childhood linguistic environment (country)			
	A1	A2	Both	Other/Unclear
AA Same Date	11 (26.8%)	11 (26.8%)	16 (39.0%)	3 (7.3%)
AA Later	2 (28.6%)	1 (14.3%)	2 (28.6%)	2 (28.6%)
	Language(s) of primary education			
	A1	A2	Both	Other
AA Same Date	17 (43.6%)	10 (25.6%)	12 (30.8%)	0
AA Later	3 (42.9%)	2 (28.6%)	2 (28.6%)	0
	Language(s) of secondary education			
	A1	A2	Both	Other
AA Same Date	11 (28.2%)	11 (28.2%)	17 (43.6%)	0
AA Later	0	4 (57.1%)	3 (42.9%)	0

Table III.4. Comparison of responses of the AA Later and AA Same Date groups to the question of whether they relocated to a different country in childhood

Group	Did you relocate to a different country during childhood? (freq and %)	
	Yes	No
AA Same Date	27 (65.9%)	14 (34.1%)
AA Later	4 (57.1%)	3 (42.9%)

(4) Language(s) of higher education:

Table III.5. Comparison of language(s) of higher education for the AA Later and AA Same Date groups

Group	Language(s) of higher education (freq and %)			
	A1	**A2**	**Both**	**Other**
AA Same Date	6 (15.4%)	18 (46.2%)	13 (33.3%)	2 (5.1%)
AA Later	1 (14.3%)	1 (14.3%)	5 (71.4%)	0

(5) Present linguistic environment and language use:

Table III.6. Comparison of present linguistic environment for the AA Later and AA Same Date groups

Group	Present linguistic environment (freq and %)			
	Dominant language(s) of country of residence			
	A1	**A2**	**Both**	**Other**
AA Same Date	9 (23.1%)	23 (59.0%)	2 (5.1%)	5 (12.8%)
AA Later	1 (16.7%)	4 (66.7%)	1 (16.7%)	0
	Language(s) exposed to the most on a daily basis			
	A1	**A2**	**Both**	**Other**
AA Same Date	6 (14.6%)	3 (7.3%)	30 (73.2%)	2 (4.9%)
AA Later	1 (14.3%)	0	5 (71.4%)	1 (14.3%)

Table III.7. Comparison of self-reported daily language use (by category) for the AA Later and AA Same Date groups

Group	Language use category and responses (freq and %)			
	Reading			
	A1	**A2**	**Both**	**Neither**
AA Same Date	8 (19.5%)	2 (4.9%)	30 (73.2%)	1 (2.4%)
AA Later	2 (28.6%)	0	5 (71.4%)	0
	Writing			
	A1	**A2**	**Both**	**Neither**
AA Same Date	1 (2.4%)	3 (7.3%)	36 (87.8%)	1 (2.4%)
AA Later	1 (14.3%)	0	6 (85.7%)	0
	Watching TV			
	A1	**A2**	**Both**	**Neither**
AA Same Date	6 (14.6%)	7 (17.1%)	19 (46.3%)	9 (22.0%)
AA Later	2 (28.6%)	0	4 (57.1%)	1 (14.3%)
	Listening to the radio			
	A1	**A2**	**Both**	**Neither**
AA Same Date	6 (14.6%)	15 (36.6%)	14 (34.1%)	6 (14.6%)
AA Later	2 (28.6%)	3 (42.9%)	2 (28.6%)	0
	Socialising			
	A1	**A2**	**Both**	**Neither**
AA Same Date	4 (9.8%)	8 (19.5%)	29 (70.7%)	0
AA Later	1 (14.3%)	0	6 (85.7%)	0

	Using the internet			
	A1	**A2**	**Both**	**Neither**
AA Same Date	6 (14.6%)	3 (7.3%)	30 (73.2%)	2 (4.9%)
AA Later	1 (14.3%)	0	5 (71.4%)	1 (14.3%)

(6) Interpreting and translation:

Table III.8. Comparison of responses for the AA Later and AA Same Date groups to questions pertaining to interpreting

Group	**Responses to questions concerning interpreting (freq and %)**		
	Language(s) you mostly interpret into:		
	A1	**A2**	**Both**
AA Same Date	12 (29.3%)	11 (26.8%)	18 (43.9%)
AA Later	3 (42.9%)	3 (42.9%)	1 (14.3%)
	Preferred interpreting direction		
	A1	**A2**	**No preference**
AA Same Date	7 (18.4%)	7 (18.4%)	24 (63.2%)
AA Later	2 (40.0%)	2 (40.0%)	1 (20.0%)
	What is more important: interpreting skill or linguistic skill?		
	Interpreting skill	**Linguistic skill**	**Both equally important**
AA Same Date	15 (37.5%)	4 (10.0%)	21 (52.5%)
AA Later	1 (14.3%)	0	6 (85.7%)

Table III.9. Number of respondents from the AA Later and AA Same Date groups who also carry out translation work

Group	**Do you do any translation work? (freq and %)**	
	Yes	**No**
AA Same Date	20 (48.8%)	21 (51.2%)
AA Later	3 (42.9%)	4 (57.1%)

Table III.10. Languages respondents from the AA Later and AA Same Date groups mostly translate into

Group	**Language(s) you mostly translate into (freq and %):**		
	A1	**A2**	**Both**
AA Same Date	5 (25.0%)	3 (15.0%)	12 (60.0%)
AA Later	1 (33.3%)	0	2 (66.7%)

(7) Language maintenance effort and motivation:

Table III.11. Comparison of responses for the AA Later and AA Same Date groups to questions pertaining to language maintenance effort and motivation

Group	Responses to questions on language maintenance effort and motivation (freq and %)		
	Do you feel that maintaining your two A languages at their present high standard requires a degree of conscious effort?		
	Yes	No	Unsure
AA Same Date	29 (70.7%)	10 (24.4%)	2 (4.9%)
AA Later	4 (57.1%)	3 (42.9%)	0
	Would you make the effort to maintain both of your A languages at their present high standard if not working as a professional interpreter?		
	Yes	No	Unsure
AA Same Date	23 (57.5%)	6 (15.0%)	11 (27.5%)
AA Later	5 (71.4%)	1 (14.3%)	1 (14.3%)
	Would it be possible to maintain both of your A languages at their present high standard if not working as a professional interpreter?		
	Yes	No	Unsure
AA Same Date	18 (43.9%)	12 (29.3%)	11 (26.8%)
AA Later	4 (57.1%)	0	3 (42.9%)
	Do you seek to fill gaps in your linguistic knowledge when you notice them?		
	Yes	No	Unsure
AA Same Date	39 (95.1%)	1 (2.4%)	1 (2.4%)
AA Later	7 (100.0%)	0	0
	Is your motivation for filling gaps in linguistic knowledge purely professional?		
	Yes	No	Unsure
AA Same Date	5 (12.5%)	33 (82.5%)	2 (5.0%)
AA Later	2 (28.6%)	5 (71.4%)	0

(8) Awareness of fluctuations in language dominance and cross-linguistic interference:

Table III.12. Responses of the AA Later and AA Same Date groups to the question of whether language dominance is perceived to fluctuate between their A languages

Group	Do you feel that language dominance fluctuates between your two A languages? (freq and %)		
	Yes	No	Unsure
AA Same Date	22 (53.7%)	14 (34.1%)	5 (12.2%)
AA Later	2 (28.6%)	5 (71.4%)	0

Table III.13. Comparison of responses for the AA Later and AA Same Date groups to the question pertaining to perceptions of non-linguistic interference between the A languages

Group	Do you notice yourself making unnatural utterances in either of your two A languages due to the influence of the other language? (freq and %)				
	In neither	**Mostly in A1**	**Mostly in A2**	**In both equally**	**Unsure**
AA Same Date	12 (29.3%)	7 (17.1%)	5 (12.2%)	12 (29.3%)	5 (12.2%)
AA Later	2 (28.6%)	0	0	3 (42.9%)	2 (28.6%)

(9) Emotional response and attachment to the languages:

Table III.14. Comparison of responses for the AA Later and AA Same Date groups to questions pertaining to emotional response and attachment to the languages

Group	Responses to questions on emotional response and attachment to the languages (freq and %)			
	If possible, would you revert to one of your two A languages when tired/upset?			
	No	**A1**	**A2**	**Unsure**
AA Same Date	15 (36.6%)	15 (36.6%)	4 (9.8%)	7 (17.1%)
AA Later	5 (71.4%)	1 (14.3%)	1 (14.3%)	0
	Do you feel that words carry the same weight in your two A languages (in particular, swear words and words such as "love" and "hate")?			
	Equal	**A1 more weight**	**A2 more weight**	**Unsure**
AA Same Date	23 (56.1%)	8 (19.5%)	3 (7.3%)	7 (17.1%)
AA Later	6 (85.7%)	1 (14.3%)	0	0
	Do you feel a greater attachment towards one of your A languages over the other?			
	No	**To A1**	**To A2**	**Unsure**
AA Same Date	19 (46.3%)	15 (36.6%)	2 (4.9%)	5 (12.2%)
AA Later	5 (71.4%)	1 (14.3%)	0	1 (14.3%)

(10) Self-ratings of proficiency in the two strongest languages:

Table III.15. Self-ratings of proficiency in the A languages relative to each other (by category) of the AA Later and AA Same Date groups

Group	Self-ratings in the two languages relative to each other across difference categories (freq and %)			
	Do you feel that your command of registers is equal in both of your A languages, or better in one language than the other?			
	Equal	**Better in A1**	**Better in A2**	**Unsure**
AA Same Date	27 (65.9%)	7 (17.1%)	2 (4.9%)	5 (12.2%)
AA Later	4 (57.1%)	1 (14.3%)	1 (14.3%)	1 (14.3%)
	Do you have fewer gaps in vocabulary in one of your A languages compared with the other?			
	Equal	**Fewer in A1**	**Fewer in A2**	**Unsure**
AA Same Date	23 (56.1%)	6 (14.6%)	5 (12.2%)	7 (17.1%)
AA Later	2 (28.6%)	4 (57.1%)	0	1 (14.3%)
	Do you write equally well/just as easily in both of your A languages?			
	Equal	**Better in A1**	**Better in A2**	**Unsure**
AA Same Date	27 (65.9%)	7 (17.1%)	4 (9.8%)	3 (7.3%)
AA Later	2 (28.6%)	3 (42.9%)	2 (28.6%)	0
	Are you indistinguishable from a monolingual in writing in both of your A languages?			
	Yes – in both	**In A1 only**	**In A2 only**	**Unsure**
AA Same Date	30 (73.2%)	3 (7.3%)	1 (2.4%)	7 (17.1%)
AA Later	5 (71.4%)	2 (28.6%)	0	0

Table III.16. Self-ratings of proficiency relative to an average monolingual standard in each language (by category) of the AA Later and AA Same Date groups

Group	Self-ratings in each language relative to a monolingual standard across different categories (freq and %)		
	Richness of vocabulary in A1		
	Weaker	**Same**	**Stronger**
AA Same Date	3 (7.3%)	17 (41.5%)	21 (51.2%)
AA Later	0	6 (85.7%)	1 (14.3%)
	Richness of vocabulary in A2		
	Weaker	**Same**	**Stronger**
AA Same Date	2 (2.4%)	19 (46.3%)	21 (51.2%)
AA Later	0	6 (85.7%)	1 (14.3%)
	Instinctive/native comprehension in A1		
	Weaker	**Same**	**Stronger**
AA Same Date	2 (4.9%)	25 (61.0%)	14 (34.1%)
AA Later	0	7 (100.0%)	0
	Instinctive/native comprehension in A2		
	Weaker	**Same**	**Stronger**
AA Same Date	0	26 (63.4%)	15 (36.6%)
AA Later	0	7 (100.0%)	0
	Pragmatic/cultural competence in A1		
	Weaker	**Same**	**Stronger**
AA Same Date	1 (2.5%)	31 (77.5%)	8 (20.0%)
AA Later	1 (14.3%)	4 (57.1%)	2 (28.6%)
	Pragmatic/cultural competence in A2		
	Weaker	**Same**	**Stronger**
AA Later	1 (2.4%)	30 (73.2%)	10 (24.4%)
AA Same Date	0	5 (71.4%)	2 (28.6%)

Appendix IV

Comparison of responses given by the subgroup of AIIC AB interpreters who consider both of their languages to be mother tongues ("AB Two MTs" group) with those given by the rest of the AB group ("AB Not Two MTs" group).

(1) Age of SLA:

Table IV.1. Comparison of mean age of SLA in years for the AB Two MTs and AB Not Two MTs groups

Group	No. in group	Mean age SLA (years)	Std. Deviation
AB Two MTs	25	4.76	4.772
AB Not Two MTs	175	9.19	4.672

An independent samples t-test showed that the difference in mean ages of SLA between the two groups is significant and represents a medium sized effect: $t(198) = 4.428$, $p = .000$ (SE = 1.001); $r = .300$.

(2) Childhood linguistic environment and languages of primary and secondary education:

Table IV.2. Comparison of childhood linguistic environment (by category) and language(s) of primary and secondary education for the AB Two MTs and AB Not Two MTs groups

Group	Childhood linguistic environment/education category and responses (freq and %)			
	First language(s) spoken			
	A	B	Both	Other
AB Two MTs	14 (50.0%)	10 (35.7%)	4 (14.3%)	0
AB Not Two MTs	169 (94.9%)	4 (2.2%)	0	5 (2.8%)
	Mother's language(s)			
	A	B	Both	Other
AB Two MTs	14 (50.0%)	14 (50.0%)	0	0
AB Not Two MTs	156 (87.2%)	6 (3.4%)	4 (2.2%)	13 (7.3%)
	Father's language(s)			
	A	B	Both	Other
AB Two MTs	17 (63.0%)	8 (29.6%)	1 (3.7%)	1 (3.7%)
AB Not Two MTs	161 (90.4%)	3 (1.7%)	6 (3.4%)	8 (4.5%)
	Language(s) mostly spoken in the home during childhood			
	A	B	Both	Other
AB Two MTs	14 (50.0%)	6 (21.4%)	8 (28.6%)	0
AB Not Two MTs	170 (95.0%)	1 (0.6%)	5 (2.8%)	3 (1.7%)
	Childhood linguistic environment (country)			
	A	B	Both	Other/Unclear
AB Two MTs	12 (42.9%)	1 (3.6%)	2 (7.1%)	13 (46.4%)
AB Not Two MTs	137 (77.0%)	3 (1.7%)	12 (6.7%)	26 (14.6%)
	Language(s) of primary education			
	A	B	Both	Other
AB Two MTs	16 (57.1%)	7 (25.0%)	5 (17.9%)	0
AB Not Two MTs	144 (81.8%)	6 (3.4%)	21 (11.9%)	5 (2.8%)

	Language(s) of secondary education			
	A	**B**	**Both**	**Other**
AB Two MTs	16 (57.1%)	7 (25.0%)	4 (14.3%)	1 (3.6%)
AB Not Two MTs	119 (67.6%)	19 (10.8%)	37 (21.0%)	1 (0.6%)

Table IV.3. Comparison of responses of the AB Two MTs and AB Not Two MTs groups to the question of whether they relocated to a different country in childhood

Group	**Did you relocate to a different country during childhood? (freq and %)**	
	Yes	No
AB Two MTs	15 (53.6%)	13 (46.4%)
AB Not Two MTs	40 (22.3%)	139 (77.7%)

(3) Language(s) of higher education:

Table IV.4. Comparison of language(s) of higher education for the AB Two MTs and AB Not Two MTs groups

Group	**Language(s) of higher education (freq and %)**			
	A	**B**	**Both**	**Other**
AB Two MTs	9 (34.6%)	9 (34.6%)	7 (26.9%)	1 (3.8%)
AB Not Two MTs	54 (31.0%)	24 (13.8%)	94 (54.0%)	2 (1.1%)

(4) Present linguistic environment and language use:

Table IV.5. Comparison of present linguistic environment for the AB Two MTs and AB Not Two MTs groups

Group	**Present linguistic environment (freq and %)**			
	Dominant language(s) of country of residence			
	A	**B**	**Both**	**Other**
AB Two MTs	11 (39.3%)	7 (25.0%)	6 (21.4%)	4 (14.3%)
AB Not Two MTs	85 (51.5%)	42 (25.5%)	14 (8.5%)	24 (14.5%)
	Language(s) exposed to the most on a daily basis			
	A	**B**	**Both**	**Other**
AB Two MTs	12 (42.9%)	3 (10.7%)	12 (42.9%)	1 (3.6%)
AB Not Two MTs	84 (46.9%)	38 (21.2%)	51 (28.5%)	6 (3.4%)

Table IV.6. Comparison of self-reported daily language use (by category) for the AB Two MTs and AB Not Two MTs groups

Group	Language use category and responses (freq and %)			
	Reading			
	A	**B**	**Both**	**Neither**
AB Two MTs	3 (10.7%)	3 (10.7%)	22 (78.6%)	0
AB Not Two MTs	14 (7.8%)	15 (8.4%)	148 (82.7%)	2 (1.1%)
	Writing			
	A	**B**	**Both**	**Neither**
AB Two MTs	7 (25.0%)	1 (3.6%)	19 (67.9%)	1 (3.6%)
AB Not Two MTs	33 (18.4%)	8 (4.5%)	136 (76.0%)	2 (1.1%)
	Watching TV			
	A	**B**	**Both**	**Neither**
AB Two MTs	5 (17.9%)	9 (32.1%)	11 (39.3%)	3 (10.7%)
AB Not Two MTs	26 (14.5%)	25 (14.0%)	108 (60.3%)	20 (11.2%)
	Listening to the radio			
	A	**B**	**Both**	**Neither**
AB Two MTs	5 (17.9%)	3 (10.7%)	12 (42.9%)	8 (28.6%)
AB Not Two MTs	53 (29.6%)	25 (14.0%)	73 (40.8%)	28 (15.6%)
	Socialising			
	A	**B**	**Both**	**Neither**
AB Two MTs	3 (10.7%)	1 (3.6%)	21 (75.0%)	3 (10.7%)
AB Not Two MTs	43 (24.0%)	19 (10.6%)	111 (62.0%)	6 (3.4%)
	Using the internet			
	A	**B**	**Both**	**Neither**
AB Two MTs	3 (10.7%)	3 (10.7%)	19 (67.9%)	3 (10.7%)
AB Not Two MTs	11 (6.1%)	25 (14.0%)	133 (74.3%)	3 (10.7%)

(5) Interpreting and translation:

Table IV.7. Comparison of responses for the AB Two MTs and AB Not Two MTs groups to questions pertaining to interpreting

Group	Responses to questions concerning interpreting (freq and %)		
	Language(s) you mostly interpret into:		
	A	B	Both
AB Two MTs	13 (46.4%)	10 (35.7%)	5 (17.9%)
AB Not Two MTs	110 (61.5%)	45 (25.1%)	24 (13.4%)
	Preferred interpreting direction		
	A	B	No preference
AB Two MTs	16 (59.3%)	6 (22.2%)	5 (18.5%)
AB Not Two MTs	106 (61.6%)	26 (15.1%)	40 (23.3%)
	What is more important: interpreting skill or linguistic skill?		
	Interpreting skill	Linguistic skill	Both equally important
AB Two MTs	8 (28.6%)	6 (21.4%)	14 (50.0%)
AB Not Two MTs	79 (44.9%)	16 (9.1%)	81 (46.0%)

Table IV.8. Number of respondents from the AB Two MTs and AB Not Two MTs groups who also carry out translation work

Group	Do you do any translation work? (freq and %)	
	Yes	No
AB Two MTs	22 (78.6%)	6 (21.4%)
AB Not Two MTs	125 (70.2%)	53 (29.8%)

Table IV.9. Languages respondents from the AB Two MTs and AB Not Two MTs groups mostly translate into

Group	Language(s) you mostly translate into (freq and %):		
	A	B	Both
AB Two MTs	6 (27.3%)	1 (4.5%)	15 (68.2%)
AB Not Two MTs	61 (49.2%)	3 (2.4%)	60 (48.4%)

(6) Language maintenance effort and motivation:

Table IV.10. Comparison of responses for the AB Two MTs and AB Not Two MTs groups to questions pertaining to language maintenance effort and motivation

Group	Responses to questions on language maintenance effort and motivation (freq and %)		
	Do you feel that maintaining your two strongest languages at their present high standard requires a degree of conscious effort?		
	Yes	No	Unsure
AB Two MTs	19 (67.9%)	6 (21.4%)	3 (10.7%)
AB Not Two MTs	131 (74.4%)	35 (19.9%)	10 (5.7%)
	Would you make the effort to maintain both of your strongest languages at their present high standard if not working as a professional interpreter?		
	Yes	No	Unsure
AB Two MTs	12 (44.4%)	8 (29.6%)	7 (25.9%)
AB Not Two MTs	91 (51.7%)	46 (26.1%)	39 (22.2%)
	Would it be possible to maintain both of your strongest languages at their present high standard if not working as a professional interpreter?		
	Yes	No	Unsure
AB Two MTs	12 (42.9%)	8 (28.6%)	8 (28.6%)
AB Not Two MTs	51 (29.0%)	85 (48.3%)	40 (22.7%)
	Do you seek to fill gaps in your linguistic knowledge when you notice them?		
	Yes	No	Unsure
AB Two MTs	27 (100.0%)	0	0
AB Not Two MTs	174 (97.8%)	1 (0.6%)	3 (1.7%)
	Is your motivation for filling gaps in linguistic knowledge purely professional?		
	Yes	No	Unsure
AB Two MTs	4 (14.3%)	22 (78.6%)	2 (7.1%)
AB Not Two MTs	33 (18.6%)	123 (69.5%)	21 (11.9%)

(7) Awareness of fluctuations in language dominance and cross-linguistic interference:

Table IV.11. Responses of the AB Two MTs and AB Not Two MTs groups to the question of whether language dominance is perceived to fluctuate between their strongest languages

Group	Do you feel that language dominance fluctuates between your two strongest languages? (freq and %)		
	Yes	No	Unsure
AB Two MTs	12 (42.9%)	15 (53.6%)	1 (3.6%)
AB Not Two MTs	66 (36.9%)	101 (56.4%)	12 (6.7%)

Table IV.12. Comparison of responses for the AB Two MTs and AB Two MTs groups to the question pertaining to perceptions of non-linguistic interference between their strongest languages

Group	Do you notice yourself making unnatural utterances in either of your two strongest languages due to the influence of the other language? (freq and %)				
	In neither	Mostly in A	Mostly in B	In both equally	Unsure
AB Two MTs	8 (28.6%)	2 (7.1%)	8 (28.6%)	8 (28.6%)	2 (7.1%)
AB Not Two MTs	42 (23.7%)	31 (17.5%)	53 (29.9%)	35 (19.8%)	16 (9.0%)

(8) Emotional response and attachment to the languages:

Table IV.13. Comparison of responses for the AB Two MTs and AB Two MTs groups to questions pertaining to emotional response and attachment to the languages

Group	Responses to questions on emotional response and attachment to the languages (freq and %)			
	If possible, would you revert to one of your two strongest languages when tired/upset?			
	No	A	B	Unsure
AB Two MTs	9 (32.1%)	10 (35.7%)	5 (17.9%)	4 (14.3%)
AB Not Two MTs	55 (31.3%)	93 (52.8%)	13 (7.4%)	15 (8.5%)
	Do you feel that words carry the same weight in your two strongest languages (in particular, swear words and words such as "love" and "hate")?			
	Equal	A more weight	B more weight	Unsure
AB Two MTs	15 (53.6%)	4 (14.3%)	2 (7.1%)	7 (25.0%)
AB Not Two MTs	60 (34.1%)	71 (40.3%)	16 (9.1%)	29 (16.5%)
	Do you feel a greater attachment towards one of your strongest languages over the other?			
	No	To A	To B	Unsure
AB Two MTs	12 (44.4%)	5 (18.5%)	7 (25.9%)	3 (11.1%)
AB Not Two MTs	65 (36.7%)	78 (44.1%)	18 (10.2%)	16 (9.0%)

(9) Self-ratings of proficiency in the two strongest languages:

Table IV.14. Self-ratings of proficiency in the strongest languages relative to each other (by category) of the AB Two MTs and AB Not Two MTs groups

Group	Self-ratings in the two languages relative to each other across difference categories (freq and %)			
	Do you feel that your command of registers is equal in both of your strongest languages, or better in one language than the other?			
	Equal	Better in A	Better in B	Unsure
AB Two MTs	10 (35.7%)	16 (57.1%)	1 (3.6%)	1 (3.6%)
AB Not Two MTs	48 (27.1%)	119 (67.2%)	1 (0.6%)	9 (5.1%)
	Do you have fewer gaps in vocabulary in one of your strongest languages compared with the other?			
	Equal	Fewer in A	Fewer in B	Unsure
AB Two MTs	11 (39.3%)	13 (46.4%)	2 (7.1%)	2 (7.1%)
AB Not Two MTs	45 (25.6%)	110 (62.5%)	9 (5.1%)	12 (6.8%)
	Do you write equally well/just as easily in both of your strongest languages?			
	Equal	Better in A	Better in B	Unsure
AB Two MTs	11 (39.3%)	13 (46.4%)	2 (7.1%)	2 (7.1%)
AB Not Two MTs	60 (34.3%)	107 (61.1%)	3 (1.7%)	5 (2.9%)

Table IV.15. Self-ratings of proficiency relative to an average monolingual standard in each language (by category) of the AB Two MTs and AB Not Two MTs groups

Group	Self-ratings in each language relative to a monolingual standard across different categories (freq and %)		
	Richness of vocabulary in A		
	Weaker	**Same**	**Stronger**
AB Two MTs	1 (3.6%)	11 (39.3%)	16 (57.1%)
AB Not Two MTs	2 (1.1%)	42 (24.0%)	131 (74.9%)
	Richness of vocabulary in B		
	Weaker	**Same**	**Stronger**
AB Two MTs	7 (25.9%)	13 (48.1%)	7 (25.9%)
AB Not Two MTs	23 (13.9%)	87 (52.4%)	56 (33.7%)
	Instinctive/native comprehension in A		
	Weaker	**Same**	**Stronger**
AB Two MTs	0	12 (42.9%)	16 (57.1%)
AB Not Two MTs	1 (0.6%)	58 (33.9%)	112 (65.5%)
	Instinctive/native comprehension in B		
	Weaker	**Same**	**Stronger**
AB Two MTs	2 (7.4%)	16 (59.3%)	9 (33.3%)
AB Not Two MTs	30 (18.4%)	89 (54.6%)	44 (27.0%)
	Pragmatic/cultural competence in A		
	Weaker	**Same**	**Stronger**
AB Two MTs	0	8 (28.6%)	20 (71.4%)
AB Not Two MTs	3 (1.7%)	58 (33.1%)	114 (65.1%)
	Pragmatic/cultural competence in B		
	Weaker	**Same**	**Stronger**
AB Two MTs	3 (11.5%)	9 (34.6%)	14 (53.8%)
AB Not Two MTs	33 (19.8%)	75 (44.9%)	59 (35.3%)