



Matura Paper

# Gender-Specific Differences in Bilingualism and Multilingualism

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# Abbreviations and Definitions

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Some of the most common terminology regarding bilingualism is summarized in the following table:

| Abbreviation/Term       | Description   |
|-------------------------|---|
| 4 Language skills       | Reading, writing, speaking and listening  |
| Code-switching          | Alternation between L1 and L2 in a single conversation  |
| Critical period         | Hypothetical period of effective language acquisition (until puberty)   |
| Domain                  | Language domain is the subject-area where the language is being utilized, such as with family, at work or for a particular topic like law, architecture, banking etc.                 |
| Immersion               | School classes (non-language) are held in the minority language   |
| Incipient Bilingualism  | The early stages of bilingualism, where one language is not fully developed   |
| L1                      | First language acquired. The language learnt from birth. The “mother tongue”.   |
| L2                      | Second language acquired in addition to L1  |
| Language forgetting     | Also known as language loss or language attrition <sup>1</sup> . The loss of fluency begins when some domains of the language are no longer supported and may extend over many years. |
| Ln                      | N-th language acquired  |
| Simultaneous Bilinguals | Individuals who learn both L1 and L2 concurrently (i.e. before the critical period)   |
| Successive Bilinguals   | Individuals who learn L2 after achieving fluency in L1  |

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<sup>1</sup> Grosjean F. 2014, p 8.

# 1. Introduction

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Bilingualism is a phenomenon encountered to an unexpectedly high degree throughout the world. This paper provides an introduction to the fields of bilingualism and multilingualism with an overview of the most common fields of research, statistics on the global spread of bilingualism as well as the techniques typically employed in bilingual research. A common definition of the subject is chosen to constrain and guide the direction of this paper and a review of the current major areas of research into bilingualism is supplied to provide an overall context for the topics handled.

My personal motivation for the topic of bilingualism is due to being a child of a bilingual family, living in a multilingual country (Switzerland, with 4 official languages) and having had very positive experience of language immersion at school. I am interested in how it was possible for me as a child to – almost effortlessly - achieve a high level of bilingualism and indeed why attaining trilingualism and the maintenance of a balanced multilingualism is conversely not so straightforward.

I consider bilingualism and multilingualism to be very important attributes in this globalised world and wish to draw comparisons with other bilinguals who, like myself, were subject to certain linguistic influences as they grew up, but also to analyse how the acquisition of additional languages as an adolescent or adult might compare.

Various approaches to experimental research on bilingualism will be discussed, including their advantages, disadvantages and limitations. One such approach is chosen for the applied research aspect of this project. For the chosen experimental technique<sup>2</sup>, the general methodology is laid out, detailing why this specific approach was chosen for this research, the techniques of data collection and particular considerations<sup>3</sup> necessary for surveys regarding multilingualism. In addition, the choice of participants for the research is discussed and the selection of tools for data-collection and data-analysis are explained.

Language acquisition throughout childhood, as an adolescent or adult and the route through which that language-fluency is attained vary from one individual to another. Various acquisition techniques exist (self-tuition, via interaction with friends or family etc.) as do environmental influences like migration. In addition to the language-history of the participant, language stability and potential loss of language proficiency is an important focus; aspects which were given added weight due to an interview conducted with Professor François Grosjean (see the partial transcript in Appendix A) in the initial stages of the project.

This work aims to initially provide a good overview of the subject of bilingualism, the forces behind language acquisition in its various forms and – through experimental means – to ascertain whether

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<sup>2</sup> The decision for a questionnaire administered per internet will be discussed in detail in 3.2.4

<sup>3</sup> Considerations consist of the types of questions being asked, the form of answers sought and the wording of questions.

there are significant differences in multi-language *acquisition*, *fluency* and *usage* between males and females.

The hypothesis is that:

*The differences due to gender regarding multi-language acquisition, fluency and usage are negligible, but there may be special contexts (for instance high or low-status<sup>4</sup> languages) where a statistical trend is recognizable for one gender or the other.*

The *special contexts* are discussed in relation to gender by Piller and Pavlenko, who conclude that:

“the relationship between gender and bilingualism is not a straightforward one”<sup>5</sup> and also that:

“access to highly valued linguistic practices is most restricted for minority and immigrant women”<sup>6</sup>.

It is clear that the ability to adequately analyse such specialized cases depends on a very specific set of participants for the survey, to provide the required demographic. The examination of such complex cases would only be possible given availability and pre-selection of appropriate subjects. For this reason the conditions described by Piller and Pavlenko are not actively taken into account in this paper. However, since the available participants included a reasonable distribution of males/females, a conclusion on the more general hypothesis will be drawn.

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<sup>4</sup> The reason for language status lies in the sociocultural attitudes and government support. It is a complex phenomenon that is made up of people's attitudes towards the home country of the language, people's attitudes towards speakers of the language and institutional attitudes about the language (<http://onraisingbilingualchildren.com/tag/language-status/>).

<sup>5</sup> Bhatia & Ritchie 2004, p 506

<sup>6</sup> Bhatia & Ritchie 2004, p 505

## 2. Attaining and Maintaining Bilingualism

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It can be argued<sup>7</sup> that almost every adult in today's world is, to some extent, bilingual. As soon as one or two words of another language are spoken or even merely understood, then a trace of bilingualism exists in that person. The other end of the scale is when a person achieves the same level of all four language-skills<sup>8</sup> in both languages, the equivalent range of vocabulary is present and can be drawn upon with equal ease, whichever language is being spoken, and the application of grammatical rules is balanced in both cases.

For the purposes of this research it has however been chosen to use the definition of bilingualism<sup>9</sup> according to Prof. François Grosjean:

*“Bilinguals are those who use two or more languages in their everyday lives”*

Grosjean dismisses the rarely-to-be-found “fully bilingual” subject as virtually non-existent, especially if an equal and perfect balance of language skills across two or more languages is sought<sup>10</sup>. At the very least, a bilingual person will invariably exhibit different strengths per language depending on the domain of usage. *“It is recognized in the field of bilingualism that many bilinguals are dominant in a language (globally or by domain), as opposed to ‘balanced’”*<sup>11</sup>.

### 2.1. Becoming Bilingual

The acquisition of any level of bilingualism can be achieved through a number of channels or combinations of these. The most common channels of language acquisition include, but are not limited to:

- Language acquired at home (typically from parents or other family members)
- Through school or university (language courses or language immersion)
- Through the working environment
- Through residence in a foreign country

Clearly there will often be overlap here, since the work or study can certainly take place in a foreign country. The aspect of residence abroad transmits itself equally to the children of parents whose place of work or study combines with their “family language” to produce bilingualism.

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<sup>7</sup> Edwards 2004, p.8

<sup>8</sup> Language skills: reading, writing, speaking, understanding

<sup>9</sup> Grosjean, Bilingual: Life and Reality 2010, p.4

<sup>10</sup> Grosjean F. , Bilingual: Life and Reality 2010, p 244

<sup>11</sup> Grosjean F. Bicultural Bilinguals 2014, p 1

Irrespective of the channel, there may be many factors impacting the degree of bilingualism which is achieved:

- The initial age at which a second language is acquired
- The way in which the language is used
- Language partners
- The frequency of language usage

It quickly becomes clear that the permutations of all these factors (and others besides) can complicate the analysis quite significantly.

In the literature it is usual to refer to formal and informal contexts<sup>12</sup> for language acquisition. The primary or informal context refers to a naturalistic way of learning (typically from family members without structured instruction) whereas the secondary or structured context refers to language learning in a school setting.

*One person one language*<sup>13</sup> is a technique often employed in simultaneous language learning. A child speaks different languages with each parent. The separation of one language from the other is achieved naturally by the change of conversational partner.

Other means of language-separation can be directly imposed or may arise by chance. The parents can (assuming bilingualism of both parents) switch languages for certain activities (e.g. playing games) or according to the location.

A choice of language according to location is something which may or may not be feasible. Typically the language at school is that of the local environment (although there are exceptions to this), as is the language required for shopping, playing with children in the neighbourhood or on visits to grandparents (who may not be fluent in multiple languages).

One aspect which these strategies have in common and which is considered crucial<sup>14</sup> in avoiding the often presumed disadvantageous *language mixing* or *language interference*, is to provide a mental separation in the child's mind between the two languages. This separation requires some strict logic as to which language is being used.

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<sup>12</sup> Krashen 2002, p.6

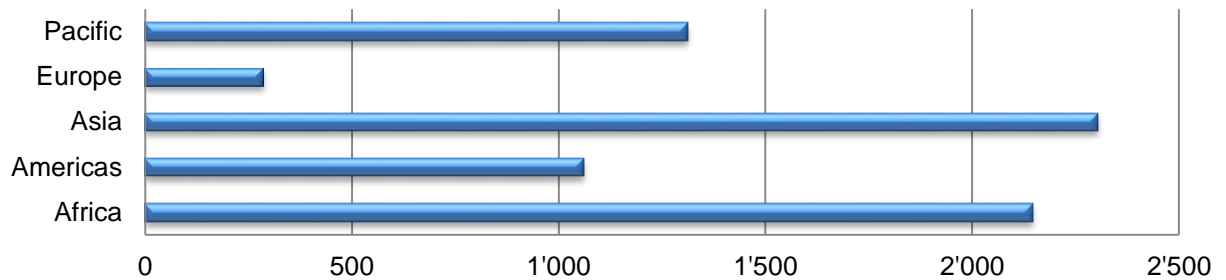
<sup>13</sup> Kielhofer & Jonekeit 1995, p. 26

<sup>14</sup> Kielhofer & Jonekeit 1995, p.19



## 2.1. Language Distribution Throughout the World

An overview of the numbers of living languages throughout the world provides an interesting background for expectations about the frequency of bilingualism. World language statistics have been catalogued by Ethnologue<sup>15</sup> since 1951. The following statistics are all taken from the online version<sup>16</sup> of Ethnologue.



**Figure 1: Distribution of World Languages by Area of Origin**

In Figure 1 it is evident that there are vastly more languages in use than there are countries<sup>17</sup> in the world. In Europe there is a common perception that there are dozens of countries and rather more languages than countries. This is affirmed by these statistics, but at the same time, the variety of languages on the other continents is almost an order of magnitude greater than in Europe.

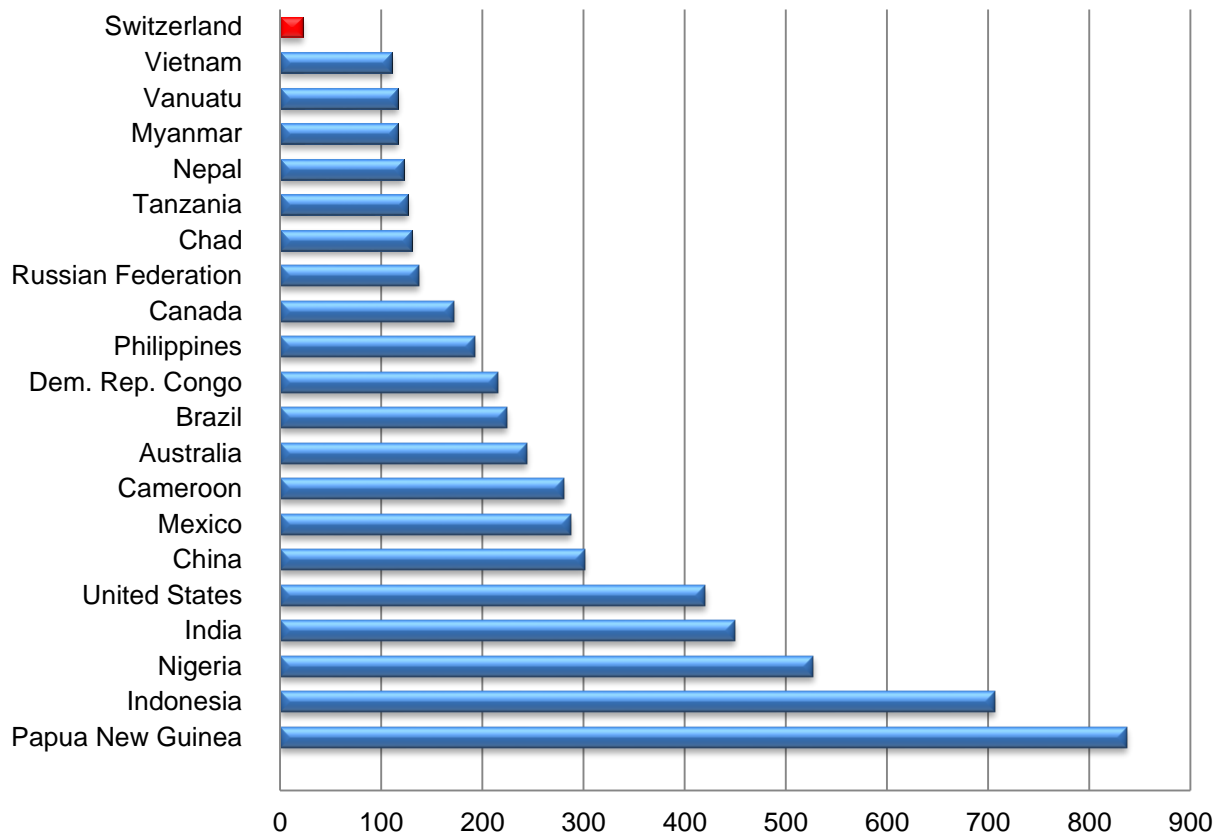
In Figure 2 the 20 countries with the highest number of active first languages is depicted, plus Switzerland (in red) for purposes of comparison. Switzerland has, with 22 first languages spoken, perhaps even more language diversity than the 4 official languages would have implied. On reflection and considering the influence of comparatively high immigration over many decades, this is nonetheless unsurprising.

In comparison with the countries of highest first language diversity: Papua New Guinea (837), Indonesia (706) and Nigeria (527), it becomes clear that on a global scale and with so many living languages - Ethnologue counts 7106 in total – a high level of multilingualism worldwide is virtually unavoidable and much greater than is usually encountered in Europe.

<sup>15</sup> Lewis, Simons, & Fen, 2014

<sup>16</sup> <http://www.ethnologue.com/statistics>

<sup>17</sup> Currently there are 193 UN member states



**Figure 2: Active First Languages in use per Country**

A dependable statistic of the number of bilinguals in the world does not exist. However, according to David Crystal, two-thirds of the world's children are estimated to grow up in a bilingual environment.<sup>18</sup> Another source of bilingualism states, that "there are many more bilingual or multilingual individuals in the world than there are monolingual."<sup>19</sup>

It follows that there are at least as many bilingual children as there are monolingual children. In fact, there are more second language speakers of English than native speakers<sup>20</sup>.

The ability to communicate directly with others in their own or in a neutral language is the most obvious advantage of bilingualism. In an increasingly globalized world, the benefits for those involved in trade and commerce are quite apparent.

In addition to these rather obvious aspects, there are - as reported by the New York Times<sup>21</sup> - further advantages for the individual. Apparently it can make you smarter, can improve your other cognitive skills and even limit the onset of dementia.

<sup>18</sup> Crystal 1997, p 17

<sup>19</sup> Tucker 2014

<sup>20</sup> Lowy 2014

<sup>21</sup> Bhattacharjee 2014

## 2.2. Language Phenomena in Bilingualism

There are several uses of language which are solely the domain of bilinguals and multilinguals. Some of these are controllable and some occur unconsciously without any active influence of the individual. The Complementarity Principle, code-switching and interference are effects which occur so often that they can almost be described as in the nature of every bilingual.

### 2.2.1. The Complementarity Principle

It can be assumed that for many bilinguals an exact parity across all language skills and in all domains (at work, study, in private...) is unlikely to be found. It could be that an individual uses English for study (due to the prevalence of academic literature in English) thus acquiring a formidable but specialized vocabulary in his subject area, but continues to speak another language more easily with family and friends. This type of specialization is known as the complementarity principle<sup>22</sup>.

### 2.2.2. Code-Switching

A single definition of code-switching has proven to be quite difficult to find. The reason being that, as Gluth says, "... it is mostly found in conjunction with borrowing, interference and convergence". One possible definition Gluth mentions is: "code-switching is the embedding or mixing of words, phrases, and sentences from two codes within the same speech event and across sentence boundaries..."<sup>23</sup>.

Code-switching is often criticized, due to the fact that many feel it creates a mixture of languages, which is used by people speaking carelessly. This misconception has led to the creation of the myth, that bilinguals code-switch out of pure laziness<sup>24</sup>. Due to negative attitudes and also the worry, that code-switching will lead to some form of "semilingualism", bilinguals are often discouraged from code-switching<sup>25</sup>.

The reasons for code-switching are various, one of which - The Complementarity Principle - has already been mentioned in 2.2.1. Topic-specific words might only have been acquired in one language, so code-switching provides a convenient mechanism, especially in the presence of other bilinguals of the same languages, to converse precisely on that topic.

Milroy<sup>26</sup> gives further examples of code-switching used for other purposes, such as switching to a higher status language to assume a position of superiority. A further application of code-switching is to gain precision in speech. Some languages have very precise vocabulary for certain situations which can only be expressed via a short sentence in other languages. An example in German would be "urlaubsreif" which in English can only be expressed as "in need of a holiday". Baetens

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<sup>22</sup> Grosjean, Studying Bilinguals 2008, p.22 ff

<sup>23</sup> Gluth 2008, p.6

<sup>24</sup> Grosjean, Bilingual: Life and Reality 2010, p.52

<sup>25</sup> Grosjean, Bilingual: Life and Reality 2010, p.52

<sup>26</sup> Milroy 1995, p.9

Beardsmore also concludes<sup>27</sup> that code-switching of stable bilinguals is by no means a negative phenomenon. On the contrary: “code-switching... unlike interference, correlates closely with high-level bilingual ability”.

### 2.2.3. Interferences and Deviations

There is a phenomenon that bilinguals – in contrast to code-switching - cannot control actively, where deviations from the language being spoken or written can occur. *Interference* is the “hidden companion” according to Grosjean. It causes linguistic deviations which are “present even though one tries to filter them out.”<sup>28</sup>

Baker & Jones Prys differentiate in their Encyclopaedia between ‘static interference’ and ‘dynamic interference’<sup>29</sup>: “...static interference occurs when influence from one of the bilingual’s languages is present relatively permanently in the other language”, whereas “an English speaker with some competence in French demonstrates dynamic interference by using the word *librairie* to mean ‘library’, whereas it means ‘bookshop’.”<sup>30</sup> The two interferences are usually difficult to separate, apart from the case of an accent, which is most often a static interference.

In addition to this difficulty of separation, there is also a distinction to be made between *interferences* and *deviations*<sup>31</sup>, which appear when language fluency is a problem.

### 2.3. Degree and Function

When quantifying bilingualism one must differentiate between degree and function: *degree* being the proficiency of competence in the language and *function* being the actual use of the languages. There are different kinds of bilinguals:

- Some may use the second language for listening or speaking but cannot use the language for reading and writing to the same extent. These kinds of bilinguals are called, *passive bilinguals*<sup>32</sup>.
- Another kind of bilingual is the *balanced bilingual*<sup>33</sup>. These are very rare, because usually some kind of dominance in one or other language is very common. The language skills change over time, so there may only be a temporary period in which the languages are truly balanced out.

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<sup>27</sup> Baetens Beardsmore 1986, p. 84

<sup>28</sup> Grosjean 2010, p.68

<sup>29</sup> Baker & Jones Prys 1998, p.58

<sup>30</sup> Baker & Sienkewicz 2000 p.32

<sup>31</sup> Deviations according to Grosjean are: “intralanguage deviations... (the linguistic knowledge level reached in the language) ... overgeneralisations (... taking irregular verbs and treating them as if they were regular) and simplifications (dropping pluralizations and tense markers, omitting function words, simplifying the syntax)”<sup>31</sup>

<sup>32</sup> Baker & Sienkewicz 2000, p 182

<sup>33</sup> Baker & Sienkewicz 2000, p 167

- At the other end of the scale are the *dominant bilinguals*, who have a higher proficiency in one language over the other. The dominance may be present in some or all of the four language skills (reading, writing, speaking and listening) and the dominant language is by no means always the primary (L1) language.

An extreme form of bilingual dominance is *receptive bilingualism*<sup>34</sup>, whereby a bilingual person may understand the secondary (L2) language very well, but not be in a position to speak the language himself at all. This can be as a result of *recessive bilingualism*<sup>35</sup> – a somewhat negative term - referring to the successive loss of linguistic ability, typically due to disuse of a language when separated for long periods from other members of the language community.

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<sup>34</sup> Baker & Sienkewicz 2000, p 184

<sup>35</sup> Baetens Beardsmore 1986, p22

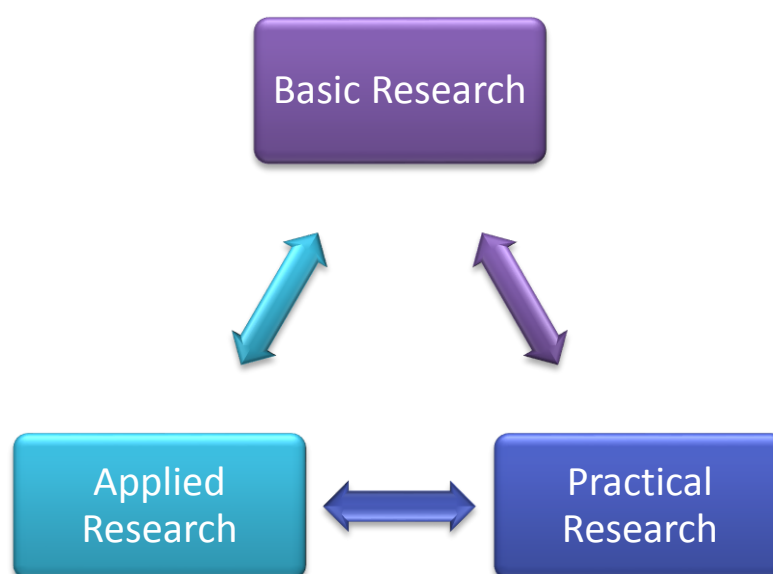
### 3. Researching Bilingualism

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There are different areas of research and also different types of research associated with the branch of linguistics. According to Elana Sohamy and Herbert W. Selinger<sup>36</sup>, there are 3 fundamentally different types of research:

- Basic
- Applied
- Practical

These don't stand alone. In fact their contents are interrelated, as visualized in the following diagram:



**Figure 3: Kinds of Second-Language Research and their Relationships**

This paper addresses areas of basic and applied research as appropriate for the subject of second language acquisition. The methods utilized to implement the applied research are described in 3.2, the results of the applied research being documented in sections 4.1 - 4.6.

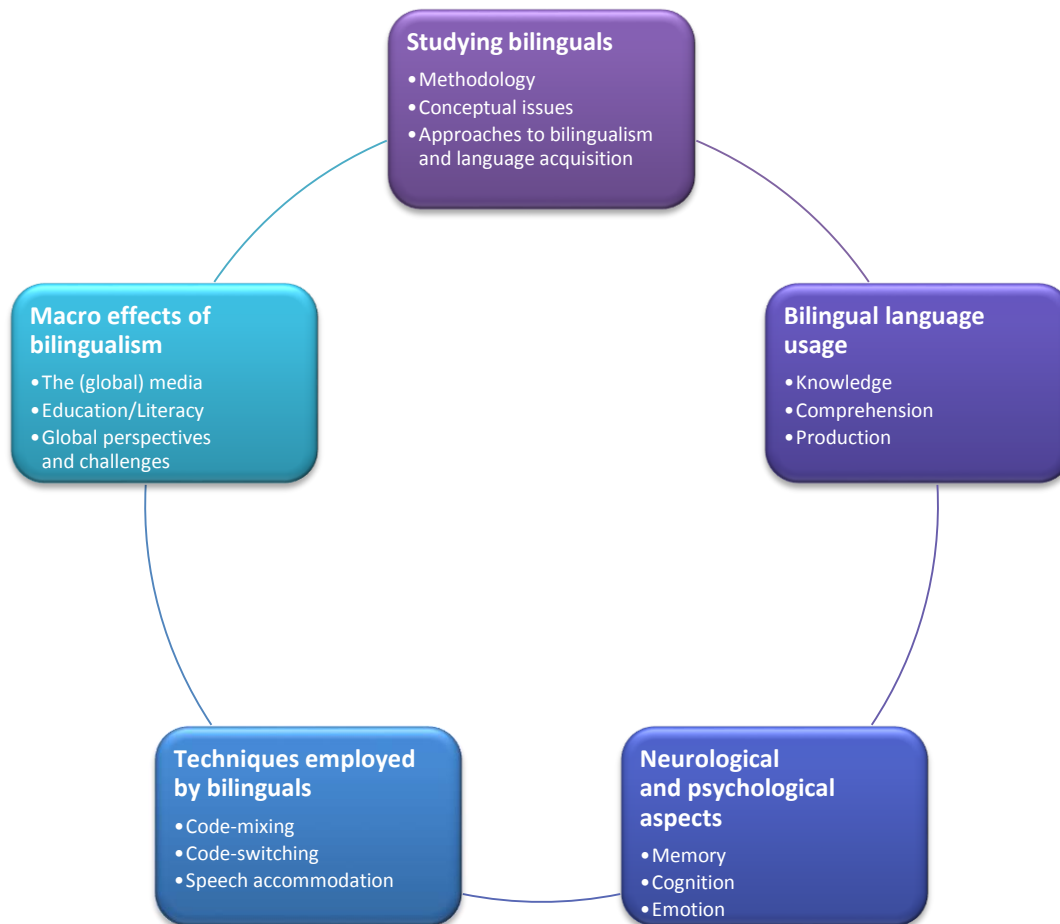
#### 3.1. Areas of Academic Research into Bilingualism

To get some idea of the breadth and depth of the research on bilingualism, we can segregate the research areas into the main branches<sup>37</sup> as summarized in Figure 4. Specifically we are interested here in the 2 segments of bilingual usage and studying bilinguals.

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<sup>36</sup> Seliger & Shohamy 1989, p.17

<sup>37</sup> Bhatia & Ritchie 2004, pp.v-vii



**Figure 4: Bilingual Research Topics**

### **3.1.1. Measurement of Bilingualism**

Many procedures have been developed for measuring the degree of bilingualism. Typically (self-) tests, tests of grammar, vocabulary, translation and synonyms, questionnaires and interviews.

The researcher interested in such measurements must ideally factor in the effects of age, sex, intelligence, linguistic differences of the subjects languages and attitude of the subject being tested.

### **3.2. Methodology and Experiment Design**

The aim of this research is to analyse a statistically relevant group of bilinguals of differing levels of bilingual-competence to corroborate or disprove the hypothesis proposed in the introduction. To this end there are a range of established techniques typically employed by researchers of bilingualism which will now be appraised and discussed.

### 3.2.1. Data Collection Techniques

Most commonly, researchers into bilingualism collect data from a group of participants by applying one or more of the following techniques:

- Tests
- Interviews
- Questionnaires: participants assess their own proficiency (in a written or electronic form)
- Diaries
- Use of Internet
- Observation

Each of these has its unique advantages and disadvantages. Ideally a combination of techniques would be employed<sup>38</sup>, the scope of this paper is however too limited to employ all of those above.

### 3.2.2. Advantages and Disadvantages of the Data Collection Techniques

The data-usage is defined according to the *degree of explicitness*, which can be viewed as a continuum. “At one end of the continuum, we often find data collection procedures which are broad ... at the other end ... more explicit and structured and usually determined in advance”.<sup>39</sup>

According to the degree of precision being sought, the data collection techniques can be placed on a scale of *degree of explicitness*<sup>40</sup>. Unstructured interviews - amongst others - belong to low explicitness whereas high explicitness on the other hand is achieved through methods like metalinguistic tests<sup>41</sup> and structured questionnaires (see Figure 5).

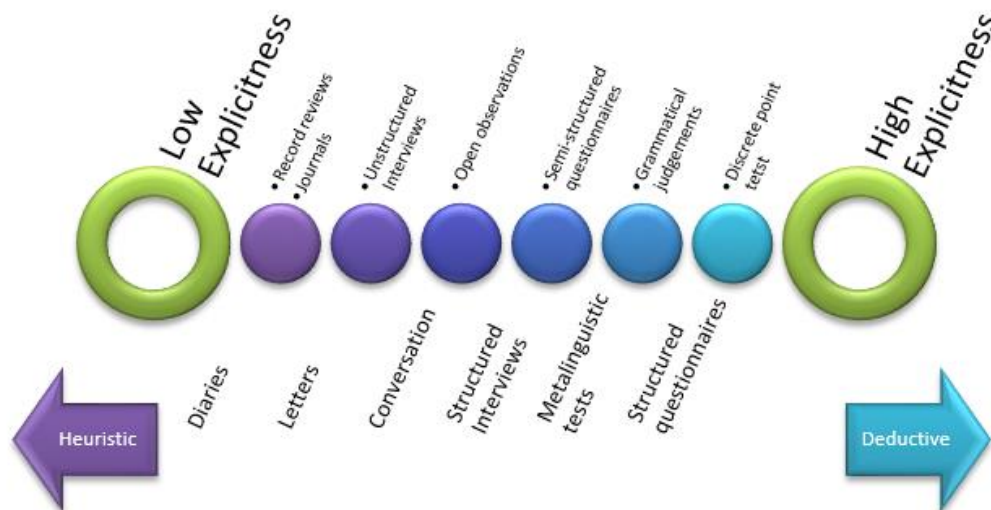


Figure 5: Examples of Data Collection Procedures Typical of Research Types

<sup>38</sup> Seliger & Shohamy 1989, p.160-162

<sup>39</sup> Seliger & Shohamy 1989, p.156

<sup>40</sup> Seliger & Shohamy 1989, p.156

<sup>41</sup> Metalinguistic tests: The ability to reflect upon the properties of a language



Even though pros and cons of data collection techniques have been researched, in this paper only one technique - questionnaires – will in fact be discussed in detail. In terms of the “cost” of acquiring results, there is a trade-off to be made between individual techniques versus the much “cheaper” approach using large-scale data-gathering to which questionnaires belong. Further efficiency in capturing the data and additionally in the initial stages of processing the data can of course be achieved via the use of electronic data-capture and more specifically with online tools. The financial costs of electronic (online) data-capture are also comparatively low.<sup>42</sup>

In summary, the choice of the online questionnaire as research method here has multiple reasons, the main ones being:

- Speed and efficiency (data-entry, data-collection *and* data processing)
- Cost (see 3.2.4)
- Versatility<sup>43</sup>
- Comparative anonymity

Of course there are disadvantages to the questionnaire approach, such as when a participant gives a completely unexpected answer, it is impossible to follow up with a clarifying question and it is also dependant on all subjects answering honestly and on everybody having understood the questions in the same way.

### 3.2.3. Participants

In his discussion of Thiery’s work (Thiery, 1978)<sup>44</sup>, Grosjean provides several examples where researchers have produced sometimes confusing and contradictory results due to inadequate qualification of the participants for their studies. The most obvious way of minimising such errors merely involves the inclusion of questions which ascertain certain fundamental differences between the individuals, namely:

- Language history
- Language stability
- Function of languages
- Language proficiency
- Language mode
- Biographical data

These fundamentals will be discussed more fully in section 3.3. *Designing Questions for the Survey*.

It should be noted that there are other more advanced techniques for qualifying participants of bilingual studies, which can include initial screening tests, pre-grouping etc. Techniques which are very time consuming and too resource intensive for this project.

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<sup>42</sup> Dörnyei & Taguchi 2010, p.6

<sup>43</sup> Dörnyei & Taguchi 2010, p.6

<sup>44</sup> Grosjean 2008, p.243

### 3.2.4. The Chosen Methodology and Tooling

The methodology chosen for this research is to collect relevant, structured information from known bilinguals and polyglots. In the interests of achieving a statistically relevant set of research data, with the somewhat limited constraints on time and money, it was decided to approach the practical re-search<sup>45</sup> phase of this project with the design of a questionnaire, which was to be administered via internet, due to the fact that “...they are easy to construct, extremely versatile, and uniquely capable of gathering a large amount of information quickly in a form that is readily processable”<sup>46</sup> as Dörnyei & Taguchi conclude.

A short list of required features for a survey tool was drawn up, to help in deciding which would be of most use in designing and carrying out the survey. The criteria are summarized in Appendix C.

It was discovered that several online survey tools - which find usage more typically in the realm of market research - offer advanced capabilities, which are ideally suited to the task. Several tools were considered and the following were tested by implementing a small prototype questionnaire with each tool including the types of questions being considered for the eventual survey:

- Survey Monkey
- Survio
- SurveyGizmo
- QuestionPro

In Appendix C, the matrix used in deciding exactly which tool to use is shown. The final decision was made for SurveyGizmo, since it contained all required features (plus others besides), the prototype questionnaire was – along with QuestionPro - the easiest and most flexible to use in the design phase and above all, although it would otherwise have been the most expensive of those pre-selected, a full-version of the tool was available for a 14-day test period at no cost. This, however, meant that the whole design, implementation and conduction of the survey had to be completed precisely within the two weeks available.

### 3.3. Designing Questions for the Survey

A key element in this whole project lay in choosing the right questions, finding the right wording and guiding the participants with precise scales for answering the survey. Much research has been conducted on this very topic over a period of decades and many mistakes have been made in the past by omitting vital questions<sup>47</sup>.

In order to achieve an adequate level of comparison with other researchers in the field, the core-questions are normalised according to the work of Lee, Sepanski and Zhao<sup>48</sup> on language history

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<sup>45</sup> Seliger & Shohamy 1989, p.17

<sup>46</sup> Dörnyei & Taguchi 2010, p.xiii

<sup>47</sup> Bhatia & Ritchie 2004, p 33

<sup>48</sup> Li, Sepanski, & Zhao 2006, p.202

questionnaires. The use of these core-questions also addresses the problem of methodological and conceptual issues discussed above in section 3.2.3 Participants.

### 3.3.1. Best Practices

Additional questions targeted at the special areas of interest were of course added and general best practices for questionnaire design as advocated by Dörnyei & Taguchi<sup>49</sup> were implemented. Indeed a great deal of advice from Dörnyei & Taguchi was applicable. Summarized it can be said:

- Provide advance notice of the survey
- Sell the survey by communicating well its purpose
- The questionnaire should be kept as short as possible without omitting key data. Only in exceptional cases should the survey take more than 30 minutes to complete
- Questions should be grouped according to content area
- Questions requiring confidential information should be kept to a minimum (or made clearly optional)
- Open-ended questions are least intrusive if placed at the end
- Thank the participants at the end of the questionnaire
- Allocate time and attention to translating the questionnaire
- Promise feedback on the results for those who are interested<sup>50</sup>

Dörnyei & Taguchi also provide many ideas on managing and processing the data after concluding the data-collection<sup>51</sup>. It was found, however, that many of these tasks are automatically taken care of by the survey tool (e.g. creating an ID for each participant) or by utilising the features available. *Data cleansing*<sup>52</sup>, for instance, was almost eliminated, by applying comprehensive data-entry and validation techniques ( e.g. constraining minimum/maximum age, drop-down lists of countries, radio buttons and sliders for entering data on a scale etc.), which are possible with an electronic form but not with traditional pen & paper questionnaires. Further techniques used to improve the ergonomics (user experience) of the questionnaire and enhance the data quality attained are described in section 3.4 ff.

### 3.3.2. The Questionnaire as Used in the Survey

There are four types of questions relevant for linguistic surveys:

- *Language history*: The subject is asked, for instance, when he has acquired his languages
- *Language choice*: “Questions concerned with language choice, associated with interlocutor, topic, physical environment, or formality.”<sup>53</sup>
- *Language dominance*: “Questions concerning what language they are most proficient in.”<sup>54</sup>

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<sup>49</sup> Dörnyei & Taguchi 2010, p.127-130

<sup>50</sup> Dörnyei & Taguchi 2010, p78

<sup>51</sup> Dörnyei & Taguchi 2010, p 83 ff

<sup>52</sup> Data cleansing: correction of obviously nonsensical/illogical results in a completed questionnaire

<sup>53</sup> Wei & Moyer 2008, p.39

<sup>54</sup> Wei & Moyer 2008, p.39

- Language attitudes: “Questions concerning the values speakers attach to various languages.”<sup>55</sup> An exemplary question would be to ask which language the participant prefers

In the online questionnaire questions were designed to address all of these facets. The final version of which can be seen in appendix D and is segregated as follows:

- Questions not directly associated with linguistics (age, gender, education)
- Periods and countries of residence (current and previous)
- Languages listed in order of strength, acquisition and emotionality
- Language preferences, specified in percentages for reading and speaking
- Impairments/disabilities (which might demand exclusion of a participant from the survey completely)

Then for each of the specified languages (from L1 up to L6)

- Ages at which acquisition began and when fluency was attained (in reading and overall)
- Amount of time spent speaking the language (various situations)
- Proficiency (speaking, comprehension, reading)
- Amount of time exposed to the language (various situations)
- Accent and code-switching/interference

Finally some general and open-ended questions to conclude the survey as mentioned above in 3.3.1, including an expression of thanks and the offer of a small reward.

The fundamental basis for this questionnaire was the standardised “*Language Experience and Proficiency Questionnaire*” (LEAP-Q, see [Marian, Blumenfeld, & Kaushanskaya, 2007]). Not only the wording of the questions and value-scales, but also the validity of LEAP-Q as a self-testing method has been established by Marian et al through application of the questionnaire in combination with standardized language tests in a study of 52 Spanish-English bilinguals<sup>56</sup>.

However, as LEAP-Q provides only a starting point, it was decided to add questions according to language use, fluency and language history with the matching complementarity principle as well as questions about emotional use of the subjects’ languages (see details in section 3.3.2 and Appendix D).

### 3.4. The Process of Launching an Online-Survey

Having decided on the precise questions for the questionnaire, some details of the process of launching an online-survey were addressed. The most important factor apart from the questionnaire itself is the choice of participants.

#### 3.4.1. Participants

The participants were chosen from personal acquaintances, family friends and colleagues who were personally known or reported to be bilingual (according to the definition at the end of section 2.3). A multiplication effect was hoped for by requesting the core-participants to additionally nominate other

<sup>55</sup> Wei & Moyer 2008, p.39

<sup>56</sup> Marian, Blumenfeld, & Kaushanskaya 2007, p 960 ff

bilingual members of their own family who would be willing to take part in the survey. The selection process was conducted for the most part via email, and only those who replied positively (a registration email had to be sent to a specially created email account set up for the project) were included in the final invitations to take part in the survey. Constraints on participants were minimal, namely that they be of 16 years or older and bilingual or multilingual according to the definition at the start of section 2.

### **3.4.2. Survey Implementation**

The chosen tool for the implementation (SurveyGizmo, see 3.2.4) allows the owner/administrator of the survey – once he has registered himself - to create a “campaign” by entering question texts, choosing the type of control for the data-entry as well as specifying a whole range of constraints and pre-defined input options to ensure that the participants enter only fully validated answers to the questions and have as much help as possible in completing the questionnaire quickly and accurately.

There are further structural aids, such as pagination of the survey and a very helpful and ergonomic feature was piping<sup>57</sup>. Equally advantageous was the large variety of question types to choose from.

*Data verification* and *constraints* were used extensively so that, for instance, at least two languages had to be specified or that the percentage distribution specified for the use of all languages over the domains is constrained to add up to 100. In many cases questions were made compulsory, i.e. the subject was forced to answer before he could continue to the next page – a very basic, but necessary constraint.

Very important was the fact, that there was support for bilingual questioning, opening the survey to many more people and enabling especially more international subjects to participate. The final step in the survey implementation was, then, to translate all the visible English texts into German.

### **3.4.3. Survey Administration**

Once the participants' email addresses were available and the questionnaire had been implemented in SurveyGizmo, a pilot survey with a few test-users was launched. The test-users were sent an invitation email (just as the final participants would later receive) with a link for participation in the survey. After further tests, it was possible to prepare the launch.

In order to start the survey, all the participants' email addresses were entered into a new campaign, an invitation email-text was drafted, as were texts for “thank you” mails and a reminder (which would come into use later on). At this point the start button was clicked and the invitations were sent out. A time for sending out reminders was configured, so that those who hadn't already completed would get a gentle reminder. The reminder was set to a recurring period of 3 days and the close of the survey was limited to 10 days, so that no problem with the 14-day test period (see section 3.2.4) could arise.

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<sup>57</sup> Piping: results of previous questions are used in later questions e.g. L3 would be replaced by “Spanish”, so that the participant doesn't have to remember what L3 was when prompted for questions on that language

It was possible to monitor the progress of proceedings throughout the survey. Through constant monitoring some minor errors were initially noticed, which could be corrected so that future participants weren't even aware of those mistakes.

During the survey some further participants were nominated who were able to be added to the campaign. Other than that, it was just a case of observing progress and waiting for new data to be entered. Finally, after closing the survey, all data was exported to a CSV-file, which could be consumed and further processed with MS-Excel.

## 4. Experimental Results

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On completion of the on-line survey, which was conducted over a period of 10 days, all results<sup>58</sup> were downloaded for analysis. Individual completion times for the survey varied quite widely – not least because some subjects took advantage of the option of completing the questionnaire over multiple sessions. For a very large proportion (70%) the survey was however completed in a single session of between 10 and 40 minutes. Of course there were the inevitable variations due to numbers of languages<sup>59</sup> and the option of answering some open questions<sup>60</sup>, which clearly takes more time than answering structured questions, such as selecting a number on a scale.

The raw data from the survey are listed almost completely<sup>61</sup> in Appendix B and have been processed in Excel to provide visualizations and calculations which are presented in this chapter.

To begin with, statistics referring to the process of conducting the survey are presented. Following this the non-linguistic profile of the 64 survey-participants is visualized to provide the reader with background information on those who completed the survey. In most cases a separation by gender is – since this is the focus of this work – visualized and commented upon. Finally the presentation of the bulk of the results - analysing the *linguistic* profiles of the subjects - is made by combining multiple findings from the results of the linguistically-focussed questions to better examine the hypotheses made in the introduction.

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### *A note on the use of colours in displaying the experimental results:*

*The languages L1 – L6 are visualized consistently using the following colours:*

■ First ■ Second ■ Third ■ Fourth ■ Fifth ■ Sixth

*Data referring especially to males or females are visualized with these colours:*

■ Male ■ Female

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### 4.1. Conducting the Survey

The survey was initiated with email invitations to more than 75 pre-registered participants on 29<sup>th</sup> June 2014. After 3 days an email-reminder was sent to those who had either not started or had started but not completed the survey. A further 3 days later a second reminder was sent and some

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<sup>58</sup> A few of the questionnaires were unfortunately only partially completed. All partial results were discarded.

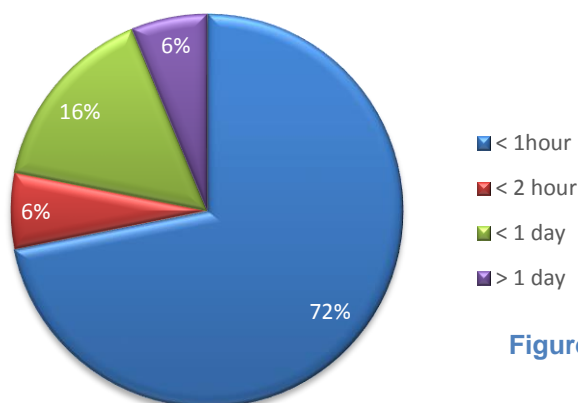
<sup>59</sup> Details of a maximum of six languages could be entered

<sup>60</sup> 42% of participants gave feedback on the open questions

<sup>61</sup> The e-mail addresses have been removed for reasons of confidentiality

personal emails were dispatched as reminders to subjects who seemed to have abandoned their attempt or perhaps thought that they had finished.

The responses grew steadily throughout the 10 days of the survey, with marked activity at the start and immediately after the reminders were sent out. Some 15 additional participants were found after initiating the survey, who were also able to be integrated into the experiment.



**Figure 6: Questionnaire Completion Time**

As is shown in Figure 6, a large majority of subjects completed the survey in less than an hour. In fact 70% of subjects took only between 11 and 40 minutes<sup>62</sup>. Taking a day or more were those who chose to take advantage of the multi-session feature of the survey.

## 4.2. Survey Participants

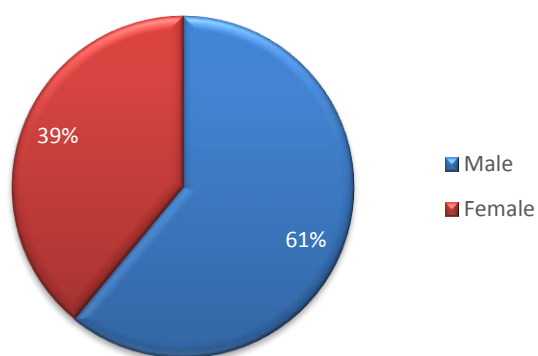
In experiments of this type, it is obligatory to analyse the profiles of the participants to ensure the level of uniformity amongst the subjects. This section summarizes and visualizes the participants' profiles for each gender and analyses non-linguistic information such as age, educational level and residency in countries other than Switzerland, which applies currently to 7 of the 64 participants.

### 4.2.1. Gender/Age Distribution of Participants

In seeking participants for the survey, a concerted effort was made to reach a balance of males and females. It should be mentioned that not everybody who agreed to participate actually submitted a completed questionnaire and of the partially completed efforts a majority were females. Nonetheless, as we see Figure 7 in reasonable proportion of participants (39%) were in fact female.

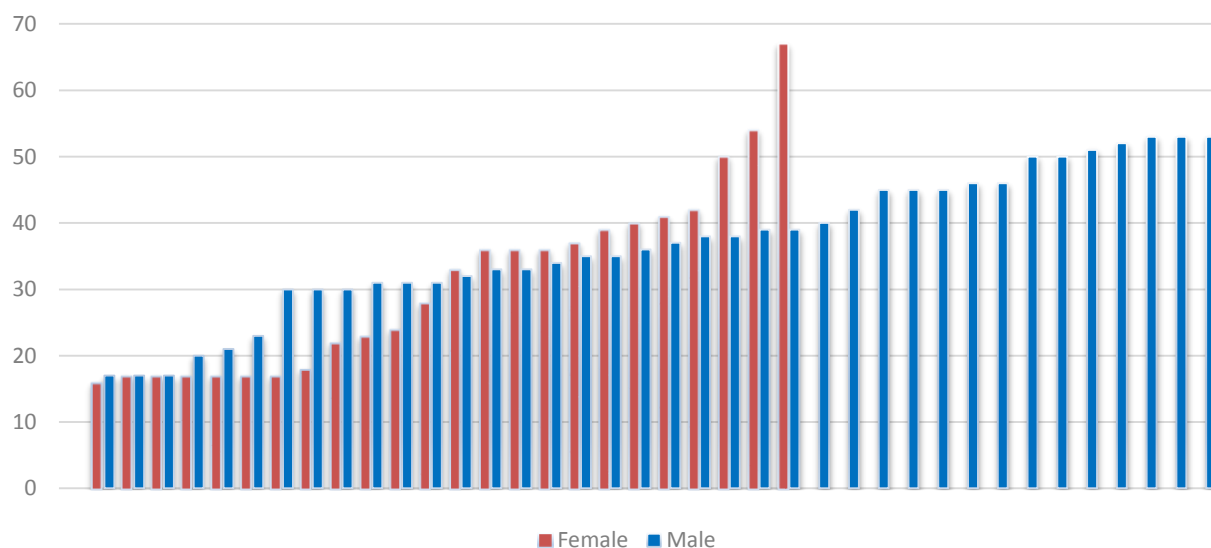
<sup>62</sup> Further details of survey completion times are illustrated in Appendix E





**Figure 7: Male/Female Participation**

The age distribution is shown in Figure 8, separated for males and females. The range of ages of men and women is quite comparable. All men are between 16 and 53. Amongst the women a single subject is outside this range (67 years).



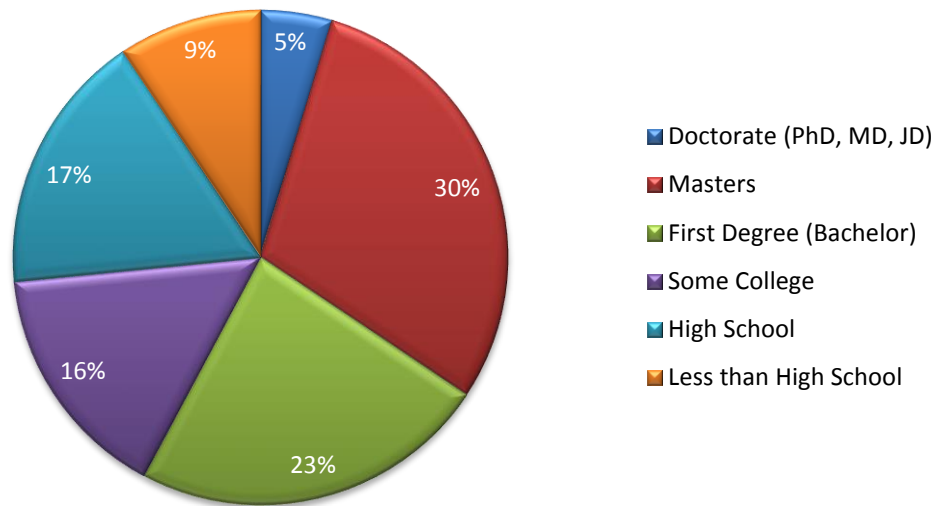
**Figure 8: Gender/Age Distribution**

Average age of the women is 31 years and the standard deviation is 13.9. Average age of the participating men is 36.8 and the standard deviation is 10.6. This underlines the optical impression of there being a wide and evenly distributed age-range of entrants both for men and women – the females being a little younger.

#### **4.2.2. Educational Profile**

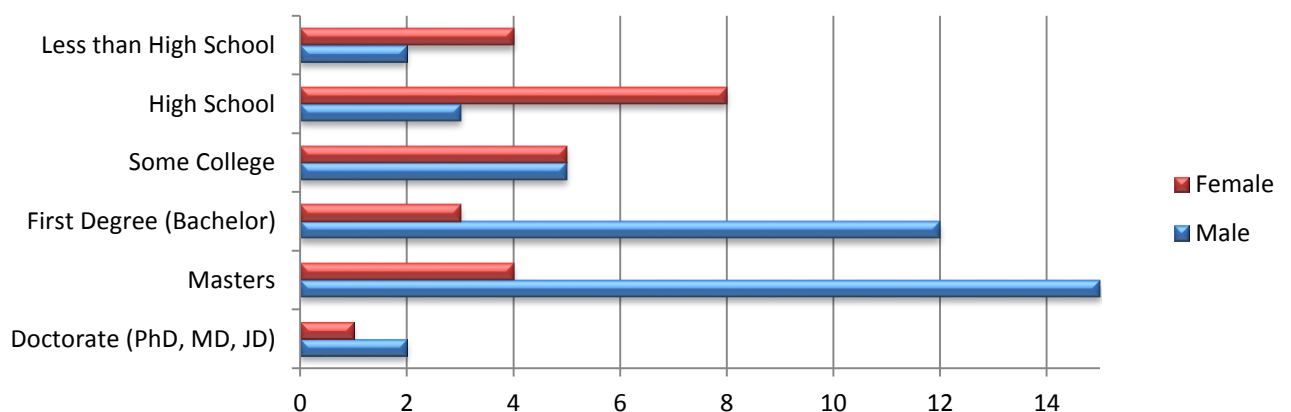
The *highest attained level of education* was gathered in the survey as a further controlling factor (in addition to age/gender distribution) in ensuring comparable participant groups for the experiment. The analysis of educational level across all subjects (see Figure 9) shows a high level of academic attainment. Well above half (58%) have completed a course of tertiary (type A) education (first degree or

higher), which is considerably higher than average in Switzerland<sup>63</sup>, although this is in fact a typical proportion when considering OECD countries on the whole (OECD average is 60%<sup>64</sup> ).



**Figure 9: Educational Level (all participants)**

Since we wish to draw comparisons between male and female subjects it is necessary, however, to also compare independently educational levels of the males and females, who provided the survey data. In Figure 10 we notice quite a strong discrepancy in the highest level of education achieved by the males (considerably over-weighted in the categories first degree, masters and doctorate) as opposed to females (over-represented in high school and below).



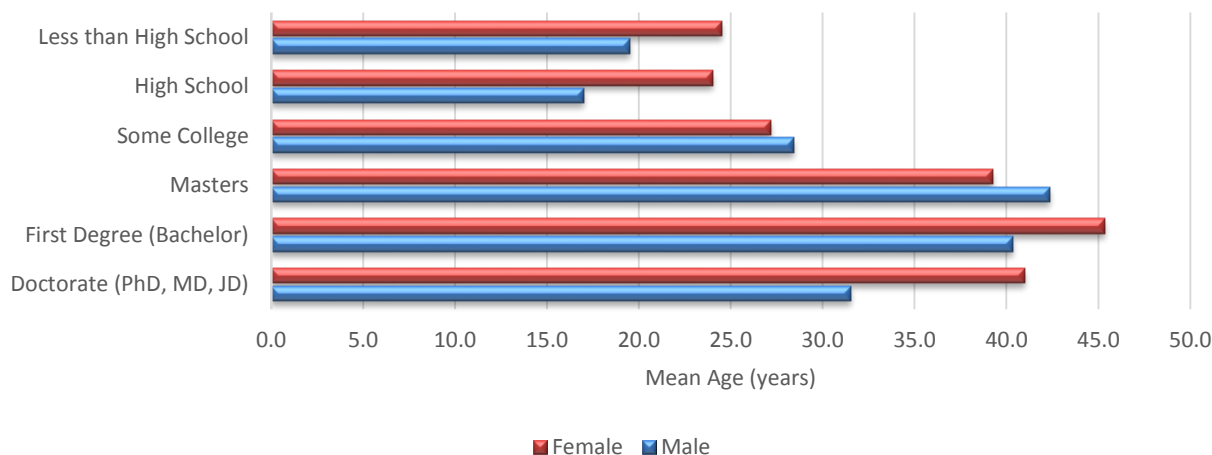
**Figure 10: Educational Level (m/f)**

The discrepancies observed in Figure 10 are undesirable in terms of the kind of comparable participant groups being sought for the experiment. This unexpected intermediate result led to a closer

<sup>63</sup> OECD 2014, p 3

<sup>64</sup> OECD 2014, p 3

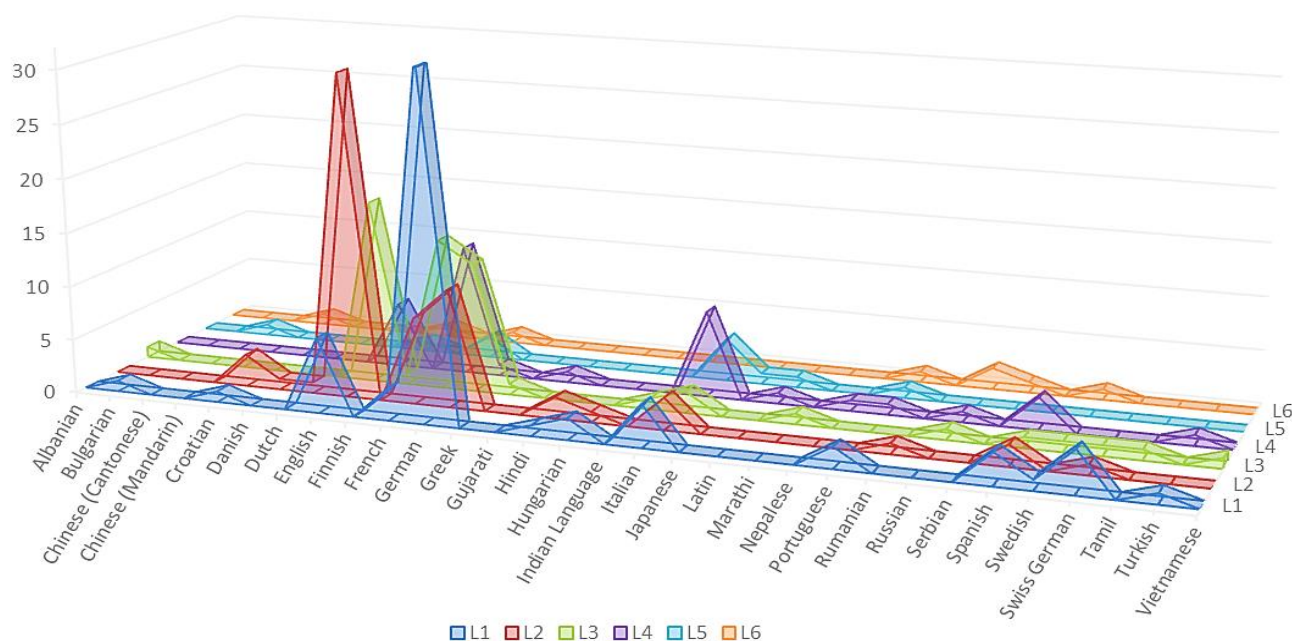
analysis of the data. Since Figure 8 displays something of an age discrepancy between the – on average – younger female participants, a comparison of educational level with age was made, resulting in Figure 11.



**Figure 11: Age/Education Comparison (m/f)**

Figure 11 confirms the assumption that the lower educational levels amongst female subjects can be quite well rationalised due to the fact that the more numerous younger females have simply not yet had the opportunity to attend tertiary (type A) courses due to age. Nonetheless, this is a slightly undesirable phenomenon which is discussed in the conclusion.

### 4.3. Languages Spoken



**Figure 12: Languages L1 - L6 of all Participants**

Even though many of the participants are non-Swiss, there is a clear emphasis on three of the four national languages of Switzerland (German, French and Italian) and additionally English, being a world language. One notes that Spanish besides English and French is an official language of the UN<sup>65</sup> and that it is - perhaps due to this status - well represented as 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> language. This applies also, but to a lesser extent, for Russian. What is seen here is that, even though there is a slight emphasis on European languages, there is no language bias due to over representation of languages other than those just mentioned above.

#### 4.4. Analysis of Language Use versus Language Fluency

A popular comparison method adopted for displaying all language competencies for a *single* person is the 2-dimensional matrix of fluency versus usage<sup>66</sup>. Using an analogous approach it is convenient to visualize, for *all* participants of the survey, how L1, L2 etc... are related to one another. A numerical value for fluency was calculated from multiple survey results of each language and derived per participant. The calculation takes a mean value<sup>67</sup> of the following factors:

- Self-appraisal of level of foreign accent
- Frequency of accent being identified as non-native
- Code-switching/interference
- Proficiency-level in speaking
- Proficiency-level in understanding
- Proficiency-level in reading

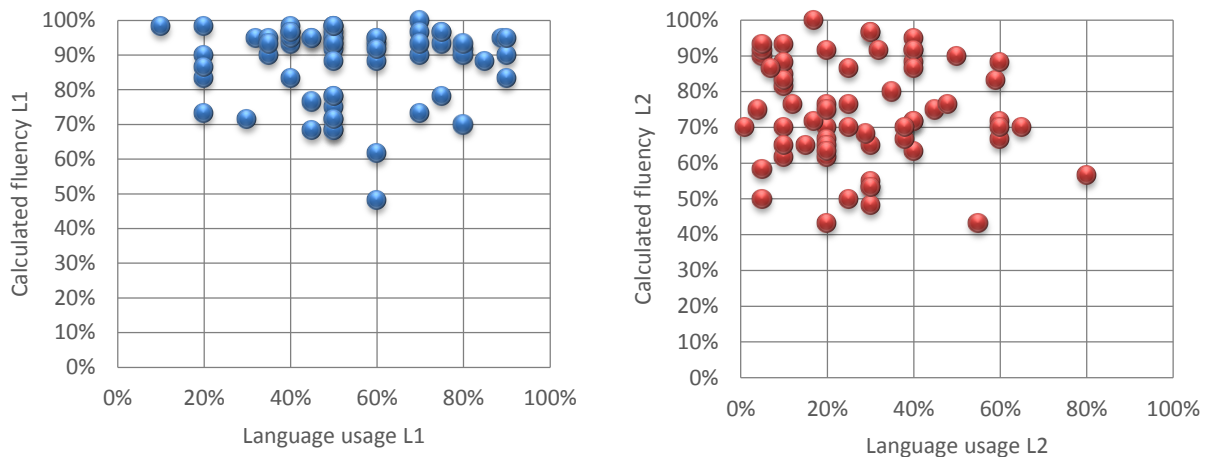
This value - denoted here as *calculated fluency* - is diagrammatically mapped against the specified percentage of current usage for the languages (L1 – L6). These matrices (Figure 13 - Figure 15) provide a fascinating insight into how very differently the various languages are used across the whole spectrum of participants, whilst at the same time displaying the increasing *spread* of fluency as we progress through the languages from L1 to L6. Even though it is to be expected, that L1, as the language first acquired, may require a high usage to maintain the usually high proficiency-level, this is not universally so across all subjects (see Figure 13).

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<sup>65</sup> The other official languages of the UN are Chinese, Russian and Arabic

<sup>66</sup> Grosjean F. 2014, p 3

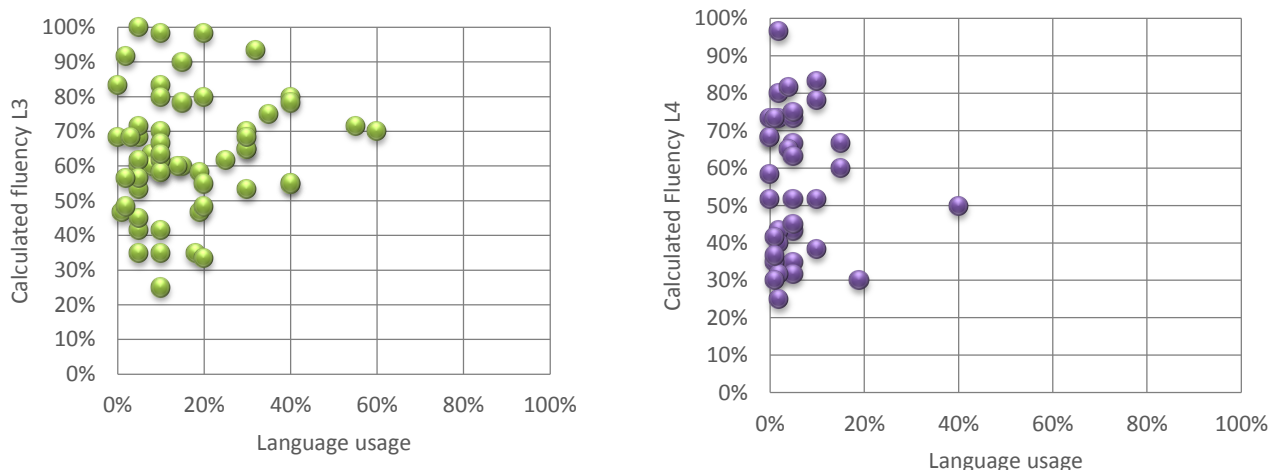
<sup>67</sup> The numerical values for accent and code-switching are in fact inverted for this averaging calculation (e.g. 0 becomes 10 and 10 becomes 0), since a “good” value for these factors is low, whereas a “good” value for the proficiency factors is high.



**Figure 13: Fluency versus Usage (L1 + L2)**

Despite the fluency ranking from 50% upwards, the level of usage is widely spread, even with as little as 10% usage. Impressive are those individuals who maintain very high fluency but with little usage. For L2 there is much less high-usage and as would be expected, a slightly wider spread of fluency, a few of which drop below 50%.

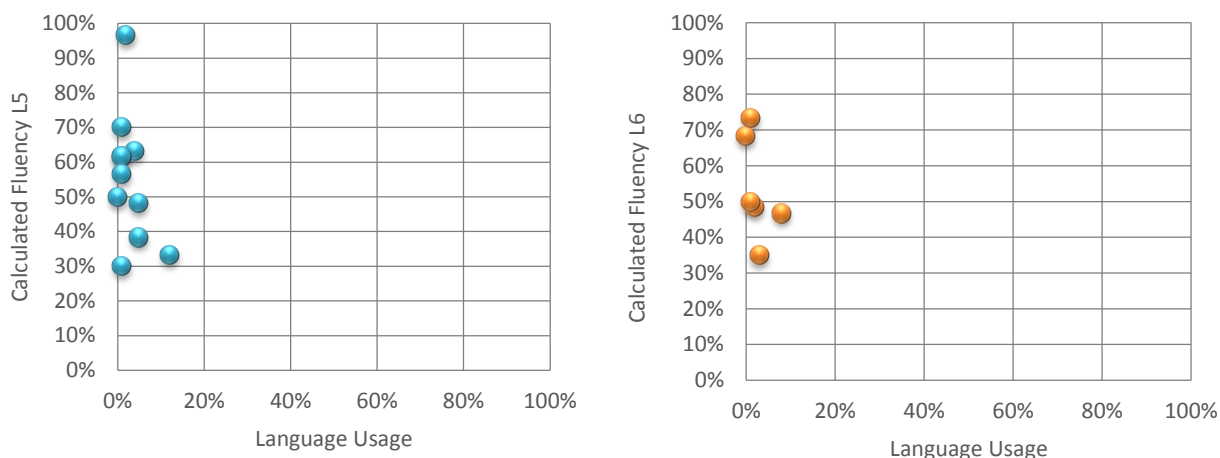
Moving on to the languages L3 and L4 in Figure 14, the usage reduces further in most (but not all) cases and this is even more pronounced for L4. For L3 the fluency weakens somewhat compared to L2, but there is still a good proportion at or above 50%. In the case of L4 this proportion is further reduced. This is what one would reasonably expect.



**Figure 14: Fluency versus Usage (L3 + L4)**

Looking at those exceptional individuals who manage to maintain proficiency of L5 and L6 (Figure 15) we see that, unsurprisingly, a usage of more than 12% becomes impossible but that the drop-off in fluency remains remarkably mild, with more than half L5's and exactly half the L6's maintaining fluency at 50% or above. The assumption here is that we are seeing mostly language professionals,

who are presumably linguistically well trained as well as being highly motivated to work on their fluency.

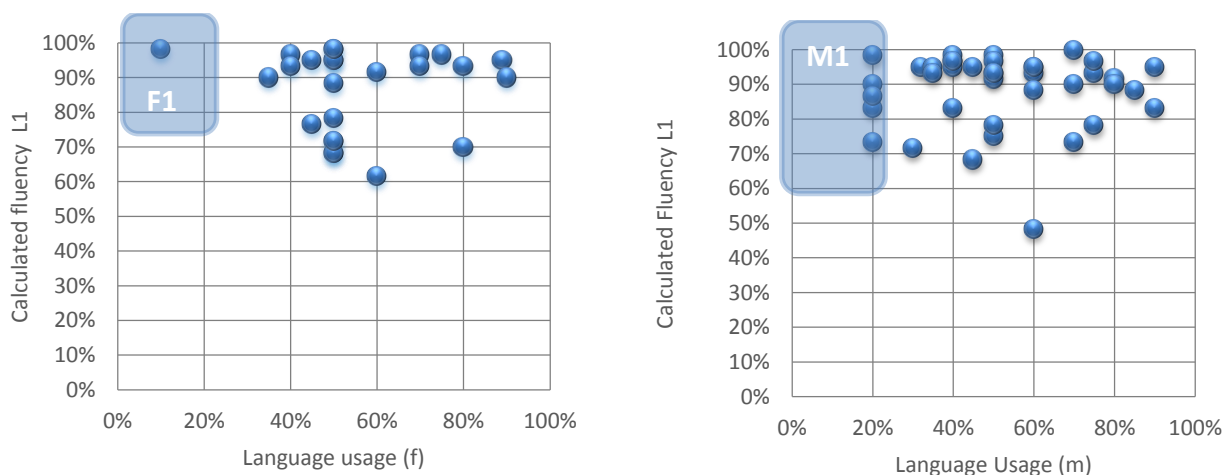


**Figure 15: Fluency versus Usage (L5 + L6)**

The counterintuitive phenomenon of little use with high fluency is found in all diagrams and this is discussed further in the final conclusions.

#### 4.5. Visualization of Gender-Specific Language Use versus Language Fluency

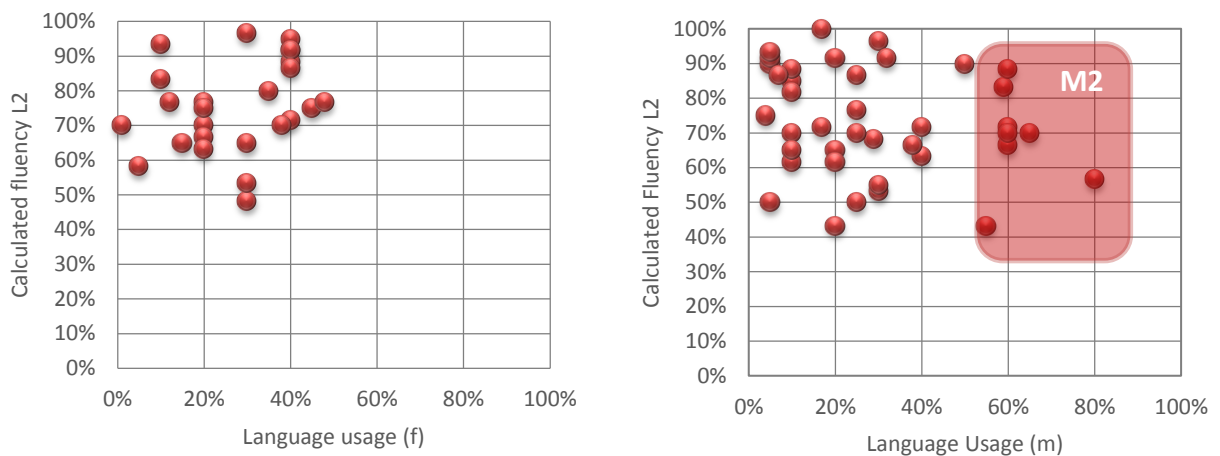
Having established familiarity with this method of visualizing how – for groups of language-users – fluency and proportion of usage can vary, it is, in the context of this study, appropriate to separate the equivalent data for males and females. It should be remembered in all cases that the matrix for the female subjects (the left-hand diagram in each of the following figures) can be expected to be comparatively sparsely populated due to the overall lower proportion of female participants (see Figure 8).



**Figure 16: L1 Fluency versus Usage (f/m)**

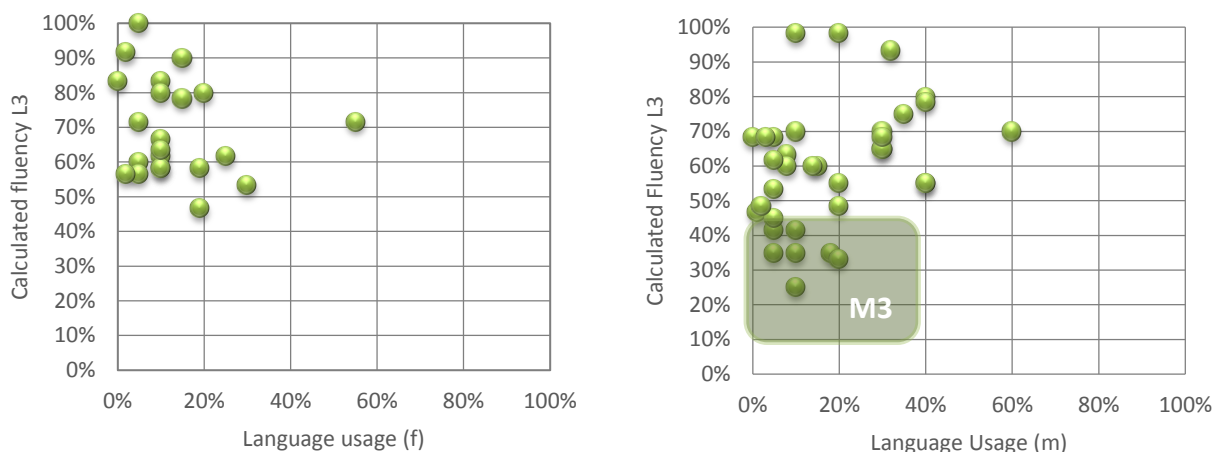
Beginning with L1 there is relatively little real difference between the male and female language fluency. All but one of the subjects in each group reaches a fluency of 68% or above. The spread of language usage is quite uniform except for a noticeable group of 5 males (marked in the diagram as M1), who only report 20% usage of L1. Even these (as well as the one female, denoted

as F1, with just 5% usage) have a high level of fluency of above 70%. For further discussion of F1 refer to section 4.6.2.



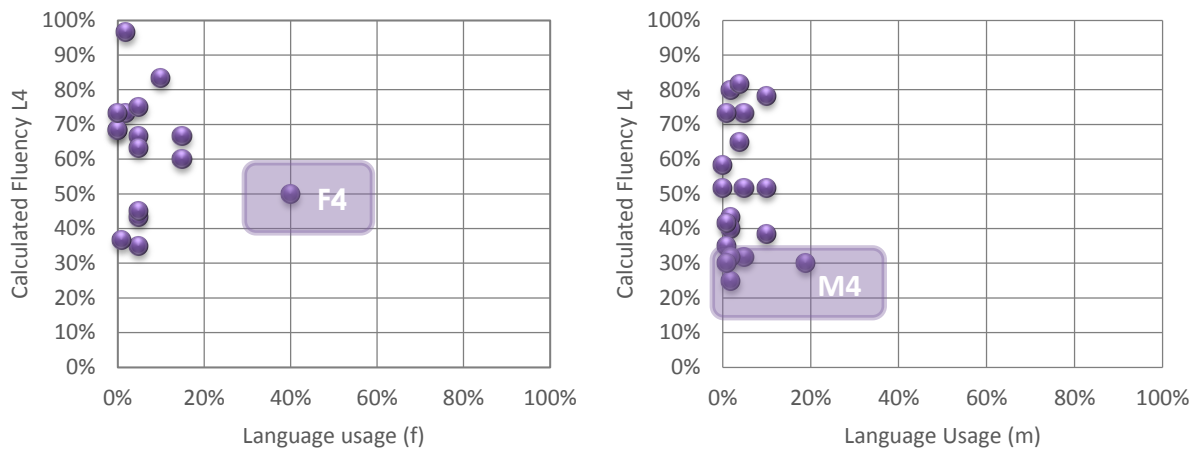
**Figure 17: L2 Fluency versus Usage (f/m)**

With L2 (Figure 17) there is, once again, an even spread of fluency – almost completely above 50% - for both genders. However, there is a remarkable group of males (marked as M2) who have a more dominant level of usage of 50% and above. The fluency level of this group nonetheless matches the rest of the male and female subjects and it is reasonable to view this group as a pendant to the M1 group in Figure 16, i.e. a lower usage %-age of L1 has to be compensated elsewhere – either in L2 (most probable) or in L3 – L6. More analysis of these particular male participants – M1 and M2 - follows later (in sections 4.6.1 and 4.6.3 respectively).



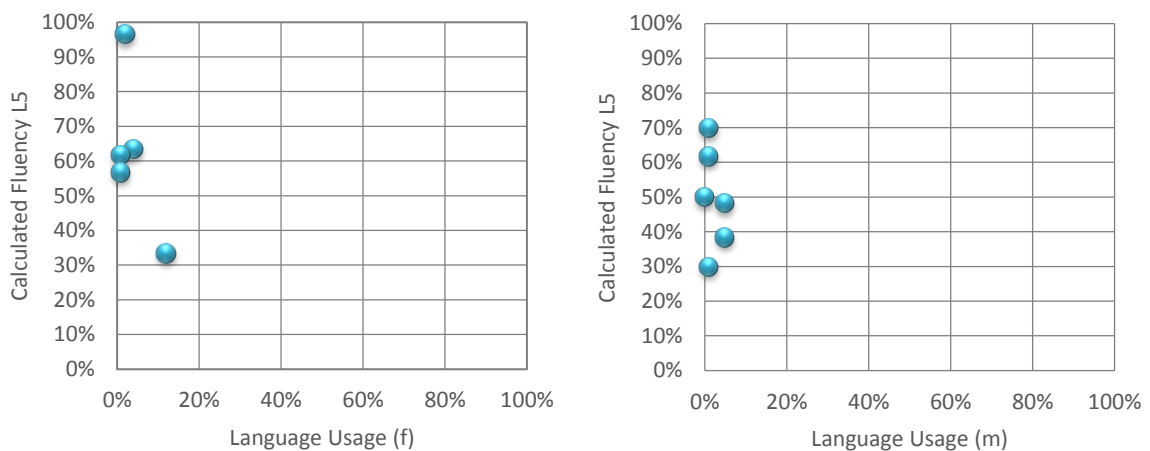
**Figure 18: L3 Fluency versus Usage (f/m)**

The visualization of L3 reveals the first significant discrepancy in *fluency* between males and females. A group of 7 males (marked as M3 in Figure 18) displays a conspicuously lower level of fluency in L3 than the rest of the male subjects and lower than *all* of the females who entered details of a third language. Excepting this M3 group, the male/female data showed very similar patterns for L3. M3 is further discussed in section 4.6.4.



**Figure 19: L4 Fluency versus Usage (f/m)**

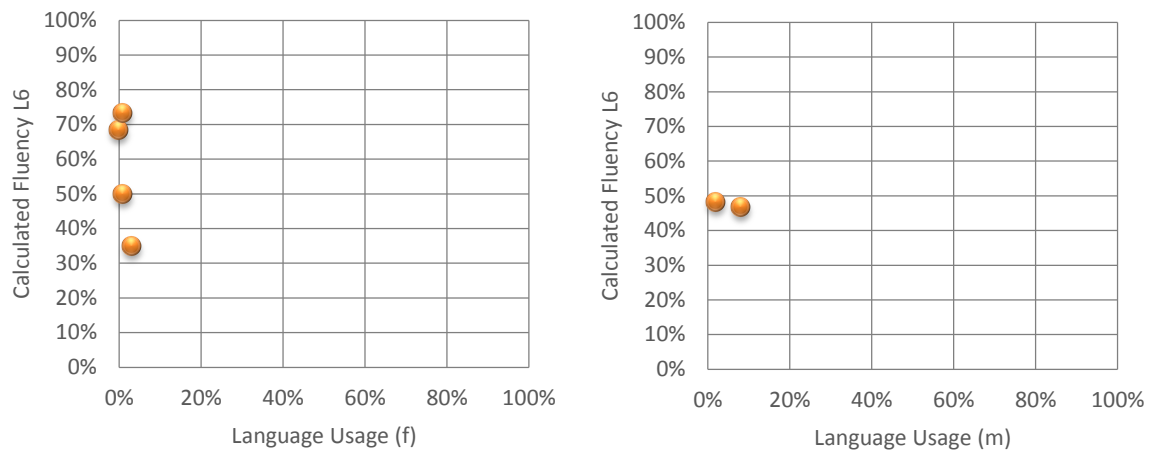
The pattern displayed for L4 is not dissimilar to that of L3. Unsurprisingly, as explained in section 4.4, the usage for L4 is generally down below 20% and the spread of values for fluency is still uniform but spread a little wider. However – as with L3 – there is a group of males (marked in Figure 19 as M4) with a significantly lower fluency level. One other peculiarity is a single female (denoted as F4) with a 40% usage level for L4. Deeper analysis of F4 and M4 follows later (in sections 4.6.5 and 4.6.6 respectively).



**Figure 20: L5 Fluency versus Usage (f/m)**

Analysis of L5 (Figure 20) and L6 (Figure 21) shows little variation in values and spread between male and female fluencies or levels of usage. Indeed, the amount of data available for L5 and L6 when separated according to gender is hardly statistically relevant. It is perhaps interesting to note, though, that despite being in the overall minority as participants in this study, there were more females able to boast of skills in 6 (or more) languages.

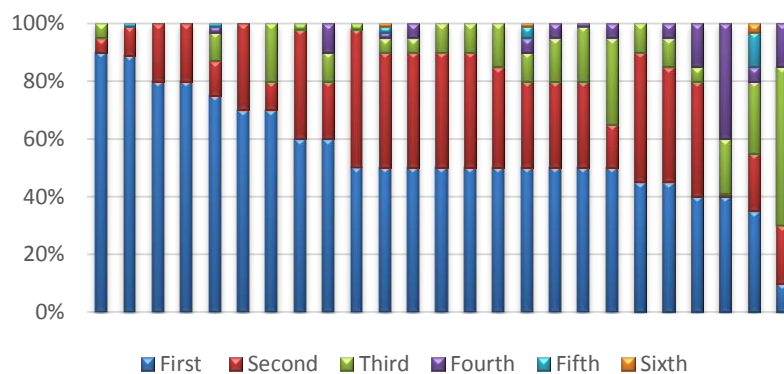




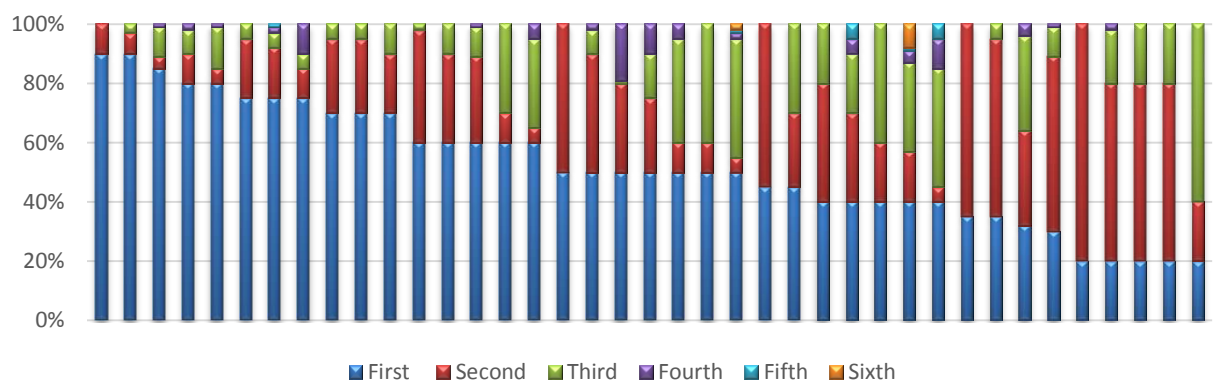
**Figure 21: L6 Fluency versus Usage (f/m)**

#### 4.5.1. Comparison of Language Usage per Gender

Language usage was estimated by all participants of the survey for each of the spoken languages L1 – L6. The sum of the usages of all languages is 100% for each subject, which allows the spectrum of usage to be compared for all the different types of application (general, reading and speaking). To provide an optical comparison, the data are sorted from highest L1 usage to lowest L1 usage for each type of application.



**Figure 22: Time Using L1 - L6 (females)**



**Figure 23: Time Using L1 - L6 (males)**

Comparing the overall language usage between males (Figure 23) and females (Figure 22), many similarities and some minor differences are noted:

- A wide variation in use of L1 exists for both groups, but for males there is a larger set of low L1 usages
- Amongst the men there are significantly more who utilize their L3 than amongst women

#### 4.5.2. Speaking

Comparing the spoken language usage between males (Figure 25) and females (Figure 24), a different picture emerges compared to the overall usage:

- There are 10 males who speak L1 as much as 90% of the time, whilst among the women only 1 is monolingual to this degree.
- There are many more men speaking 3 languages in a balanced way than is the case by the women.

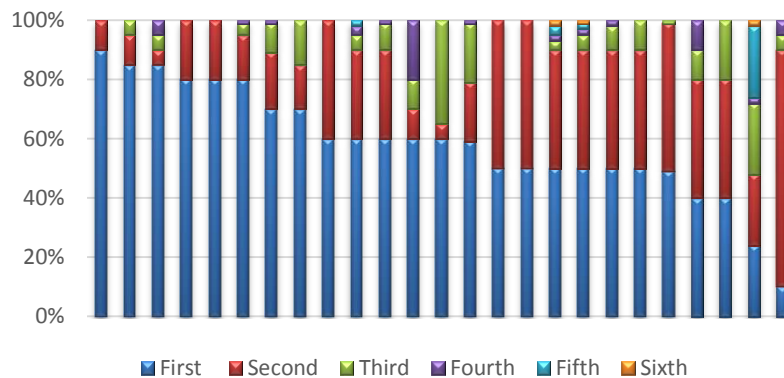


Figure 24: Time Speaking L1 - L6 (females)

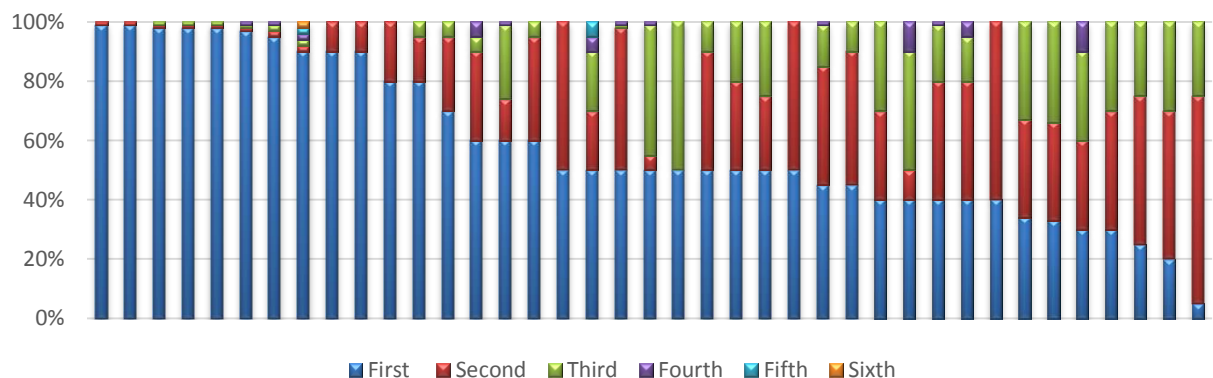


Figure 25: Time Speaking L1 - L6 (males)

### 4.5.3. Reading

When reading, the men are not as dependent on L1 as in oral usage. The more balanced oral usage of L1, L2 and L3 becomes much more bilingual when reading, which is perhaps an indication of more professional use of L2 and more casual use of L3. Amongst the women, the amount read seems to compare well with the proportion of time speaking each of the languages. Only 2 or 3 individual differences can be noted.

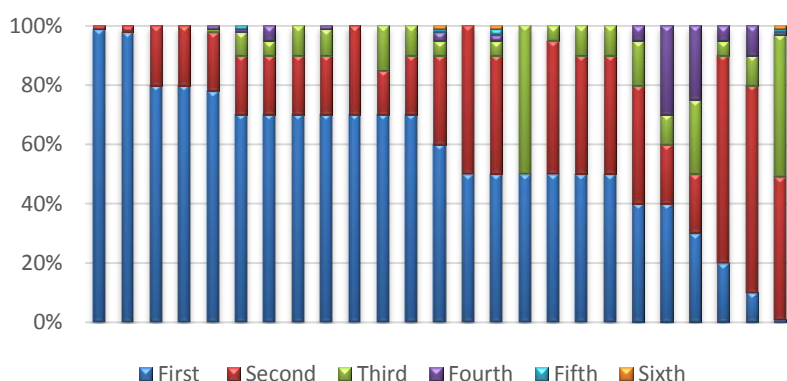


Figure 26: Time Reading L1 - L6 (females)

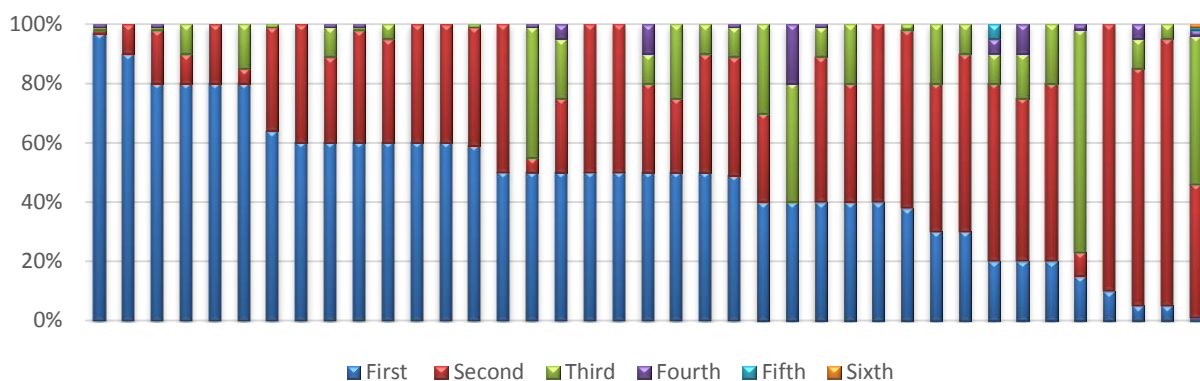


Figure 27: Time Reading L1 - L6 (males)

## 4.6. Individual Analyses of Anomalous Groups

In section 4.5.1 several groups of participants were identified, which contain patterns displaying divergent properties when comparing male and female usage/fluency factors. In the following sections an analysis of the raw data for those individual subjects in each group is undertaken, to better understand and explain the reasons behind the apparent anomalies.

### 4.6.1. Group M1

Group M1 contains 5 males who report a usage of L1 as low as 20% despite fluency levels of between 73% and 98%. All are now resident in Switzerland, but none were born or brought up in Switzerland. 4 out of 5 group-members name English as L2

A single member of the group uses L3 for 60% of the time and this appears to be attributable to family interactions. It should be mentioned that in terms of preference he barely discriminates in terms of fluency and personal preference between L2 (English) and L3 (German).

The remaining 4 group-members use their L2 between 60 and 80% of the time and they are – as expected – also members of group M2 (see also 4.5 and 4.6.3). One of these four uses his L2 (German) for family interaction and professional purposes. The other 3 have hardly any family interactions in L2 and appear<sup>68</sup> to use L2 professionally.

#### **4.6.2. Group F1**

Group F1 consists of a single female who uses her L1 only 10% of the time but has a calculated fluency of 95%. The explanation seems clearly to be due to L1 being her mother tongue, but not the family language (which is L2) or her professional language (which is L3).

#### **4.6.3. Group M2**

M2 is a group of 8 males who use their L2 more than 50% of the time. Amongst females there is no such usage. The M2 group is very similar to M1 and has 4 common members. All but one of M2 are now resident in Switzerland, none of which being born or brought up in Switzerland. The single person born in Switzerland is conversely now resident abroad. In addition to those also in group M1, all others in M2 use L2 – for the most part - professionally.

To summarize: these men have all moved to a country with a foreign language which they now master and use for a majority of their time. Although no women in the survey display these characteristics, it is – linguistically – a migrational phenomenon, not as such directly attributable to gender.

#### **4.6.4. Group M3**

M3 is a group of 7 males whose language fluency in L3 is below 45%. Amongst the females, *all* had a higher level of fluency for L3. One subject became a fluent speaker of L3 as a young child, but never learnt to read the language. His only significant interaction with the language is via (speaking with) family and some TV viewing. This would seem to be a classic case of *language forgetting*<sup>69</sup>.

Five subjects started learning L3 at a late age (on average 26.8 years) and 2 state that they never (or have not yet) achieved fluency, whilst one other considers himself only fluent in reading. Of the 2 who attained fluency, one spent 10 years perfecting L3 but never lived in an environment where the language is spoken, once again there are aspects of *language forgetting*, here. The other person is linguistically most interesting. He has spent a long time (over 14 years and up to the present day) in an environment where his L3 is spoken, speaks the language only with friends and consumes some TV and radio in L3. This person is widely travelled and seems to have established English (his L2) as his

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<sup>68</sup> A specific question regarding professional use of languages was unfortunately not included in the questionnaire. This would certainly be a helpful addition for future research.

<sup>69</sup> Grosjean F. 2014, p 8

main language of communication wherever he goes, despite never having lived in an English-speaking country. Emotionally, though, he still prefers his mother tongue.

The last subject from the group is still at high school and is still acquiring his L3.

To summarize: this group contains 4 men who have not yet reached fluency in L3. Two others display examples of language loss. One is the classic case of learning a language as a child and having little chance or reason to use the language for many years, the other learnt L3 as an adult but lost fluency having never lived for an extended period in an environment where his L3 is spoken. The last member of group M3 appears to have established English as his lingua franca<sup>70</sup>, causing his L3 – although it is the language of his long-term and current environment – to decline in fluency.

#### **4.6.5. Group F4**

F4 is another single-woman-group, with a remarkable usage of 40% for L4 (English). On analysis of the data it is very hard to understand the exact reason for such a high usage. The subject dislikes reading English (L1 or L3 are preferred), dislikes speaking English (L1 is preferred), whilst nonetheless speaking it in a family context. This seems to be either a very special case (perhaps working for a family, whose preferred language is not the local language) or there may possibly have been some confusion on entering the data (although the time for data-entry was 36 minutes, which seems to be quite unhurried for 4 languages).

#### **4.6.6. Group M4**

M4 is a group of 4 males whose language fluency in L4 is below 35% (see Figure 19). Amongst the females, *all* had a higher level of fluency for L4.

Noticeable is that all in this group have very little preference for reading or speaking L4 (both averaging well below 1%). For L4 a low level is to be expected, but for females the averages were 6% (reading) and 3% (speaking) and for the other males in the group 4% (reading) and 3% (speaking). Two of the group never achieved fluency; one never achieved fluency in reading. This state is known technically as *incipient bilingualism*<sup>71</sup>. The other (the most proficient in L4 of those in group M4) achieved his fluency very quickly (in 1 year), apparently through much interaction with friends in a country where the language is spoken.

To summarize: it seems that 3 of this group have never achieved full fluency and now find little motivation for using L4. The remaining member of the group displays, once again, evidence of *language forgetting*

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<sup>70</sup> Grosjean F. 2014, p 6

<sup>71</sup> Baker & Sienkewicz, The Care and Education of Young Bilinguals: An Introduction for Professionals 2000, p 175

## 5. Conclusion

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To conclude this work the most important results will be summarized and evaluated with respect to the original hypothesis. An appraisal of the success and shortcomings of the techniques used in the experimental phase of the work is made, with some ideas on how this could be improved upon and further advanced. Finally some ideas and recommendations for extending the research started in this project are proposed.

The most significant results attained in this work begin with those in section 4.4 which establish the expected dependency of language fluency to usage. Grosjean asserts<sup>72</sup> that language fluency increases in direct proportion to language usage. The diagrams in Figure 13 - Figure 15 show that, progressing from language L1 to L4 there is – when larger groups of test subjects are observed – a noticeable increase in the *spread* of fluencies. However, for certain individuals we see the counterintuitive phenomenon of low usage with high fluency in all diagrams, even including L5 and L6.

The examination of the original hypothesis - that differences due to gender in multi-language acquisition, fluency and usage are negligible - begins to be addressed more explicitly with the results in section 4.5. Across all languages from L1 to L6 there are 6 anomalous groups which have been identified. There are discrepancies in usage patterns between males and females which are visible in groups M1 and M2 (see discussion in sections 4.6.1 and 4.6.3), where it can be concluded that there is a very different pattern of migration amongst these men that is not observed amongst any of the female subjects. This phenomenon is not directly attributable to gender, but certainly there is an indirect environmental effect. It seems that amongst a measurable portion of this test-group, males are geographically more mobile and this positively affects their language skills.

In terms of gender-specific fluency it is necessary to go as far as L3 and L4 to discover a marked difference. Here, the anomalous groups M3 and M4 are identified, which contain - upon analysis of the individuals in the groups - some special cases of linguistic bias (see especially the analysis in sections 4.6.4 and 4.6.6). Language forgetting is exhibited by two men in M3 and by one male in M4. Incipient bilingualism was discovered in 3 members of M4 and one member of M3. The other single member of M3 displays a case of using a lingua franca (English in this case) to the detriment of his L3, although L3 is the language of the area in which he lives. These phenomena are all well documented in the literature<sup>73</sup>, but it is noteworthy that there are no apparent such occurrences amongst the female participants. The lack of language forgetting may be explained to a degree by the slightly younger average age amongst female participants<sup>74</sup> and would be something that could be further investigated in a follow-up survey with a better balance of gender/age amongst the subjects.

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<sup>72</sup> As referenced in section 4.4

<sup>73</sup> Grosjean F. 2014, p 6,

<sup>74</sup> Being younger they have on average had less time for language regression to take effect.

Incipient bilingualism is certainly not a phenomenon that only exists amongst males. Perhaps there is a difference in attitude here amongst males (who, when answering the questionnaire, were more prepared to give details of languages in which they were not yet fluent) compared to females (who chose not to mention languages except those in which they felt they had strong skills). Psychologically, this is an interesting question indeed, but beyond the scope of this work.

The single participant using English as a lingua franca and losing fluency in his L3 is interesting but statistically inappropriate for further analysis in this work. A further two special cases<sup>75</sup> are documented as F1 and F4 in sections 4.6.2 and 4.6.5 respectively. Further research might include interviews with these 3 participants to confirm the apparent reasons behind these phenomena or to discover the deeper background.

### **5.1. Gender Differences Depending on Types of Language Usage**

In section 4.5.2 a differentiation for spoken language-use with a comparison of the male and female groups was made. There are ten males who speak L1 as much as 90% of the time, whilst among the women only one is monolingual to this degree. However, there are many more men speaking 3 languages in a more balanced way than is the case by the women.

In section 4.5.3 the focus is changed to reading skills. When reading, none of the men are as dependent on L1 as some are in oral usage. The more balanced oral usage of L1, L2 and L3 becomes much more pronounced for reading, which is perhaps an indication of more professional use of L2 and more casual use of L3. There may also be a tie-in here, with the observed higher level of education amongst male subjects (see section 4.2.2); a more academic background indicating a more theoretical handling of certain topics (reading/writing as opposed to conversation). Nonetheless there is still an interesting contradiction here, since the oral trilingualism of some men would suggest almost the opposite of this assertion.

### **5.2. Summary of Conclusions**

The results of this project support the hypothesis attested in the introduction to a large extent, but not overwhelmingly so. There *do* exist significant groups amongst males whose usage/fluency are not mirrored exactly amongst the female group of participants. Furthermore, there are certain discrepancies in the type of language usage (oral versus reading) when comparing L1, L2 and L3.

An explanation for these discrepancies would seem – using the available data – to be attributable to slight differences in the education, migration background and professional status of the males as opposed to the females, but this would need to be verified in a further experiment controlling all of these factors.

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<sup>75</sup> Special cases: because groups F1 and F4 both contain only a single subject

### 5.3. Appraisal of the Experimental Techniques

Utilizing the selected online survey tool for data collection proved to be very advantageous. The survey results were administered and delivered in real time in a form which enabled a multitude of data-analyses to be completed. The choice of a questionnaire approach (as opposed to interviews, tests etc.) yielded the expected high explicitness and deductive results (see Figure 5) required of this introductory survey on the subject of bilingualism.

There are of course several things which could be improved upon. To begin with, the pre-selection of participants was purposefully simplified<sup>76</sup> to ensure that a sufficient array of data could be collected. However, for a more focussed experiment it would be advisable to match more closely the participating group to the topic at hand, whilst controlling all other variable factors<sup>77</sup>. An example could be, to search for equal numbers of males and females, whose ages, migration and educational backgrounds were all very similar. As mentioned in 3.2.3, there are excellent techniques for qualifying participants of bilingual studies, which can include initial screening tests, pre-grouping etc<sup>78</sup>.

A further improvement in the techniques employed in this project would be to include additional questions, which would reduce the ambiguity of some responses. Using LEAP-Q provided an excellent, solid basis for investigating linguistic ability and it is most helpful that the basic questionnaire has been scientifically cross-checked with standardized language tests (see 3.3.2). In the analysis of results some difficulties did arise, which were sometimes a limiting factor. There is no differentiation between code-switching and interference, no questions on *professional* use of the language and no estimation of *written* proficiency. Direct answers to some of these questions would have made the conclusions derived in section 4.6 (Individual Analyses of Anomalous Groups) much simpler and more certain.

### 5.4. Further Research

There are areas of this work which could be expanded upon. Even using the existing raw-data that has been collected, there would be many possibilities to explore such as comparing the language fluency of those with and without immersive language education. One could compare the groups who have higher degrees with those who don't or quite classically those who acquired their languages as children against those who learnt a language as an adult.

Certainly it would now be of great interest to consider a deeper probe of some subjects of this survey using other methods<sup>79</sup> to answer some of the questions raised by this first analysis. A discussion of the options as well as their advantages and disadvantages is provided in section 3.2.2.

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<sup>76</sup> Only a minimum age of 16 and the presence of bilingualism were imposed as restrictions

<sup>77</sup> The comparison of education of participants according to gender in section 4.2.2 displays an undesirable discrepancy between males (higher overall in the categories first degree, masters and doctorate) as opposed to females (over-represented in high school and below)

<sup>78</sup> Building such test-groups is a problem that any linguistic researcher will encounter, but to ensure statistically relevant results, there is no other option.

<sup>79</sup> E.g. testing, interviews, diaries or observation.



Another approach might be, after a period of 1 or 2 years to retest the current participants with the same survey questions. This could provide valuable insights into language attrition (by the older participants) and development of language acquisition (by the younger participants). Such long-term testing could also go some way towards rechecking the hypotheses and interpretations made in this study.

There are also some unused results from the survey, which, due to the restricted volume of this paper, remain unevaluated. There are results – in particular the answers to the open questions and feedback (see Appendix B) – which anybody interested in continuing this work could build upon.

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# Appendix A

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## Interview with Prof. François Grosjean (abridged version)

Interviewee: Prof. François Grosjean  
Title: Professor Emeritus and former Director of the Language and Speech Processing Laboratory at the University of Neuchâtel  
Date: Bern, 26.06.2014  
Interviewer: Janice Butler

**I have two main topics, which I would like to talk about with you: firstly the experimental technique and secondly a discussion of the subject-focus for my paper. As bilingualism is such a vast topic, I have not narrowed down to a specific field yet. Since you have studied it for approximately 40 years and research is still being done with it, I was hoping that you would have some ideas for me.**

**Regarding experimental technique: I decided that as a practical part of my Matura, I would like to conduct an online-questionnaire. I already have some bilinguals and polyglots, who have agreed to participate and I think that I have understood the basics for avoiding most experimental errors.**

**I have based it on the LEAP-Q questionnaire and I am going to add some questions of my own.**

Fine! Just make sure that there are questions on how well your participants know their languages - that is the knowledge aspect - and how often they use their languages. Make sure also that you capture with your questionnaire what I call the Complementarity Principle.

**I was thinking that I would like to set up my hypotheses based on specific aspects that I will concentrate on.**

What you call aspects, we call variables or factors. It is with variables that you organize groups... For example, if you have two groups, you would make them vary on just one variable. You would also make sure that there are enough participants in each group and that they resemble each other (in numbers of women and men, age, educational background, etc.). These are controlling variables to make sure that the groups are more or less comparable ... Statistics are extremely useful because you can actually do statistical tests to see if your groups are different or not.

**In what cases would you consider removing data from the sample?**

You have to be very careful about removing data. It is called, in our jargon, "data purification", and I've spent most of my life telling people to avoid doing so. It is an open door to scientific cheating, so you have to be very careful.

**What do you think about using one or two *open* questions? Is that a good thing to do?**

I particularly like questions whose answers are scale values. I think scales are extremely useful because you are using numbers in a richer way. You will want to read about this in a book on statistics.

Scales can be anchored on either end with “Not at all” and “A lot”, for example, where the numbers go from 1 to 7. Your participants will circle a number. What is beautiful then is that you can set up Excel tables with these numbers and do statistics on them.

**Are there some unproven theories which I might be able to prove or disprove or at least find a deeper understanding to?**

For the Matura I wouldn't be quite so ambitious. Already doing a good descriptive job in which you analyse two groups of people and letting the results speak for themselves would be wonderful... You will have discovered through your readings something that you know about personally but didn't know about in a scientific way. You will have used a questionnaire to find out more about people. You will have analysed your results and hopefully what you find will make sense. That's already fantastic.

**I mentioned that I have a mix of people. I also have a mix of people with and without bilingual schooling like immersion. Is there something there that can be followed?**

That exemplifies what I've been saying, that is that it would be much more exiting if you had two groups of different bilinguals. This is a nice way of having two groups, those who followed a bilingual education and those who didn't.

# Appendix B

## Online Survey Results (Raw-Data)

| Response ID | Time Started     | Date Submitted   | Time for completion | Contact ID | Language | Age | Gender |
|-------------|------------------|------------------|---------------------|------------|----------|-----|--------|
| 49          | 02.07.2014 05:04 | 02.07.2014 05:30 | 00:26:02            | 100039811  | English  | 33  | Male   |
| 38          | 29.06.2014 09:47 | 01.07.2014 09:06 | 23:19:00            | 100039759  | English  | 17  | Female |
| 46          | 02.07.2014 02:46 | 02.07.2014 04:04 | 01:17:50            | 100039754  | English  | 23  | Female |
| 52          | 02.07.2014 10:16 | 02.07.2014 17:23 | 07:06:20            | 100039761  | German   | 32  | Male   |
| 41          | 01.07.2014 08:10 | 01.07.2014 08:40 | 00:29:48            | 100039756  | German   | 36  | Female |
| 11          | 29.06.2014 10:05 | 29.06.2014 10:32 | 00:26:59            | 100039820  | German   | 37  | Female |
| 34          | 30.06.2014 09:26 | 30.06.2014 09:46 | 00:19:48            | 100039809  | German   | 22  | Female |
| 43          | 02.07.2014 01:21 | 02.07.2014 01:50 | 00:28:30            | 100039787  | English  | 53  | Male   |
| 58          | 02.07.2014 11:16 | 03.07.2014 05:13 | 17:56:19            | 100039801  | English  | 45  | Male   |
| 66          | 06.07.2014 13:21 | 06.07.2014 13:48 | 00:27:02            | 100040231  | German   | 17  | Male   |
| 72          | 07.07.2014 06:14 | 07.07.2014 06:32 | 00:17:23            | 100040370  | German   | 53  | Male   |
| 61          | 04.07.2014 16:21 | 04.07.2014 16:44 | 00:23:10            | 100039810  | English  | 17  | Female |
| 67          | 06.07.2014 15:58 | 06.07.2014 16:34 | 00:35:56            | 100040260  | English  | 41  | Female |
| 69          | 07.07.2014 00:04 | 07.07.2014 00:16 | 00:12:23            | 100039800  | German   | 38  | Male   |
| 73          | 07.07.2014 16:20 | 08.07.2014 08:18 | 15:58:10            | 100040367  | German   | 67  | Female |
| 13          | 29.06.2014 10:23 | 29.06.2014 10:51 | 00:27:51            | 100039780  | German   | 17  | Male   |
| 18          | 29.06.2014 14:34 | 29.06.2014 15:08 | 00:33:39            | 100039783  | English  | 45  | Male   |
| 19          | 29.06.2014 15:03 | 29.06.2014 15:36 | 00:33:15            | 100039722  | English  | 17  | Female |
| 20          | 29.06.2014 16:11 | 29.06.2014 16:27 | 00:16:10            | 100039773  | English  | 39  | Female |
| 32          | 30.06.2014 06:43 | 30.06.2014 07:08 | 00:25:41            | 100039757  | English  | 21  | Male   |
| 33          | 30.06.2014 08:29 | 30.06.2014 09:08 | 00:38:43            | 100039819  | English  | 30  | Male   |
| 26          | 30.06.2014 03:07 | 30.06.2014 04:24 | 01:17:20            | 100039818  | German   | 53  | Male   |
| 28          | 30.06.2014 03:56 | 30.06.2014 04:24 | 00:28:21            | 100039786  | English  | 42  | Male   |
| 29          | 30.06.2014 04:14 | 30.06.2014 10:19 | 06:05:16            | 100039765  | German   | 31  | Male   |
| 24          | 30.06.2014 02:44 | 30.06.2014 03:09 | 00:24:21            | 100039802  | English  | 46  | Male   |
| 36          | 30.06.2014 15:25 | 30.06.2014 16:02 | 00:36:27            | 100039772  | German   | 40  | Female |
| 37          | 01.07.2014 03:41 | 03.07.2014 03:29 | 23:47:41            | 100039784  | German   | 24  | Female |
| 39          | 01.07.2014 06:29 | 05.07.2014 20:05 | 13:35:43            | 100039763  | English  | 17  | Female |
| 44          | 02.07.2014 01:59 | 02.07.2014 02:22 | 00:23:23            | 100040258  | English  | 17  | Female |
| 45          | 02.07.2014 01:55 | 05.07.2014 01:47 | 23:51:18            | 100039739  | English  | 36  | Female |
| 47          | 02.07.2014 03:03 | 02.07.2014 03:23 | 00:20:44            | 100039790  | English  | 35  | Male   |
| 59          | 03.07.2014 05:16 | 03.07.2014 09:08 | 03:52:10            | 100039766  | German   | 18  | Female |
| 50          | 02.07.2014 06:57 | 04.07.2014 06:30 | 23:32:32            | 100039817  | English  | 40  | Male   |
| 54          | 02.07.2014 12:14 | 02.07.2014 12:49 | 00:35:07            | 100039755  | English  | 20  | Male   |
| 55          | 02.07.2014 16:36 | 02.07.2014 17:17 | 00:40:53            | 100040357  | German   | 30  | Male   |
| 51          | 02.07.2014 08:31 | 02.07.2014 23:25 | 14:53:50            | 100039793  | English  | 34  | Male   |
| 5           | 29.06.2014 09:35 | 29.06.2014 09:55 | 00:19:11            | 100039782  | English  | 23  | Male   |
| 6           | 29.06.2014 09:39 | 29.06.2014 09:58 | 00:18:42            | 100039807  | German   | 31  | Male   |
| 23          | 30.06.2014 02:02 | 30.06.2014 02:17 | 00:15:07            | 100039762  | English  | 36  | Male   |

|    |                  |                  |          |           |         |    |        |
|----|------------------|------------------|----------|-----------|---------|----|--------|
| 25 | 30.06.2014 02:53 | 30.06.2014 03:06 | 00:13:08 | 100039781 | English | 36 | Female |
| 27 | 30.06.2014 03:42 | 30.06.2014 04:37 | 00:54:42 | 100039774 | German  | 39 | Male   |
| 31 | 30.06.2014 05:07 | 30.06.2014 05:25 | 00:17:38 | 100039813 | English | 30 | Male   |
| 35 | 30.06.2014 09:26 | 30.06.2014 09:47 | 00:21:14 | 100039771 | English | 46 | Male   |
| 40 | 01.07.2014 06:37 | 01.07.2014 06:58 | 00:20:38 | 100039808 | English | 50 | Male   |
| 42 | 01.07.2014 00:39 | 04.07.2014 05:25 | 04:46:12 | 100040230 | English | 16 | Female |
| 48 | 02.07.2014 03:06 | 02.07.2014 03:23 | 00:16:47 | 100039798 | German  | 52 | Male   |
| 53 | 02.07.2014 11:20 | 02.07.2014 13:03 | 01:42:50 | 100039789 | German  | 33 | Female |
| 8  | 29.06.2014 09:47 | 29.06.2014 10:18 | 00:31:10 | 100039721 | English | 51 | Male   |
| 10 | 29.06.2014 10:00 | 29.06.2014 10:15 | 00:14:58 | 100039779 | English | 16 | Male   |
| 15 | 29.06.2014 10:54 | 29.06.2014 11:22 | 00:27:54 | 100039816 | German  | 17 | Female |
| 56 | 03.07.2014 02:24 | 03.07.2014 03:00 | 00:36:24 | 100040355 | English | 28 | Female |
| 17 | 29.06.2014 12:51 | 02.07.2014 18:39 | 05:48:32 | 100039797 | English | 38 | Male   |
| 21 | 29.06.2014 16:13 | 29.06.2014 16:26 | 00:12:53 | 100039785 | English | 17 | Male   |
| 57 | 03.07.2014 02:33 | 03.07.2014 02:56 | 00:23:07 | 100040264 | German  | 50 | Male   |
| 65 | 06.07.2014 11:26 | 06.07.2014 11:42 | 00:16:30 | 100039812 | English | 33 | Male   |
| 70 | 07.07.2014 04:06 | 07.07.2014 05:29 | 01:23:13 | 100039777 | English | 35 | Male   |
| 63 | 05.07.2014 04:04 | 05.07.2014 04:27 | 00:22:06 | 100040366 | German  | 50 | Female |
| 7  | 29.06.2014 09:43 | 29.06.2014 10:12 | 00:29:04 | 100039738 | German  | 54 | Female |
| 14 | 29.06.2014 10:39 | 29.06.2014 10:56 | 00:16:47 | 100039758 | English | 39 | Male   |
| 16 | 29.06.2014 12:30 | 29.06.2014 12:46 | 00:16:52 | 100039767 | English | 31 | Male   |
| 22 | 29.06.2014 16:40 | 05.07.2014 09:29 | 16:49:18 | 100039788 | English | 37 | Male   |
| 60 | 04.07.2014 01:56 | 04.07.2014 02:08 | 00:11:34 | 100040263 | German  | 42 | Female |
| 62 | 05.07.2014 02:24 | 05.07.2014 02:35 | 00:10:42 | 100039736 | German  | 16 | Female |
| 64 | 05.07.2014 22:58 | 05.07.2014 23:11 | 00:12:45 | 100039768 | English | 45 | Male   |



| Response ID | Languages in order of strength |           |                 |            |                     |                           |
|-------------|--------------------------------|-----------|-----------------|------------|---------------------|---------------------------|
|             | First                          | Second    | Third           | Fourth     | Fifth               | Sixth                     |
| 49          | Swiss German                   | German    | English         | Latin      | French              | Russian, Swedish, Serbian |
| 38          | Swiss German                   | German    | English         | French     | Chinese (Cantonese) | Chinese (Mandarin)        |
| 46          | Spanish                        | German    | English         | French     | Italian             | Portuguese                |
| 52          | German                         | Hungarian | English         | French     | Italian             | Russian                   |
| 41          | German                         | Spanish   | Italian         | Portuguese | English             | French                    |
| 11          | Spanish                        | German    | Galizisch       | Italian    | French              | English                   |
| 34          | German                         | English   | French          | Italian    | Portuguese          |                           |
| 43          | French                         | Italian   | German          | English    | Japanese            |                           |
| 58          | German                         | English   | French          | Spanish    | Italian             |                           |
| 66          | Swiss German                   | German    | English         | French     | Italian             |                           |
| 72          | German                         | English   | French          | Italian    | Latein              |                           |
| 61          | German                         | English   | French          | Spanish    |                     |                           |
| 67          | Hungarian                      | French    | German          | English    |                     |                           |
| 69          | German                         | French    | English         | Turkish    |                     |                           |
| 73          | German                         | French    | Italian         | English    |                     |                           |
| 13          | German                         | Croatian  | English         | French     |                     |                           |
| 18          | Italian                        | English   | German          | French     |                     |                           |
| 19          | English                        | German    | Swiss German    | French     |                     |                           |
| 20          | German                         | English   | Swedish         | French     |                     |                           |
| 32          | German                         | French    | English         | Russian    |                     |                           |
| 33          | Swiss German                   | German    | French          | English    |                     |                           |
| 26          | French                         | German    | English         | Italian    |                     |                           |
| 28          | German                         | English   | French          | Spanish    |                     |                           |
| 29          | German                         | Spanish   | English         | French     |                     |                           |
| 24          | German                         | French    | English         | Italian    |                     |                           |
| 36          | Hungarian                      | Rumanian  | German          | English    |                     |                           |
| 37          | German                         | Croatian  | English         | French     |                     |                           |
| 39          | German                         | English   | Indian Language | French     |                     |                           |
| 44          | German                         | English   | French          | Italian    |                     |                           |
| 45          | English                        | Hindi     | Marathi         | gujarati   |                     |                           |
| 47          | Portuguese                     | English   | Spanish         | German     |                     |                           |
| 59          | German                         | English   | French          | Italian    |                     |                           |
| 50          | German                         | Italian   | French          | English    |                     |                           |
| 54          | German                         | English   | Albanian        | French     |                     |                           |
| 55          | German                         | English   | French          | Italian    |                     |                           |
| 51          | English                        | Hindi     | German          | Nepalese   |                     |                           |
| 5           | German                         | English   | Tamil           |            |                     |                           |
| 6           | German                         | French    | English         |            |                     |                           |
| 23          | German                         | English   | French          |            |                     |                           |
| 25          | French                         | English   | Greek           |            |                     |                           |
| 27          | German                         | English   | Vietnamese      |            |                     |                           |
| 31          | Hindi                          | English   | German          |            |                     |                           |
| 35          | English                        | French    | German          |            |                     |                           |

|    |            |              |         |
|----|------------|--------------|---------|
| 40 | Italian    | English      | German  |
| 42 | German     | English      | French  |
| 48 | Croatian   | German       | English |
| 53 | German     | Danish       | English |
| 8  | English    | German       | French  |
| 10 | Spanish    | English      | German  |
| 15 | German     | Croatian     | English |
| 56 | Swedish    | English      | Finnish |
| 17 | Turkish    | English      | German  |
| 21 | German     | English      | French  |
| 57 | German     | Dutch        | English |
| 65 | Filipino   | English      | German  |
| 70 | Bulgarian  | English      | Russian |
| 63 | English    | Swiss German | German  |
| 7  | German     | English      |         |
| 14 | Italian    | English      |         |
| 16 | Italian    | English      |         |
| 22 | Portuguese | English      |         |
| 60 | German     | Italian      |         |
| 62 | German     | French       |         |
| 64 | English    | German       |         |

| Response ID | Languages in order of acquisition |        |       |        |       |       | Languages in order of emotionality |        |       |        |       |       | Percentage of time using language |        |       |        |       |       |
|-------------|-----------------------------------|--------|-------|--------|-------|-------|------------------------------------|--------|-------|--------|-------|-------|-----------------------------------|--------|-------|--------|-------|-------|
|             | First                             | Second | Third | Fourth | Fifth | Sixth | First                              | Second | Third | Fourth | Fifth | Sixth | First                             | Second | Third | Fourth | Fifth | Sixth |
| 49          | L1                                | L2     | L5    | L4     | L3    | L6    | L1                                 | L3     | L2    | L6     | L5    | L4    | 50%                               | 5%     | 40%   | 2%     | 1%    | 2%    |
| 38          | L1                                | L5     | L2    | L3     | L4    | L6    | L3                                 | L1     | L5    | L2     | L4    | L6    | 35%                               | 20%    | 25%   | 5%     | 12%   | 3%    |
| 46          | L1                                | L2     | L3    | L5     | L4    | L6    | L1                                 | L2     | L3    | L5     | L4    | L6    | 50%                               | 30%    | 10%   | 5%     | 4%    | 1%    |
| 52          | L1                                | L2     | L4    | L3     | L5    | L6    | L1                                 | L2     | L4    | L3     | L5    | L6    | 40%                               | 17%    | 30%   | 4%     | 1%    | 8%    |
| 41          | L2                                | L1     | L3    | L6     | L4    | L5    | L2                                 | L1     | L3    | L5     | L6    | L4    | 89%                               | 10%    | 0%    | 0%     | 1%    | 0%    |
| 11          | L1                                | L3     | L2    | L4     | L5    | L6    | L1                                 | L3     | L5    | L2     | L4    | L6    | 50%                               | 40%    | 5%    | 2%     | 2%    | 1%    |
| 34          | L1                                | L3     | L2    | L4     | L5    |       | L1                                 | L2     | L3    | L4     | L5    |       | 75%                               | 12%    | 10%   | 2%     | 1%    |       |
| 43          | L2                                | L1     | L4    | L3     | L5    |       | L1                                 | L3     | L2    | L4     | L5    |       | 40%                               | 5%     | 40%   | 10%    | 5%    |       |
| 58          | L1                                | L2     | L2    | L3     | L4    |       | L1                                 | L1     | L2    | L3     | L4    |       | 50%                               | 50%    | 0%    | 0%     | 0%    |       |
| 66          | L1                                | L2     | L4    | L3     | L5    |       | L1                                 | L2     | L3    | L5     | L4    |       | 75%                               | 17%    | 5%    | 2%     | 1%    |       |
| 72          | L1                                | L3     | L2    | L4     | L5    |       | L2                                 | L3     | L1    | L4     | L5    |       | 40%                               | 30%    | 20%   | 5%     | 5%    |       |
| 61          | L1                                | L2     | L3    | L4     |       |       | L2                                 | L1     | L3    | L4     |       |       | 45%                               | 40%    | 10%   | 5%     |       |       |
| 67          | L1                                | L4     | L2    | L3     |       |       | L1                                 | L2     | L3    | L4     |       |       | 10%                               | 20%    | 55%   | 15%    |       |       |
| 69          | L1                                | L2     | L3    | L4     |       |       | L1                                 | L2     | L3    | L4     |       |       | 75%                               | 10%    | 5%    | 10%    |       |       |
| 73          | L2                                | L1     | L3    | L4     |       |       | L2                                 | L3     | L1    | L4     |       |       | 50%                               | 40%    | 5%    | 5%     |       |       |
| 13          | L2                                | L1     | L4    | L3     |       |       | L2                                 | L3     | L1    | L4     |       |       | 50%                               | 40%    | 8%    | 2%     |       |       |
| 18          | L1                                | L2     | L4    | L3     |       |       | L2                                 | L1     |       |        |       |       | 20%                               | 60%    | 18%   | 2%     |       |       |
| 19          | L1                                | L2     | L3    | L4     |       |       | L1                                 | L2     | L3    | L4     |       |       | 50%                               | 30%    | 15%   | 5%     |       |       |
| 20          | L1                                | L4     | L2    | L3     |       |       | L2                                 | L1     |       |        |       |       | 40%                               | 40%    | 5%    | 15%    |       |       |
| 32          | L1                                | L2     | L3    | L4     |       |       | L3                                 | L1     | L4    | L2     |       |       | 60%                               | 5%     | 30%   | 5%     |       |       |
| 33          | L3                                | L1     | L2    | L4     |       |       | L3                                 | L1     | L2    | L4     |       |       | 50%                               | 10%    | 35%   | 5%     |       |       |
| 26          | L1                                | L2     | L4    | L3     |       |       | L1                                 | L2     | L4    | L3     |       |       | 60%                               | 29%    | 10%   | 1%     |       |       |
| 28          | L1                                | L2     | L3    | L4     |       |       | L1                                 | L2     | L3    | L4     |       |       | 80%                               | 10%    | 8%    | 2%     |       |       |
| 29          | L2                                | L3     | L1    | L4     |       |       | L2                                 | L3     | L1    | L4     |       |       | 50%                               | 25%    | 15%   | 10%    |       |       |
| 24          | L1                                | L2     | L3    | L4     |       |       | L1                                 | L2     | L3    | L4     |       |       | 80%                               | 5%     | 14%   | 1%     |       |       |
| 36          | L1                                | L2     | L4    | L3     |       |       | L1                                 | L4     | L3    | L2     |       |       | 40%                               | 1%     | 19%   | 40%    |       |       |
| 37          | L2                                | L1     | L4    | L3     |       |       | L2                                 | L3     | L1    | L4     |       |       | 45%                               | 45%    | 10%   | 0%     |       |       |
| 39          | L3                                | L1     | L2    | L4     |       |       | L1                                 | L3     | L2    | L4     |       |       | 50%                               | 15%    | 30%   | 5%     |       |       |
| 44          | L1                                | L3     | L2    | L4     |       |       | L1                                 | L2     | L3    | L4     |       |       | 50%                               | 35%    | 15%   | 0%     |       |       |
| 45          | L4                                | L3     | L1    | L2     |       |       | L4                                 | L1     | L2    | L3     |       |       | 60%                               | 20%    | 10%   | 10%    |       |       |
| 47          | L1                                | L3     | L2    | L4     |       |       | L1                                 | L2     | L3    | L4     |       |       | 50%                               | 30%    | 1%    | 19%    |       |       |
| 59          | L1                                | L3     | L2    | L4     |       |       | L2                                 | L1     | L4    | L3     |       |       | 50%                               | 30%    | 19%   | 1%     |       |       |
| 50          | L1                                | L2     | L3    | L4     |       |       | L2                                 | L1     | L3    | L4     |       |       | 32%                               | 32%    | 32%   | 4%     |       |       |
| 54          | L1                                | L2     | L3    | L4     |       |       | L1                                 | L3     | L2    | L4     |       |       | 85%                               | 4%     | 10%   | 1%     |       |       |
| 55          | L1                                | L3     | L2    | L4     |       |       | L1                                 | L2     | L3    | L4     |       |       | 30%                               | 59%    | 10%   | 1%     |       |       |
| 51          | L2                                | L1     | L4    | L3     |       |       | L2                                 | L1     |       |        |       |       | 70%                               | 20%    | 10%   | 0%     |       |       |
| 5           | L1                                | L3     | L2    |        |       |       | L1                                 | L3     | L2    |        |       |       | 50%                               | 10%    | 40%   |        |       |       |
| 6           | L1                                | L2     | L3    |        |       |       | L1                                 | L3     | L2    |        |       |       | 60%                               | 10%    | 30%   |        |       |       |
| 23          | L1                                | L3     | L2    |        |       |       | L1                                 | L2     | L3    |        |       |       | 70%                               | 25%    | 5%    |        |       |       |
| 25          | L1                                | L3     | L2    |        |       |       | L1                                 | L2     | L3    |        |       |       | 50%                               | 48%    | 2%    |        |       |       |
| 27          | L3                                | L1     | L2    |        |       |       | L3                                 | L1     | L2    |        |       |       | 75%                               | 20%    | 5%    |        |       |       |
| 31          | L1                                | L2     | L3    |        |       |       | L1                                 | L2     | L3    |        |       |       | 60%                               | 30%    | 10%   |        |       |       |
| 35          | L1                                | L2     | L3    |        |       |       | L2                                 | L1     | L3    |        |       |       | 45%                               | 25%    | 30%   |        |       |       |
| 40          | L1                                | L3     | L2    |        |       |       | L1                                 | L3     | L2    |        |       |       | 20%                               | 20%    | 60%   |        |       |       |
| 42          | L1                                | L2     | L3    |        |       |       | L1                                 | L2     | L3    |        |       |       | 50%                               | 40%    | 10%   |        |       |       |
| 48          | L1                                | L3     | L2    |        |       |       | L2                                 | L1     | L3    |        |       |       | 20%                               | 60%    | 20%   |        |       |       |
| 53          | L1                                | L2     | L3    |        |       |       | L1                                 | L2     | L3    |        |       |       | 90%                               | 5%     | 5%    |        |       |       |
| 8           | L1                                | L3     | L2    |        |       |       | L1                                 | L2     | L3    |        |       |       | 35%                               | 60%    | 5%    |        |       |       |
| 10          | L1                                | L2     | L3    |        |       |       | L1                                 | L2     | L3    |        |       |       | 40%                               | 20%    | 40%   |        |       |       |
| 15          | L1                                | L2     | L3    |        |       |       | L2                                 | L1     | L3    |        |       |       | 50%                               | 40%    | 10%   |        |       |       |
| 56          | L1                                | L3     | L2    |        |       |       | L1                                 | L3     | L2    |        |       |       | 70%                               | 10%    | 20%   |        |       |       |
| 17          | L1                                | L2     | L3    |        |       |       | L1                                 | L2     | L3    |        |       |       | 40%                               | 40%    | 20%   |        |       |       |
| 21          | L1                                | L3     | L2    |        |       |       | L1                                 | L2     | L3    |        |       |       | 70%                               | 25%    | 5%    |        |       |       |
| 57          | L2                                | L1     | L3    |        |       |       | L2                                 | L1     | L3    |        |       |       | 90%                               | 7%     | 3%    |        |       |       |
| 65          | L1                                | L2     | L3    |        |       |       | L2                                 | L3     | L1    |        |       |       | 20%                               | 60%    | 20%   |        |       |       |
| 70          | L1                                | L3     | L2    |        |       |       | L1                                 | L2     |       |        |       |       | 60%                               | 38%    | 2%    |        |       |       |
| 63          | L1                                | L3     | L2    |        |       |       | L1                                 | L2     | L3    |        |       |       | 60%                               | 38%    | 2%    |        |       |       |
| 7           | L1                                | L2     |       |        |       |       | L1                                 | L2     |       |        |       |       | 80%                               | 20%    |       |        |       |       |
| 14          | L1                                | L2     |       |        |       |       | L1                                 | L2     |       |        |       |       | 45%                               | 55%    |       |        |       |       |
| 16          | L1                                | L2     |       |        |       |       | L1                                 | L2     |       |        |       |       | 35%                               | 65%    |       |        |       |       |
| 22          | L1                                | L2     |       |        |       |       | L1                                 | L2     |       |        |       |       | 20%                               | 80%    |       |        |       |       |
| 60          | L1                                | L2     |       |        |       |       | L1                                 | L2     |       |        |       |       | 80%                               | 20%    |       |        |       |       |
| 62          | L1                                | L2     |       |        |       |       | L2                                 | L1     |       |        |       |       | 70%                               | 30%    |       |        |       |       |
| 64          | L1                                | L2     |       |        |       |       | L1                                 | L2     |       |        |       |       | 90%                               | 10%    |       |        |       |       |

| Response ID | Percentage time preferred for reading language |        |       |        |       |       | Percentage time preferred for speaking language |        |       |        |       |       |
|-------------|--|--------|-------|--------|-------|-------|---|--------|-------|--------|-------|-------|
|             | First  | Second | Third | Fourth | Fifth | Sixth | First   | Second | Third | Fourth | Fifth | Sixth |
| 49          | 1%   | 45%    | 50%   | 2%     | 1%    | 1%    | 90%   | 2%     | 2%    | 2%     | 2%    | 2%    |
| 38          | 1%   | 48%    | 48%   | 1%     | 1%    | 1%    | 24%   | 24%    | 24%   | 2%     | 24%   | 2%    |
| 46          | 60%  | 30%    | 5%    | 3%     | 1%    | 1%    | 50%   | 40%    | 3%    | 2%     | 3%    | 2%    |
| 52          | 40%  | 30%    | 30%   |        |       |       | 40%   | 30%    | 30%   |        |       |       |
| 41          | 50%  | 50%    |       |        |       |       | 50%   | 50%    |       |        |       |       |
| 11          | 50%  | 40%    | 5%    | 2%     | 2%    | 1%    | 50%   | 40%    | 5%    | 2%     | 2%    | 1%    |
| 34          | 70%  | 20%    | 8%    | 1%     | 1%    |       | 60%   | 30%    | 5%    | 3%     | 2%    |       |
| 43          | 40%  |        | 40%   | 20%    |       |       | 40%   | 10%    | 40%   | 10%    |       |       |
| 58          | 50%  | 50%    |       |        |       |       | 50%   | 50%    |       |        |       |       |
| 66          | 5%   | 80%    | 10%   | 5%     |       |       | 95%   | 2%     | 2%    | 1%     |       |       |
| 72          | 20%  | 60%    | 10%   | 5%     | 5%    |       | 50%   | 20%    | 20%   | 5%     | 5%    |       |
| 61          | 20%  | 70%    | 5%    | 5%     |       |       | 40%   | 40%    | 10%   | 10%    |       |       |
| 67          | 30%  | 20%    | 25%   | 25%    |       |       | 59%   | 20%    | 20%   | 1%     |       |       |
| 69          | 97%  | 1%     | 1%    | 1%     |       |       | 50%   | 48%    | 1%    | 1%     |       |       |
| 73          | 40%  | 40%    | 15%   | 5%     |       |       | 50%   | 40%    | 8%    | 2%     |       |       |
| 13          | 15%  | 8%     | 75%   | 2%     |       |       | 45%   | 40%    | 14%   | 1%     |       |       |
| 18          | 60%  | 40%    |       |        |       |       | 80%   | 20%    |       |        |       |       |
| 19          | 70%  | 20%    | 5%    | 5%     |       |       | 80%   | 15%    | 4%    | 1%     |       |       |
| 20          | 10%  | 70%    | 10%   | 10%    |       |       | 10%   | 80%    | 5%    | 5%     |       |       |
| 32          | 50%  | 5%     | 44%   | 1%     |       |       | 50%   | 5%     | 44%   | 1%     |       |       |
| 33          | 20%  | 55%    | 15%   | 10%    |       |       | 50%   |        | 50%   |        |       |       |
| 26          | 60%  | 29%    | 10%   | 1%     |       |       | 60%   | 30%    | 5%    | 5%     |       |       |
| 28          | 60%  | 38%    | 1%    | 1%     |       |       | 30%   | 30%    | 30%   | 10%    |       |       |
| 29          | 50%  | 25%    | 20%   | 5%     |       |       | 25%   | 50%    | 25%   |        |       |       |
| 24          | 40%  | 49%    | 10%   | 1%     |       |       | 40%   | 40%    | 19%   | 1%     |       |       |
| 36          | 50%  |        | 50%   |        |       |       | 85%   | 5%     | 5%    | 5%     |       |       |
| 37          | 70%  | 20%    | 10%   |        |       |       | 60%   | 40%    |       |        |       |       |
| 39          | 78%  | 20%    | 1%    | 1%     |       |       | 70%   | 19%    | 10%   | 1%     |       |       |
| 44          | 50%  | 45%    | 5%    |        |       |       | 40%   | 40%    | 20%   |        |       |       |
| 45          | 40%  | 20%    | 10%   | 30%    |       |       | 60%   | 10%    | 10%   | 20%    |       |       |
| 47          | 80%  | 18%    | 1%    | 1%     |       |       | 97%   | 1%     | 1%    | 1%     |       |       |
| 59          | 70%  | 20%    | 9%    | 1%     |       |       | 60%   | 30%    | 9%    | 1%     |       |       |
| 50          | 50%  | 50%    |       |        |       |       | 40%   | 40%    | 15%   | 5%     |       |       |
| 54          | 50%  | 50%    |       |        |       |       | 60%   | 14%    | 25%   | 1%     |       |       |
| 55          | 49%  | 40%    | 10%   | 1%     |       |       | 50%   | 40%    | 10%   |        |       |       |
| 51          | 50%  | 30%    | 10%   | 10%    |       |       | 50%   | 30%    | 20%   |        |       |       |
| 5           | 59%  | 40%    | 1%    |        |       |       | 33%   | 33%    | 34%   |        |       |       |
| 6           | 80%  | 10%    | 10%   |        |       |       | 98%   | 1%     | 1%    |        |       |       |
| 23          | 90%  | 10%    |       |        |       |       | 90%   | 10%    |       |        |       |       |
| 25          | 70%  | 30%    |       |        |       |       | 60%   | 5%     | 35%   |        |       |       |
| 27          | 80%  | 20%    |       |        |       |       | 70%   | 25%    | 5%    |        |       |       |
| 31          | 5%   | 90%    | 5%    |        |       |       | 80%   | 15%    | 5%    |        |       |       |
| 35          | 40%  | 40%    | 20%   |        |       |       | 34%   | 33%    | 33%   |        |       |       |

|    |     |     |     |     |     |     |
|----|-----|-----|-----|-----|-----|-----|
| 40 | 50% | 25% | 25% | 50% | 25% | 25% |
| 42 | 50% | 40% | 10% | 50% | 40% | 10% |
| 48 | 30% | 50% | 20% | 20% | 50% | 30% |
| 53 | 70% | 15% | 15% | 70% | 15% | 15% |
| 8  | 60% | 35% | 5%  | 45% | 45% | 10% |
| 10 | 50% | 40% | 10% | 30% | 40% | 30% |
| 15 | 70% | 20% | 10% | 49% | 50% | 1%  |
| 56 | 50% | 40% | 10% | 85% | 10% | 5%  |
| 17 | 30% | 60% | 10% | 98% | 1%  | 1%  |
| 21 | 64% | 35% | 1%  | 60% | 35% | 5%  |
| 57 | 80% | 5%  | 15% | 98% | 1%  | 1%  |
| 65 | 20% | 60% | 20% | 5%  | 70% | 25% |
| 70 | 38% | 60% | 2%  | 99% | 1%  |     |
| 63 | 99% | 1%  |     | 50% | 50% |     |
| 7  | 80% | 20% |     | 80% | 20% |     |
| 14 | 60% | 40% |     | 99% | 1%  |     |
| 16 | 40% | 60% |     | 40% | 60% |     |
| 22 | 10% | 90% |     | 90% | 10% |     |
| 60 | 80% | 20% |     | 80% | 20% |     |
| 62 | 98% | 2%  |     | 90% | 10% |     |
| 64 | 60% | 40% |     | 50% | 50% |     |

| Education   |                           |                         | Residence    |                |                 |                     |
|-------------|---------------------------|-------------------------|--------------|----------------|-----------------|---------------------|
| Response ID | years of formal education | Highest education level | Resident now | Resident years | Resident months | Years (decimalized) |
| 49          | 19                        | Masters                 | Switzerland  | 33             |                 | 33.0                |
| 38          | 11                        | High School             | Switzerland  | 15             | 2               | 15.2                |
| 46          | 10                        | Less than High School   | Switzerland  | 17             |                 | 17.0                |
| 52          | 12                        | Doctorate (PhD, MD, JD) | Switzerland  | 32             | 2               | 32.2                |
| 41          | 12                        | Some College            | Switzerland  | 36             |                 | 36.0                |
| 11          | 12                        | Some College            | Switzerland  | 35             |                 | 35.0                |
| 34          | 3                         | Some College            | Switzerland  | 22             | 6               | 22.5                |
| 43          | 9                         | First Degree (Bachelor) | Switzerland  | 53             |                 | 53.0                |
| 58          | 20                        | Masters                 | Switzerland  | 45             |                 | 45.0                |
| 66          | 12                        | High School             | Switzerland  | 17             | 10              | 17.8                |
| 72          | 18                        | Masters                 | Switzerland  | 53             | 1               | 53.1                |
| 61          | 11                        | Less than High School   | Switzerland  | 17             | 11              | 17.9                |
| 67          | 24                        | Doctorate (PhD, MD, JD) | Switzerland  | 12             |                 | 12.0                |
| 69          | 17                        | First Degree (Bachelor) | Switzerland  | 38             |                 | 38.0                |
| 73          | 15                        | First Degree (Bachelor) | Switzerland  | 67             |                 | 67.0                |
| 13          | 11                        | High School             | Switzerland  | 17             | 3               | 17.3                |
| 18          | 18                        | Masters                 | Switzerland  | 7              |                 | 7.0                 |
| 19          | 11                        | High School             | Switzerland  | 7              |                 | 7.0                 |
| 20          | 13                        | Masters                 | Switzerland  | 38             |                 | 38.0                |
| 32          | 13                        | Some College            | Switzerland  | 21             |                 | 21.0                |
| 33          | 16                        | First Degree (Bachelor) | Switzerland  | 30             |                 | 30.0                |
| 26          | 15                        | First Degree (Bachelor) | Switzerland  | 53             |                 | 53.0                |
| 28          | 18                        | Masters                 | Switzerland  | 38             | 6               | 38.5                |
| 29          | 18                        | Some College            | Switzerland  | 19             |                 | 19.0                |
| 24          | 9                         | Masters                 | Switzerland  | 46             |                 | 46.0                |
| 36          | 14                        | High School             | Switzerland  | 5              | 4               | 5.3                 |
| 37          | 13                        | Some College            | Switzerland  | 23             |                 | 23.0                |
| 39          | 11                        | High School             | Switzerland  | 11             |                 | 11.0                |
| 44          | 11                        | High School             | Switzerland  | 17             |                 | 17.0                |
| 45          | 16                        | First Degree (Bachelor) | India        | 32             |                 | 32.0                |
| 47          | 17                        | Masters                 | Switzerland  | 5              | 6               | 5.5                 |
| 59          | 12                        | High School             | Switzerland  | 18             |                 | 18.0                |
| 50          | 12                        | Masters                 | Switzerland  | 40             |                 | 40.0                |
| 54          | 14                        | Some College            | Switzerland  | 17             |                 | 17.0                |
| 55          | 24                        | Masters                 | Israel       |                | 6               | 0.5                 |
| 51          | 16                        | First Degree (Bachelor) | Switzerland  | 5              | 6               | 5.5                 |
| 5           | 10                        | Less than High School   | Switzerland  | 23             |                 | 23.0                |
| 6           | 16                        | Some College            | Switzerland  | 31             |                 | 31.0                |
| 23          | 7                         | First Degree (Bachelor) | Switzerland  | 36             | 2               | 36.2                |
| 25          | 20                        | Masters                 | Switzerland  | 36             |                 | 36.0                |
| 27          | 18                        | First Degree (Bachelor) | Germany      | 33             |                 | 33.0                |
| 31          | 16                        | First Degree (Bachelor) | Switzerland  | 4              | 9               | 4.8                 |
| 35          | 20                        | Masters                 | Switzerland  | 43             | 6               | 43.5                |
| 40          | 17                        | First Degree (Bachelor) | Switzerland  | 12             |                 | 12.0                |
| 42          | 11                        | Less than High School   | Switzerland  | 17             |                 | 17.0                |
| 48          | 17                        | Masters                 | Switzerland  | 23             | 4               | 23.3                |

|    |    |                         |               |    |   |             |
|----|----|-------------------------|---------------|----|---|-------------|
| 53 | 12 | First Degree (Bachelor) | Switzerland   | 33 |   | <b>33.0</b> |
| 8  | 18 | Masters                 | Switzerland   | 7  | 4 | <b>7.3</b>  |
| 10 | 11 | Less than High School   | Switzerland   | 1  |   | <b>1.0</b>  |
| 15 | 11 | Some College            | Switzerland   | 17 |   | <b>17.0</b> |
| 56 | 18 | Masters                 | Finland       | 26 | 6 | <b>26.5</b> |
| 17 | 15 | First Degree (Bachelor) | Switzerland   | 14 |   | <b>14.0</b> |
| 21 | 11 | High School             | Switzerland   | 17 | 8 | <b>17.7</b> |
| 57 | 16 | First Degree (Bachelor) | Switzerland   | 11 |   | <b>11.0</b> |
| 65 | 15 | First Degree (Bachelor) | Switzerland   | 6  | 1 | <b>6.1</b>  |
| 70 | 17 | Masters                 | Bulgaria      | 35 |   | <b>35.0</b> |
| 63 | 11 | High School             | Switzerland   | 25 |   | <b>25.0</b> |
| 7  | 18 | Masters                 | Switzerland   | 7  | 0 | <b>7.0</b>  |
| 14 | 18 | Some College            | Switzerland   | 7  | 6 | <b>7.5</b>  |
| 16 | 21 | Doctorate (PhD, MD, JD) | Germany       | 0  | 6 | <b>0.5</b>  |
| 22 | 25 | Masters                 | Switzerland   | 3  | 8 | <b>3.7</b>  |
| 60 | 10 | Less than High School   | Switzerland   | 42 | 7 | <b>42.6</b> |
| 62 | 10 | High School             | Switzerland   | 16 |   | <b>16.0</b> |
| 64 | 18 | Masters                 | United States | 2  | 8 | <b>2.7</b>  |

| Response ID | Countries of residence |                |               |             |             |
|-------------|------------------------|----------------|---------------|-------------|-------------|
|             | Earliest residence     | Residence 2    | Residence 3   | Residence 4 | Residence 5 |
| 49          | United States          | Australia      |               |             |             |
| 38          | Hong Kong              |                |               |             |             |
| 46          | Cuba                   |                |               |             |             |
| 52          | Hungary                | United States  |               |             |             |
| 41          |                        |                |               |             |             |
| 11          | Spain                  |                |               |             |             |
| 34          |                        |                |               |             |             |
| 43          | Italy                  | Japan          |               |             |             |
| 58          | United Kingdom         | United Kingdom |               |             |             |
| 66          |                        |                |               |             |             |
| 72          | France                 | United Kingdom |               |             |             |
| 61          |                        |                |               |             |             |
| 67          | Hungary                |                |               |             |             |
| 69          |                        |                |               |             |             |
| 73          |                        |                |               |             |             |
| 13          | Switzerland            |                |               |             |             |
| 18          | Italy                  | Germany        | Switzerland   |             |             |
| 19          | Germany                | Switzerland    |               |             |             |
| 20          | Switzerland            | United States  |               |             |             |
| 32          |                        |                |               |             |             |
| 33          |                        |                |               |             |             |
| 26          |                        |                |               |             |             |
| 28          | Switzerland            | United States  | Switzerland   |             |             |
| 29          | Dominican Republic     |                |               |             |             |
| 24          |                        |                |               |             |             |
| 36          | Germany                | Romania        |               |             |             |
| 37          | Bosnia and Herzegovina |                |               |             |             |
| 39          | Austria                | India          |               |             |             |
| 44          |                        |                |               |             |             |
| 45          | United Kingdom         | United States  |               |             |             |
| 47          | Portugal               | Netherlands    | Portugal      | Germany     | Switzerland |
| 59          | Canada                 |                |               |             |             |
| 50          |                        |                |               |             |             |
| 54          | Albania                |                |               |             |             |
| 55          | Switzerland            |                |               |             |             |
| 51          | India                  | United Kingdom | United States | Nepal       |             |
| 5           | United Kingdom         | Germany        |               |             |             |
| 6           |                        |                |               |             |             |
| 23          |                        |                |               |             |             |
| 25          |                        |                |               |             |             |
| 27          | Vietnam                | Germany        |               |             |             |
| 31          | India                  | Switzerland    |               |             |             |
| 35          | Switzerland            | United States  | Switzerland   |             |             |
| 40          | Belgium                | Germany        |               |             |             |
| 42          |                        |                |               |             |             |
| 48          | Croatia                | Switzerland    |               |             |             |
| 53          | Switzerland            |                |               |             |             |
| 8           | United Kingdom         | Germany        | Switzerland   |             |             |
| 10          | Chile                  |                |               |             |             |
| 15          |                        |                |               |             |             |



|    |                |                |             |             |
|----|----------------|----------------|-------------|-------------|
| 56 | United States  |                |             |             |
| 17 | Turkey         | Egypt          | Brazil      | Switzerland |
| 21 |                |                |             |             |
| 57 | Netherlands    | Germany        | Switzerland |             |
| 65 | Philippines    | United States  | Netherlands | Switzerland |
| 70 |                |                |             |             |
| 63 | United Kingdom |                |             |             |
| 7  | Germany        | United Kingdom |             |             |
| 14 | Italy          |                |             |             |
| 16 |                |                |             |             |
| 22 | Brazil         | Switzerland    |             |             |
| 60 |                |                |             |             |
| 62 | Switzerland    |                |             |             |
| 64 | Germany        | Switzerland    |             |             |

| Response ID | Impairment/disability |         |          |          | Language Impairment | Receiving a copy of a finished paper |
|-------------|-----------------------|---------|----------|----------|---------------------|--------------------------------------|
|             | 1                     | 2       | 3        | 4        |                     |                                      |
| 49          |                       |         |          |          | Yes                 | Yes                                  |
| 38 Vision   |                       |         |          |          | Yes                 | Yes                                  |
| 46          |                       |         |          | Learning | Yes                 | Yes                                  |
| 52          |                       |         |          |          |                     | Yes                                  |
| 41          |                       |         |          |          |                     | Yes                                  |
| 11 Vision   |                       |         |          |          |                     | No                                   |
| 34          |                       | Hearing |          |          | Yes                 | Yes                                  |
| 43          |                       |         |          |          | Yes                 | Yes                                  |
| 58          |                       |         |          |          |                     | Yes                                  |
| 66 Vision   |                       |         |          |          | Yes                 | No                                   |
| 72          |                       |         |          |          |                     | Yes                                  |
| 61          |                       |         |          |          | Yes                 | Yes                                  |
| 67          |                       |         |          |          | Yes                 | Yes                                  |
| 69          |                       |         |          |          |                     | No                                   |
| 73          |                       |         |          |          |                     | Yes                                  |
| 13          |                       |         |          |          |                     | Yes                                  |
| 18          |                       |         |          |          | Yes                 | Yes                                  |
| 19          |                       |         |          |          | Yes                 | Yes                                  |
| 20          |                       |         |          |          |                     | No                                   |
| 32          |                       |         |          | Learning | Yes                 | Yes                                  |
| 33          |                       |         |          |          | Yes                 | Yes                                  |
| 26          |                       |         |          |          |                     | Yes                                  |
| 28          |                       |         |          |          | Yes                 | No                                   |
| 29          |                       |         |          |          | Yes                 | Yes                                  |
| 24          |                       |         |          |          |                     | Yes                                  |
| 36          |                       |         |          |          |                     | No                                   |
| 37          |                       |         |          |          |                     | No                                   |
| 39          |                       |         |          |          | Yes                 | Yes                                  |
| 44          |                       |         |          |          | Yes                 | No                                   |
| 45          |                       |         |          |          | Yes                 | Yes                                  |
| 47          |                       |         |          |          |                     | Yes                                  |
| 59 Vision   |                       |         |          |          | Yes                 | No                                   |
| 50          |                       |         |          |          |                     | Yes                                  |
| 54 Vision   |                       |         |          |          | Yes                 | No                                   |
| 55          |                       |         |          | Learning |                     | Yes                                  |
| 51          |                       |         |          |          | Yes                 | Yes                                  |
| 5           |                       |         |          |          |                     | Yes                                  |
| 6           |                       |         |          |          |                     | Yes                                  |
| 23          |                       |         |          |          | Yes                 | Yes                                  |
| 25          |                       |         |          |          | Yes                 | Yes                                  |
| 27 Vision   |                       |         |          |          |                     | Yes                                  |
| 31          |                       |         |          |          | Yes                 | Yes                                  |
| 35          |                       | Hearing |          |          |                     | Yes                                  |
| 40          |                       |         |          |          | Yes                 | Yes                                  |
| 42          |                       |         |          |          | Yes                 | No                                   |
| 48          |                       |         |          |          |                     | Yes                                  |
| 53          |                       |         |          |          | Yes                 | Yes                                  |
| 8           |                       |         |          |          |                     | Yes                                  |
| 10          |                       |         |          |          |                     | Yes                                  |
| 15          |                       |         |          |          |                     | No                                   |
| 56          |                       |         |          |          |                     | Yes                                  |
| 17          |                       |         |          |          | Yes                 | Yes                                  |
| 21          |                       |         |          |          |                     | No                                   |
| 57          |                       |         |          |          |                     | Yes                                  |
| 65          |                       |         |          |          |                     | Yes                                  |
| 70          |                       |         |          |          |                     | Yes                                  |
| 63          |                       |         |          |          |                     | Yes                                  |
| 7           |                       |         |          |          |                     | No                                   |
| 14          |                       |         |          |          |                     | Yes                                  |
| 16          |                       |         |          |          |                     | Yes                                  |
| 22          |                       |         |          |          | Yes                 | Yes                                  |
| 60 Vision   |                       |         | Language |          | Yes                 | No                                   |
| 62          |                       |         |          |          | Yes                 | Yes                                  |
| 64          |                       |         |          |          | Yes                 | Yes                                  |

## Open Questions

|  |
|--|
| Advantages/disadvantages of bilingualism   |
| A child does not develop one language properly   |
| After learning french having problems by leaning espagnol true in my experience  |
| Better integration in a multilingual society; true   |
| Better job opportunities -> might be true  |
| Bilinguals are good at switching between tasks (other than language). Yes, I think so.   |
| Bilinguals are particularly good interpreters. No, not the case!   |
| Bilinguals growing up with 2 languages are slow at school to begin with and overtake the others later. Don't know if it's true - hard to test for  |
| Bilingues geh  Ären keiner Sprachkultur richtig an. - Glaube ich nicht   |
| Bilingues können weder die eine noch die anderer Sprache schreiben. - Glaube ich zum Teil  |
| Bilingues sind offenere Menschen als Monolingues. - Glaube ich   |
| Dass man beide Sprachen nicht vollkommen spricht. Durch meine sehr Germanlastige Kindheit ist dies nicht der Fall. Dafür fällt mir das Sprechen von Dänisch schwerer obwohl mein passiver Wortschatz doch gross ist. |
| Dass man keine Sprache perfekt beherrsche  |
| Dass man weder in der einen noch andern zu Hause sei   |
| Die dritte Sprache wird einfacher gelernt  |
| Different approaches to questions/ problem solving -> scientifically proven  |
| Easier to get a job; not necessarily true  |
| Easy to learn languages after learning one. Probably not true; very hard to pick up French in my experience.   |
| Erleichterte Eingliederung in multikulturelles Umfeld  |
| Erleichtertes Erlernen neuer Sprachen  |
| Finding new friends  |
| Global or expanded thinking  |
| Grammar mistakes are more often in both languages  |
| Haben Zugang zu Arbeit im anderen Land. Für mich war das so (Arbeit in Germanland finden war einfach)  |
| It is easy for you to communicate with other people, regardless of which language is spoken (i.e. you become more outgoing) (advantage): in my experience true   |
| Können oft fließend sprechen, beherrschen jedoch die Grammatik nicht!  |
| Knowing a foreign language helps learning a new one due to Association. Definitely Correct.  |
| learning is never optimum in a language that is not mothertongue   |
| Less conflicts in the Swiss Army: Capable to talk with FR and DE colleagues -> I agree   |
| less frustration when interacting with foreign people; true  |

|   |
|---|
| Leute denken dass man die Sprache nicht versteht wenn man nicht sofort spricht  |
| living in a country where the people speak the foreign language is better to improve than learning by yourself  |
| Lots of job opportunities; in US, not true. In Europe, more true.   |
| Mehrsprachige beherrschen meistens keine der Sprachen zu 100% -> stimmt nicht   |
| Mehrsprachige erlernen eine weitere Sprache einfacher -> stimmt   |
| Mehrsprachigkeit kann negative Einflüsse auf andere Fächer in der Schule haben -> stimmt nicht  |
| mixed up sentences in different languages   |
| Multilinguals do have an advantage professionally. It easy for them to move countries and work.   |
| Multilinguals find it difficult to become experts at a language (size of vocabulary, ...). -> I agree   |
| Multilinguals: Broader vision of the World -> I agree   |
| My daughter is polyglot (4 languages: Italian, Hungarian, German+SwissGerman, English) but still learning (she's 5). She is less proficient in any of the languages, compared with children of same age who know one language only. I expect this issue to persist, although very mildly, throughout her life |
| Nachteil: sobald ersichtlich wird, dass man diese Sprache kennt, verhalten sich Einheimische anders... manchmal offener ... manchmal anfänglich ... manchmal distanziert  |
| one can never express emotions in a language that is not his/her mother tongue  |
| Polyglots are more skilled at language acquisition - yes, this is true. Science also demonstrates it (brain functions are modified through multiple language acquisition at early age)  |
| Socially they are better off. One can make a good social circle if one is pro efficient in local language.  |
| They can acquire languages faster   |
| Vorteil: in Vietnam bekommt man mehr mit. Viele "Nebenschauplätze" bzw. "Nebengespräche" können mitverfolgt werden.   |
| Work. Makes the CV more attractive.   |
| You never become completely fluent in one language (disadvantage): not true in my personal experience, although I believe this can be true for some.  |

## Feedback

|  |
|--|
| Good one, nice questions...  |
| how about no   |
| I find it very well done   |
| In the questions which factors contribute of the learning the language I would like to have the possibility to choose: interacting in professional/working environnement.  |
| Maybe I didn't really get what your MA is about, because German IS my native language... I hope that's okay like this... ;)  |
| Nicely framed quests   |
| No it is fine for me   |
| Simplify data entering for mother language. Example: it was difficult to answer when I got proficient reading Italian. What shall we assume: when I finished elementary school? Or high school? Those questions for mother language are difficult to answer, therefore I expect people to give too much variability in their interpretation of when they were "proficient" in the mother language. I propose that you avoid asking for any language (L1, L2, ...) that is declared as "mother". Accordingly, add a question: is this language (L1, L2, ...) a Mother language for you? Proposed definition: every language learned during childhood (&lt;12 years old) is Mother language. |
| Some questions did not work...   |
| Too long   |
| Very professional questionnaire. Congratulations! It was also quite interesting taking part.   |
| You have chosen a demanding and interesting topic that is often debated in Finland, whose tiny minority of Swedish In general, the questionnaire raised some interesting thoughts that hadn't crossed my mind before and also pushed me to analyze how I acquired the languages and how it has affected me. Good luck!   |

|             | L1                  |               |               |                          |  |                     |                         |                         |                  |                  |                   |               |         |                          |                         |         |                      |             |                    |                          |                         |             |                    |         |                        |                |                |                                      |                |
|-------------|---------------------|---------------|---------------|--------------------------|--|---------------------|-------------------------|-------------------------|------------------|------------------|-------------------|---------------|---------|--------------------------|-------------------------|---------|----------------------|-------------|--------------------|--------------------------|-------------------------|-------------|--------------------|---------|------------------------|----------------|----------------|--------------------------------------|----------------|
| Response ID | Age at which you... |               |               |                          | How long spent where lan-<br>guage is spoken |                     |                         |                         |                  |                  | Proficiency level |               |         | Contributing factors     |                         |         |                      |             |                    | Language exposure        |                         |             |                    |         |                        |                | Self appraisal |                                      |                |
|             | began acquiring     | became fluent | began reading | became fluent in reading | is spoken?                                   | is spoken (months)? | Spoken in a family (yy) | Spoken in a family (mm) | school/work (yy) | school/work (mm) | speaking          | Understanding | reading | Interacting with friends | Interacting with family | Reading | CDs/Self instruction | Watching TV | Listening to radio | Interacting with friends | Interacting with family | Watching TV | Listening to radio | Reading | CDs / self instruction | Internet usage | foreign accent | accent identified as non-na-<br>tive | code-switching |
| 49          | 1                   | 4             | 6             | 8                        | 33   |                     | 33                      |                         | 27               |                  | 10                | 10            | 10      | 10                       | 10                      | 0       | 0                    | 5           | 5                  | 10                       | 10                      | 6           | 6                  | 4       | 0                      | 6              | 0              | 0                                    | 1              |
| 38          | 0                   | 3             | 11            | 8                        | 15   |                     | 17                      |                         | 11               |                  | 9                 | 10            | 9       | 10                       | 10                      | 1       | 0                    | 1           | 3                  | 10                       | 10                      | 10          | 5                  | 2       | 0                      | 1              | 0              | 1                                    | 3              |
| 46          | 1                   | 3             | 5             | 9                        | 8  |                     | 24                      |                         | 9                |                  | 10                | 10            | 10      | 7                        | 10                      | 5       | 3                    | 4           | 3                  |                          | 10                      | 4           | 3                  | 4       | 3                      | 4              | 9              | 0                                    | 8              |
| 52          | 0                   | 3             | 4             | 5                        | 29   | 6                   | 29                      | 6                       | 23               | 6                | 10                | 10            | 10      | 10                       | 10                      | 10      | 0                    | 10          | 10                 | 10                       | 10                      | 10          | 10                 | 0       | 10                     | 0              | 0              | 2                                    |                |
| 41          | 5                   | 6             | 7             | 9                        | 36   |                     | 30                      |                         | 32               |                  | 10                | 10            | 9       | 10                       | 4                       | 9       | 0                    | 5           | 6                  | 10                       | 0                       | 8           | 0                  | 9       | 0                      | 10             | 0              | 0                                    | 2              |
| 11          | 1                   | 2             | 7             | 8                        | 3  |                     | 0                       |                         | 9                |                  | 10                | 10            | 10      | 10                       | 10                      | 10      | 0                    | 10          | 10                 | 10                       | 10                      | 10          | 10                 | 0       | 8                      | 0              | 0              | 3                                    |                |
| 34          | 2                   | 4             | 6             | 6                        | 22   | 6                   | 22                      | 6                       | 12               | 6                | 10                | 10            | 10      | 10                       | 10                      | 10      | 6                    | 9           | 9                  | 10                       | 10                      | 10          | 7                  | 9       | 6                      | 7              | 0              | 0                                    | 2              |
| 43          | 6                   | 8             | 8             | 10                       | 53   |                     | 25                      |                         | 10               |                  | 10                | 10            | 10      | 8                        | 6                       | 10      | 9                    | 10          | 8                  | 10                       | 10                      | 9           | 9                  | 10      | 0                      | 5              | 0              | 0                                    | 1              |
| 58          | 0                   | 3             | 6             | 8                        | 45   |                     | 45                      |                         | 40               |                  | 10                | 10            | 10      | 9                        | 7                       | 10      | 6                    | 6           | 6                  | 10                       | 7                       |             | 8                  | 6       | 7                      | 0              | 1              | 1                                    |                |
| 66          | 1                   | 3             | 5             | 7                        | 17   | 10                  | 17                      | 10                      | 12               | 0                | 10                | 10            | 9       | 8                        | 10                      | 0       | 0                    | 7           | 9                  | 10                       | 10                      | 5           | 7                  | 0       | 0                      | 3              | 1              | 0                                    | 2              |
| 72          | 1                   | 3             | 5             | 6                        | 53   | 1                   | 53                      | 1                       | 47               | 1                | 10                | 10            | 10      | 6                        | 10                      | 8       | 4                    | 2           | 6                  | 9                        | 8                       | 3           | 2                  | 5       | 1                      | 6              | 4              | 6                                    | 0              |
| 61          | 0                   | 7             | 7             | 10                       | 17   |                     | 17                      |                         | 12               |                  | 10                | 10            | 10      | 10                       | 10                      | 10      | 0                    | 10          | 7                  | 9                        | 7                       |             | 0                  | 5       | 0                      | 5              | 0              | 0                                    | 3              |
| 67          | 0                   | 2             | 6             | 7                        | 27   |                     | 41                      |                         | 27               |                  | 10                | 10            | 10      | 10                       | 10                      | 6       | 0                    | 0           | 0                  | 6                        | 10                      | 0           | 0                  | 8       | 0                      | 6              | 0              | 0                                    | 1              |
| 69          | 2                   | 3             | 6             | 6                        | 38   |                     | 38                      |                         | 38               |                  | 10                | 10            | 10      | 10                       | 10                      | 8       | 0                    | 7           | 1                  | 10                       | 10                      | 7           | 3                  | 7       | 0                      | 7              | 0              | 0                                    | 2              |
| 73          | 5                   | 8             | 6             | 8                        |  |                     |                         |                         |                  |                  | 8                 | 9             | 10      | 5                        | 2                       | 9       | 1                    | 3           | 4                  | 5                        | 8                       | 4           | 4                  | 7       | 1                      | 5              | 7              | 7                                    | 2              |
| 13          | 3                   | 5             | 6             |                          | 17   | 3                   | 17                      | 3                       | 11               |                  | 8                 | 8             | 8       | 10                       | 3                       | 7       | 5                    | 3           | 3                  | 10                       | 4                       | 7           | 5                  | 5       | 3                      | 5              | 2              | 0                                    | 7              |
| 18          | 0                   | 6             | 6             | 8                        | 34   |                     | 34                      |                         | 34               |                  | 10                | 10            | 10      | 10                       | 10                      | 10      | 0                    | 2           | 0                  | 2                        | 10                      | 0           | 0                  | 0       | 0                      | 0              | 0              | 0                                    | 1              |
| 19          | 0                   | 4             | 4             | 7                        | 0  |                     | 0                       |                         | 0                |                  | 10                | 10            | 10      | 1                        | 10                      | 8       | 4                    | 7           | 2                  | 8                        | 10                      | 8           | 2                  | 10      | 8                      | 8              | 0              | 0                                    | 3              |
| 20          | 0                   |               | 7             |                          | 38   |                     | 38                      |                         | 31               |                  | 10                | 10            | 10      | 10                       | 10                      | 10      | 2                    | 8           | 8                  | 6                        | 10                      | 0           | 4                  | 6       | 0                      | 4              | 0              | 0                                    | 2              |
| 32          | 7                   | 9             | 7             | 9                        | 21   |                     | 21                      |                         | 21               |                  | 10                | 10            | 10      | 9                        | 9                       | 7       | 10                   | 10          |                    | 9                        | 9                       | 9           |                    | 7       | 10                     | 10             | 2              | 1                                    | 1              |
| 33          | 5                   | 5             | 10            | 10                       | 30   |                     | 2                       |                         | 25               |                  | 9                 | 9             | 8       | 9                        | 3                       | 3       | 0                    | 2           | 5                  | 8                        | 3                       | 1           | 1                  | 1       | 0                      | 0              | 0              | 0                                    | 1              |
| 26          | 1                   | 12            | 14            | 14                       | 53   |                     | 53                      |                         | 20               |                  | 9                 | 9             | 9       | 8                        | 7                       | 9       | 2                    | 1           | 2                  | 9                        | 9                       | 9           |                    | 3       | 0                      |                | 0              | 0                                    | 0              |
| 28          | 0                   | 4             | 5             | 7                        | 38   |                     | 42                      |                         | 36               |                  | 10                | 10            | 10      | 7                        | 10                      | 4       | 0                    | 0           | 0                  | 8                        | 9                       | 4           | 6                  | 6       | 1                      | 6              | 0              | 0                                    | 5              |
| 29          | 10                  | 12            | 11            | 12                       | 12   | 0                   | 12                      | 0                       | 19               | 6                | 8                 | 9             | 9       | 8                        |                         | 8       | 5                    | 9           | 5                  | 9                        | 5                       | 9           | 6                  | 10      | 9                      | 1              | 7              | 1                                    |                |
| 24          | 1                   | 4             | 12            | 14                       | 22   |                     | 46                      |                         | 22               |                  | 8                 | 9             | 8       | 1                        | 10                      | 6       | 0                    | 2           | 2                  | 9                        | 10                      | 7           | 5                  | 5       | 5                      | 7              | 0              | 0                                    | 1              |
| 36          | 2                   | 2             | 7             | 10                       | 29   |                     | 29                      |                         | 23               |                  | 10                | 10            | 10      | 5                        | 10                      | 10      | 5                    | 2           | 5                  | 6                        | 8                       | 0           | 0                  | 2       | 0                      | 3              | 2              | 1                                    | 1              |
| 37          | 4                   | 6             | 7             | 9                        | 24   |                     | 0                       |                         | 19               |                  | 9                 | 10            | 10      | 10                       | 5                       | 9       | 0                    | 9           | 6                  | 10                       | 5                       | 8           | 9                  | 9       | 1                      | 9              | 2              | 2                                    | 9              |
| 39          | 6                   | 10            | 9             | 11                       | 11   |                     | 11                      |                         | 11               |                  | 9                 | 10            | 10      | 6                        | 2                       | 9       | 4                    | 8           | 0                  | 3                        | 3                       | 6           | 0                  | 7       | 2                      | 5              | 2              | 3                                    | 7              |

|    |   |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |   |   |
|----|---|----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|----|---|---|
| 44 | 2 | 4  | 6   | 7  | 17 | 17 | 11 | 10 | 10 | 0  | 5  | 10 | 10 | 10 | 10 | 5  | 10 | 10 | 5  | 10 | 5  | 5  | 2  | 2 | 5  |   |   |
| 45 | 4 | 10 | 6   | 8  | 3  | 6  | 26 | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 10 | 10 | 5  | 5  | 5  | 5  | 5  | 2  | 3  | 5 |    |   |   |
| 47 | 0 | 4  | 6   | 7  | 25 | 25 | 22 | 9  | 10 | 10 | 10 | 10 | 10 | 0  | 0  | 0  | 5  | 10 | 2  | 7  | 0  | 10 | 0  | 0 | 3  |   |   |
| 59 | 1 |    | 4   |    | 19 | 19 | 12 | 10 | 9  | 10 |    | 9  | 10 | 6  | 0  | 4  | 10 | 8  | 10 | 4  | 6  | 4  | 0  | 3 | 10 | 3 | 3 |
| 50 | 4 | 7  | 7   | 8  | 40 | 0  | 33 | 10 | 10 | 10 |    | 10 |    | 10 | 0  |    | 10 |    |    |    | 10 | 10 | 0  | 1 | 2  |   |   |
| 54 | 7 | 8  | 7   | 9  | 16 | 0  | 13 | 10 | 10 | 10 | 6  | 0  | 7  | 5  | 10 | 3  | 10 | 0  | 10 | 10 | 10 | 1  | 6  | 0 | 0  | 7 |   |
| 55 | 1 | 1  | 6   | 9  | 30 | 24 | 24 | 10 | 10 | 10 | 8  | 9  | 10 | 0  | 8  | 0  | 4  | 6  | 0  | 0  | 7  | 0  | 7  | 2 | 6  | 9 |   |
| 51 | 5 | 10 | 5   | 5  | 30 | 20 | 20 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 4 | 6  | 6 |   |
| 5  | 4 | 7  | 7   | 13 | 23 | 23 | 23 | 10 | 10 | 10 | 8  | 7  | 10 | 5  | 10 | 0  | 9  | 9  | 8  | 5  | 5  | 10 | 5  | 1 | 2  | 1 |   |
| 6  | 1 | 3  | 6   | 7  | 30 | 30 | 30 | 10 | 10 | 10 | 10 | 10 | 7  | 3  | 7  | 4  | 9  | 10 | 4  | 2  | 6  | 0  | 2  | 1 | 1  | 1 |   |
| 23 | 1 | 5  | 6   | 10 | 36 | 2  | 36 | 2  | 36 | 2  | 36 | 2  | 10 | 10 | 10 | 0  | 10 | 10 | 9  | 8  | 8  | 0  | 7  | 0 | 0  | 0 |   |
| 25 | 0 | 0  | 1.5 | 3  | 36 |    | 36 |    | 36 |    | 36 |    | 10 | 10 | 10 | 0  | 10 | 10 | 7  | 10 | 5  | 0  | 1  | 0 | 0  | 1 |   |
| 27 | 6 | 10 | 8   | 12 | 33 | 20 | 32 | 9  | 9  | 9  | 10 | 2  | 8  | 7  | 6  | 7  | 10 | 7  | 2  | 4  | 8  | 1  | 8  | 3 | 2  | 5 |   |
| 31 | 2 | 12 | 5   | 12 | 26 | 30 | 25 | 7  | 8  | 3  | 8  | 10 | 6  | 0  | 8  | 8  | 8  | 10 | 6  | 2  | 3  | 0  | 0  | 7 | 6  | 6 |   |
| 35 | 0 | 4  | 7   | 10 | 2  | 46 | 1  | 9  | 8  | 8  | 9  | 10 | 8  | 2  | 5  | 0  | 8  | 8  | 5  | 0  | 8  | 0  | 9  | 5 | 2  | 7 |   |
| 40 | 1 | 2  | 5   | 5  | 50 | 50 | 50 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 4 | 7  | 5 |   |
| 42 | 1 | 3  | 6   | 7  | 17 | 17 | 11 | 10 | 10 | 10 | 10 | 5  | 10 |    |    |    | 10 | 5  |    |    | 10 |    |    | 0 | 0  | 1 |   |
| 48 | 2 | 3  | 6   | 8  | 29 | 18 | 18 | 8  | 9  | 9  | 8  | 9  | 6  | 2  | 7  | 8  | 8  | 9  | 5  | 6  | 3  | 0  | 4  | 2 | 3  | 1 |   |
| 53 | 2 | 3  | 7   | 8  | 32 | 33 | 21 | 9  | 9  | 10 | 9  | 10 | 8  | 0  | 8  | 5  | 10 | 9  | 10 | 5  | 8  | 0  | 5  | 1 | 0  | 3 |   |
| 8  | 0 | 4  | 4   | 7  | 25 | 22 | 21 | 10 | 10 | 10 | 7  | 10 | 6  | 0  | 1  | 1  | 4  | 9  | 8  | 0  | 8  | 0  | 8  | 0 | 1  | 2 |   |
| 10 | 0 | 5  | 6   | 8  | 16 | 16 | 16 | 10 | 10 | 9  | 10 | 10 | 6  | 0  | 0  | 0  | 10 | 10 | 10 | 0  | 10 | 0  | 0  | 0 | 0  | 2 |   |
| 15 | 1 |    | 6   | 12 | 17 | 17 | 17 | 9  | 10 | 10 | 8  | 3  | 6  | 7  | 8  | 4  | 10 | 5  | 10 | 1  | 10 | 0  | 7  | 1 | 0  | 5 |   |
| 56 | 0 | 2  | 4   | 5  | 26 | 6  | 28 | 10 | 10 | 10 | 9  | 10 | 9  | 0  | 4  | 0  | 10 | 10 | 2  | 1  | 8  | 0  | 2  | 0 | 0  | 2 |   |
| 17 | 0 | 5  | 5   | 5  | 22 | 38 | 6  | 10 | 10 | 10 | 10 | 10 | 10 | 0  | 10 | 10 | 10 | 10 | 10 | 10 | 0  | 10 | 0  | 0 | 0  | 2 |   |
| 21 | 0 | 3  | 6   | 8  | 17 | 8  | 17 | 9  | 8  | 9  | 3  | 8  | 10 | 0  | 3  |    | 6  | 9  | 6  | 4  | 6  | 0  | 2  | 0 | 0  | 2 |   |
| 57 | 5 | 7  | 14  | 15 | 4  | 6  | 4  | 9  | 9  | 9  | 0  | 0  | 0  | 0  | 10 | 0  | 8  | 8  | 8  | 0  | 8  | 0  | 8  | 2 | 2  | 3 |   |
| 65 | 2 | 4  | 4   | 4  | 25 | 25 | 14 | 10 | 10 | 10 | 10 | 10 | 8  | 0  | 8  | 8  | 7  | 2  | 2  | 2  | 3  | 0  | 6  | 3 | 2  | 1 |   |
| 70 | 0 | 5  | 5   | 7  | 35 | 35 | 35 | 10 | 10 | 10 | 10 | 10 | 10 | 0  | 6  | 6  | 9  | 10 | 3  | 3  | 4  | 0  | 4  | 5 | 0  | 2 |   |
| 63 | 1 | 3  | 4   | 7  | 25 | 25 | 25 | 10 | 10 | 10 | 10 | 10 | 10 | 0  | 5  | 5  | 10 | 10 | 5  | 5  |    | 0  | 5  | 0 | 0  | 5 |   |
| 7  | 1 | 3  | 5   | 6  | 53 | 53 | 46 | 9  | 10 | 10 | 10 | 10 | 10 | 10 | 8  | 8  | 1  | 10 | 8  | 6  | 7  | 5  | 9  | 1 | 0  | 2 |   |
| 14 | 2 | 4  | 5   | 6  | 30 | 6  | 39 | 2  | 30 | 6  | 10 | 10 | 10 | 10 | 8  | 8  | 8  | 10 | 8  | 4  | 4  | 4  | 4  | 0 | 0  | 3 |   |
| 16 | 0 | 5  | 6   | 8  | 27 | 18 | 27 | 9  | 9  | 9  | 6  | 6  | 10 | 10 | 6  | 7  | 3  | 10 | 6  | 6  | 1  | 2  | 3  | 0 | 0  | 1 |   |
| 22 | 7 | 13 | 7   | 13 | 34 |    | 20 | 10 | 10 | 10 | 10 | 10 | 10 | 0  | 10 | 10 | 5  |    | 0  | 0  |    | 0  | 0  | 6 | 0  | 2 |   |
| 60 | 5 | 6  | 7   | 8  | 42 | 7  | 23 | 0  | 42 | 7  | 10 | 10 | 10 | 10 | 6  | 7  | 3  |    | 10 | 10 | 10 | 0  | 10 | 7 | 6  | 5 |   |
| 62 | 0 | 4  | 7   | 8  | 16 | 16 | 10 | 9  | 10 | 10 | 5  | 5  | 7  | 5  | 5  | 5  | 7  | 6  | 6  | 5  | 5  | 5  | 5  | 0 | 0  | 3 |   |
| 64 | 3 | 6  | 6   | 13 | 45 | 45 | 43 | 10 | 10 | 10 | 10 | 9  | 10 | 0  | 9  | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 0 | 0  | 3 |   |





|    |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |
|----|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|----|----|
| 37 | 1  | 4  | 8  | 11 |    | 1 | 24 | 0  | 9  | 9  | 8  | 10 | 10 | 8  | 3  | 5  | 0  | 10 | 10 | 5  | 5  | 6  | 0  | 5  | 2 | 2  | 7  |
| 39 | 3  | 15 | 15 | 16 | 0  |   | 17 | 2  | 7  | 9  | 7  | 0  | 6  | 8  | 3  | 7  | 0  | 1  | 6  | 3  | 0  | 7  | 2  | 10 | 5 | 6  | 3  |
| 44 | 12 | 17 | 13 | 15 |    | 0 |    | 0  | 10 | 10 | 10 | 10 |    | 10 |    | 10 | 10 | 10 | 5  | 10 | 5  |    | 10 | 4  | 5 | 3  |    |
| 45 | 7  | 15 | 10 | 15 | 36 |   | 10 | 1  | 5  | 6  | 6  | 7  | 5  | 6  | 0  | 5  | 3  | 6  | 4  | 6  | 1  | 5  | 3  | 3  | 1 | 1  | 5  |
| 47 | 14 | 21 | 14 | 21 | 10 |   | 0  | 6  | 7  | 7  | 7  | 10 | 0  | 6  | 0  | 2  | 0  | 10 | 0  | 4  | 0  | 7  | 0  |    | 6 | 10 | 3  |
| 59 | 7  |    | 9  |    | 1  |   |    | 4  | 8  | 9  | 7  | 9  | 2  | 8  | 0  | 7  | 3  | 10 | 0  | 8  | 0  | 8  | 0  | 9  | 7 | 9  | 9  |
| 50 | 0  | 7  | 7  | 9  | 10 |   | 40 | 12 | 10 | 10 | 10 | 10 | 10 | 10 |    | 10 |    | 10 | 10 | 10 | 10 | 10 |    | 10 | 0 | 2  | 3  |
| 54 | 8  | 16 | 10 | 15 | 0  |   | 0  | 5  | 7  | 8  | 10 | 2  | 0  | 8  | 2  | 10 | 8  | 3  | 0  | 8  | 8  | 9  | 4  | 10 | 4 | 5  | 1  |
| 55 | 12 | 17 | 12 | 17 | 1  |   | 1  | 1  | 10 | 10 | 10 | 9  | 2  | 10 | 0  | 9  | 0  | 9  | 0  | 8  | 0  | 10 | 0  | 10 | 1 | 1  | 8  |
| 51 | 0  | 4  | 5  | 5  | 25 |   | 30 | 16 | 10 | 10 | 10 | 5  | 5  | 5  | 5  | 5  |    | 5  | 5  | 5  | 5  | 5  | 5  |    | 3 | 0  | 2  |
| 5  | 14 | 17 | 14 | 17 | 1  |   | 23 | 7  | 10 | 10 | 10 | 10 | 10 | 10 | 5  | 10 | 5  | 5  | 10 | 10 | 10 | 5  | 5  | 5  | 3 | 2  | 2  |
| 6  | 12 | 22 | 22 | 22 | 1  |   | 0  | 1  | 7  | 7  | 4  | 5  | 3  | 4  | 2  | 6  | 7  | 3  | 2  | 3  | 2  | 6  | 1  | 2  | 3 | 3  | 5  |
| 23 | 14 | 30 | 14 | 30 |    | 6 |    | 2  | 8  | 8  | 8  | 9  | 0  | 7  | 1  | 5  | 6  | 7  | 0  | 3  | 3  | 7  | 0  | 7  | 4 | 3  | 5  |
| 25 | 3  | 16 | 13 | 16 | 0  |   | 36 | 10 | 9  | 10 | 10 | 0  | 9  | 10 | 0  | 8  | 0  | 5  | 5  | 8  | 0  | 10 | 0  | 9  | 2 | 3  | 8  |
| 27 | 11 | 16 | 16 | 20 | 0  |   | 0  | 28 | 7  | 7  | 8  | 4  | 0  | 8  | 8  | 8  | 6  | 6  | 0  | 7  | 7  | 9  | 6  | 9  | 9 | 10 | 7  |
| 31 | 5  | 15 | 5  | 15 | 30 |   | 5  | 5  | 7  | 8  | 7  | 8  | 4  | 8  | 6  | 7  | 0  | 7  | 3  | 7  | 0  | 8  | 6  | 8  | 5 | 7  | 7  |
| 35 | 3  | 7  | 7  | 10 | 32 | 1 | 43 | 3  | 8  | 8  | 8  | 8  | 7  | 5  | 1  | 9  | 8  | 5  | 9  | 6  | 1  | 5  | 0  | 5  | 5 | 1  | 2  |
| 40 | 10 | 20 | 18 | 18 | 3  |   | 0  | 10 | 8  | 8  | 8  | 10 | 2  | 10 | 10 | 10 | 10 | 10 | 2  | 7  | 7  | 10 | 10 | 10 | 0 | 10 | 5  |
| 42 | 5  | 5  | 5  | 5  | 1  |   | 1  | 1  | 10 | 10 |    |    | 10 | 5  |    |    |    | 5  |    | 10 |    | 5  |    | 10 | 1 | 5  | 2  |
| 48 | 26 | 29 | 28 | 30 | 23 |   | 0  | 23 | 8  | 9  | 9  | 9  | 5  | 9  | 6  | 9  | 7  | 9  | 7  | 9  | 8  | 9  | 1  | 9  | 4 | 6  | 3  |
| 53 | 2  | 7  | 20 | 21 | 1  |   | 1  | 0  | 7  | 8  | 8  | 1  | 10 | 8  | 0  | 0  | 1  | 1  | 4  | 0  | 5  | 5  | 0  | 1  | 6 | 9  | 3  |
| 8  | 26 | 27 | 26 | 27 | 25 |   | 21 | 25 | 9  | 10 | 10 | 9  | 2  | 8  | 10 | 7  | 0  | 10 | 9  | 8  | 0  | 8  | 1  | 3  | 2 | 3  | 1  |
| 10 | 7  | 15 | 8  | 13 | 0  |   | 0  | 0  | 7  | 8  | 8  | 10 | 0  | 7  | 0  | 8  | 0  | 9  | 0  | 6  | 0  | 6  | 3  | 10 | 6 | 7  | 3  |
| 15 | 1  |    | 10 |    | 3  |   | 17 | 0  | 7  | 7  | 5  | 3  | 10 | 2  | 0  | 4  | 0  | 1  | 7  | 0  | 4  | 0  | 0  | 2  | 3 | 1  | 2  |
| 56 | 5  | 5  | 5  | 7  | 1  | 6 | 1  | 6  | 9  | 9  | 9  | 10 | 5  | 9  | 0  | 6  | 3  | 4  | 2  | 6  | 0  | 8  | 0  | 6  | 1 | 3  | 3  |
| 17 | 10 | 17 | 10 | 17 | 0  |   | 0  | 16 | 9  | 10 | 10 | 10 | 0  | 9  | 9  | 7  | 7  | 8  | 0  | 8  | 7  | 9  | 0  | 9  | 6 | 4  | 6  |
| 21 | 12 | 17 | 15 | 17 | 0  | 0 | 0  | 0  | 7  | 5  | 6  |    | 0  | 10 | 0  | 5  | 0  |    | 0  | 9  | 0  | 10 | 0  | 10 | 4 | 6  | 8  |
| 57 | 2  | 3  | 7  | 9  | 36 |   | 36 | 36 | 8  | 9  | 9  | 9  | 9  | 9  | 0  | 9  | 9  | 2  | 2  | 0  | 1  | 2  | 0  | 0  | 1 | 1  | 2  |
| 65 | 4  | 4  | 4  | 4  | 33 |   | 33 | 14 | 10 | 10 | 10 | 7  | 4  | 9  | 0  | 10 | 10 | 9  | 7  | 10 | 8  | 10 | 0  | 10 | 4 | 5  | 9  |
| 70 | 5  | 15 | 10 | 15 | 1  |   | 0  | 15 | 8  | 9  | 8  | 3  | 0  | 8  | 0  | 8  | 8  | 6  | 0  | 6  | 6  | 10 | 0  | 9  | 6 | 6  | 3  |
| 63 | 25 | 28 | 30 | 35 | 25 |   | 25 | 25 | 8  | 10 | 4  | 10 | 5  | 5  | 1  | 8  | 8  | 8  | 0  | 6  | 5  | 1  | 0  | 0  | 5 | 4  | 1  |
| 7  | 10 | 15 | 10 | 12 | 1  | 6 | 6  | 1  | 7  | 7  | 7  | 7  | 7  | 9  | 9  | 9  | 9  | 5  | 8  | 8  | 5  | 7  | 5  | 6  | 0 | 1  | 5  |
| 14 | 12 | 16 | 22 | 25 | 1  |   | 0  | 8  | 7  | 8  | 9  | 7  |    | 6  | 8  |    | 6  | 7  | 1  | 4  | 4  | 10 | 7  | 10 | 9 | 10 | 9  |
| 16 | 12 | 24 | 12 | 24 |    | 6 |    | 0  | 9  | 9  | 9  | 8  | 0  | 8  | 10 | 7  | 5  | 7  | 1  |    | 8  | 10 | 8  |    | 4 | 5  | 6  |
| 22 | 14 | 21 | 14 | 18 | 3  | 0 | 0  | 0  | 7  | 10 | 10 | 8  | 0  | 10 | 7  | 10 | 10 | 8  | 0  | 10 | 9  | 10 | 6  | 10 | 4 | 9  | 10 |
| 60 | 1  | 4  | 10 | 11 | 0  | 0 | 0  | 0  | 8  | 8  | 10 | 7  | 10 | 8  | 0  | 8  | 5  | 6  | 6  | 6  | 6  | 6  | 1  | 6  | 6 | 6  | 6  |
| 62 | 3  | 6  | 12 | 15 | 0  |   | 16 | 0  | 9  | 8  | 7  | 0  | 10 | 0  | 0  | 0  | 0  | 0  | 10 | 0  | 0  | 6  | 0  | 0  | 7 | 8  | 7  |
| 64 | 13 | 25 | 13 | 22 | 4  |   | 1  | 3  | 8  | 9  | 9  | 10 | 0  | 8  | 1  | 6  | 9  | 1  | 0  | 2  | 2  | 1  | 0  | 6  | 6 | 10 | 1  |

| Response ID | L3                  |               |               |                          |   |                     |                         |                         |                   |                  |          |                      |         |                          |                         |         |                      |             |                    |                          |                         |             |                    |                |                        |                |                |                                 |                |
|-------------|---------------------|---------------|---------------|--------------------------|---|---------------------|-------------------------|-------------------------|-------------------|------------------|----------|----------------------|---------|--------------------------|-------------------------|---------|----------------------|-------------|--------------------|--------------------------|-------------------------|-------------|--------------------|----------------|------------------------|----------------|----------------|---------------------------------|----------------|
|             | Age at which you... |               |               |                          | How long spent where language is spoken |                     |                         |                         | Proficiency level |                  |          | Contributing factors |         |                          |                         |         | Language exposure    |             |                    |                          |                         |             |                    | Self appraisal |                        |                |                |                                 |                |
|             | began acquiring     | became fluent | began reading | became fluent in reading | is spoken?                              | is spoken (months)? | Spoken in a family (yy) | Spoken in a family (mm) | school/work (yy)  | school/work (mm) | speaking | understanding        | reading | Interacting with friends | Interacting with family | Reading | CDs/Self instruction | Watching TV | Listening to radio | Interacting with friends | Interacting with family | Watching TV | Listening to radio | Reading        | CDs / self instruction | Internet usage | foreign accent | accent identified as non-native | code-switching |
| 49          | 12                  | 19            | 12            | 19                       | 2                                       |                     | 2                       |                         | 11                |                  | 9        | 10                   | 9       | 8                        | 0                       | 10      | 2                    | 10          | 7                  | 8                        | 0                       | 8           | 6                  | 10             | 0                      | 10             | 4              | 3                               | 3              |
| 38          | 4                   | 10            | 10            | 12                       | 2                                       |                     | 17                      |                         | 2                 |                  | 9        | 9                    | 9       | 9                        | 9                       | 8       | 7                    | 9           | 0                  | 10                       | 10                      | 10          | 0                  | 8              | 7                      | 10             | 6              | 6                               | 8              |
| 46          | 11                  | 16            | 14            | 17                       | 0                                       |                     | 0                       |                         | 6                 |                  | 5        | 7                    | 6       | 3                        | 0                       | 7       | 6                    | 7           | 2                  | 1                        | 0                       |             | 0                  | 5              | 6                      | 6              | 2              | 10                              | 1              |
| 52          | 13                  | 16            | 13            | 16                       | 1                                       |                     | 1                       |                         | 2                 |                  | 9        | 10                   | 10      | 10                       | 5                       | 10      | 0                    | 10          | 3                  | 9                        | 9                       | 3           | 3                  | 10             | 0                      | 10             | 3              | 10                              | 7              |
| 41          | 5                   | 7             | 10            | 14                       | 0                                       |                     | 0                       |                         | 0                 |                  | 8        | 8                    | 8       | 10                       | 0                       | 0       | 10                   | 10          | 0                  | 5                        | 0                       | 0           | 0                  | 0              | 0                      | 0              | 1              | 3                               | 0              |
| 11          | 2                   | 3             | 7             | 9                        | 3                                       |                     | 0                       |                         | 0                 |                  | 10       | 10                   | 10      | 8                        | 10                      | 7       | 0                    | 10          | 10                 | 7                        | 10                      | 10          | 6                  | 6              | 0                      | 7              | 0              | 0                               | 0              |
| 34          | 13                  | 13            | 13            | 13                       | 0                                       | 0                   | 0                       | 0                       | 8                 | 6                | 7        | 8                    | 7       | 4                        | 4                       | 4       | 4                    | 4           | 4                  | 6                        | 0                       | 0           | 0                  | 0              | 0                      | 6              | 0              | 0                               | 2              |
| 43          | 10                  | 15            | 10            | 16                       | 0                                       |                     | 0                       |                         | 8                 |                  | 9        | 9                    | 9       | 10                       | 0                       | 10      | 3                    | 9           | 9                  | 10                       | 0                       | 10          | 10                 | 10             | 1                      | 8              | 4              | 5                               | 1              |
| 58          | 12                  | 18            | 13            | 18                       | 0                                       |                     | 0                       |                         | 0                 |                  | 6        | 9                    | 9       |                          |                         | 9       | 6                    | 7           | 6                  | 5                        |                         | 6           |                    | 8              |                        |                | 5              | 6                               | 2              |
| 66          | 13                  | 15            | 13            | 16                       | 0                                       | 1                   | 0                       | 1                       | 5                 | 1                | 7        | 10                   | 5       | 3                        | 0                       | 5       | 3                    | 6           | 0                  | 0                        | 0                       | 4           | 0                  | 7              | 2                      | 6              | 6              | 9                               | 5              |
| 72          | 13                  | 15            | 13            | 16                       | 1                                       |                     | 1                       |                         | 1                 |                  | 10       | 10                   | 10      | 4                        | 1                       | 10      | 8                    | 6           | 2                  | 4                        | 1                       | 6           | 3                  | 10             | 8                      | 7              | 0              | 1                               | 0              |
| 61          | 11                  | 16            | 14            | 16                       |   | 4                   |                         | 5                       | 7                 |                  | 8        | 8                    | 7       | 10                       | 10                      | 5       | 0                    | 7           | 0                  | 5                        | 5                       | 5           | 0                  | 5              | 0                      | 2              | 2              | 2                               | 1              |
| 67          | 29                  | 38            | 30            | 37                       | 10                                      |                     | 0                       |                         | 4                 |                  | 8        | 9                    | 9       | 9                        | 0                       | 8       | 1                    | 4           | 4                  | 9                        | 1                       | 3           | 3                  | 7              | 0                      | 6              | 4              | 6                               | 3              |
| 69          | 11                  | 23            | 11            | 23                       | 0                                       |                     | 0                       |                         | 3                 |                  | 7        | 7                    | 8       | 3                        | 0                       | 7       | 6                    | 6           | 0                  | 1                        | 0                       | 6           | 6                  | 2              | 3                      | 10             | 5              | 3                               | 3              |
| 73          | 16                  | 19            | 16            | 21                       |   | 8                   |                         | 3                       |                   | 6                | 8        | 8                    | 7       | 8                        | 5                       | 6       | 4                    | 10          | 4                  | 8                        | 2                       | 2           | 3                  | 4              | 3                      | 1              | 2              | 5                               | 3              |
| 13          | 13                  |               | 13            |                          | 0                                       |                     | 0                       |                         | 5                 |                  | 7        | 8                    | 8       | 5                        | 0                       | 6       | 0                    | 6           | 0                  | 8                        | 0                       | 10          | 10                 | 8              | 0                      | 10             | 6              | 6                               | 3              |
| 18          | 33                  |               | 33            |                          | 13                                      |                     | 0                       |                         | 1                 | 6                | 5        | 4                    | 3       | 0                        | 0                       | 2       | 6                    | 4           | 0                  | 0                        | 0                       | 4           | 0                  | 2              | 2                      | 1              | 8              | 10                              | 3              |
| 19          | 10                  | 11            | 13            | 13                       | 7                                       |                     | 7                       |                         | 7                 |                  | 9        | 10                   | 8       | 10                       | 0                       | 1       | 7                    | 0           | 0                  | 10                       | 0                       | 0           | 1                  | 1              | 0                      | 0              | 2              | 1                               | 0              |
| 20          | 22                  |               | 22            |                          | 0                                       | 1                   | 0                       | 0                       | 0                 | 0                | 5        | 7                    | 7       | 0                        | 0                       | 8       | 9                    | 7           | 7                  | 0                        | 0                       | 3           | 4                  | 8              | 8                      | 10             | 5              | 8                               | 0              |
| 32          | 9                   | 10            | 9             | 10                       | 1                                       |                     | 0                       |                         | 5                 |                  | 10       | 10                   | 10      | 10                       | 2                       | 7       | 10                   | 10          | 1                  | 10                       | 2                       | 10          | 0                  | 7              | 10                     | 10             | 1              | 9                               | 8              |
| 33          | 0                   | 4             | 10            | 12                       | 1                                       |                     | 30                      |                         | 14                |                  | 8        | 8                    | 7       | 4                        | 7                       | 3       | 0                    | 1           | 1                  | 4                        | 7                       | 1           | 1                  | 3              | 0                      | 1              | 3              | 3                               | 2              |
| 26          | 20                  | 30            | 20            | 30                       | 0                                       |                     | 0                       |                         | 0                 |                  | 2        | 3                    | 3       | 3                        | 0                       | 8       | 0                    | 0           | 0                  | 1                        | 0                       | 0           | 2                  | 9              | 0                      | 7              | 10             | 10                              | 3              |
| 28          | 10                  | 13            | 10            | 13                       | 0                                       |                     | 0                       |                         | 0                 |                  | 6        | 7                    | 7       | 3                        | 0                       | 3       | 0                    | 0           | 0                  | 4                        | 0                       | 0           | 0                  | 2              | 0                      | 0              | 6              | 6                               | 2              |
| 29          | 12                  | 16            | 12            | 16                       | 0                                       |                     | 0                       |                         | 0                 |                  | 6        | 6                    | 6       | 7                        | 4                       | 7       | 8                    | 6           | 9                  | 4                        | 2                       | 8           | 10                 | 8              | 8                      | 9              | 3              | 6                               | 3              |
| 24          | 11                  | 26            | 11            | 26                       | 0                                       |                     | 0                       |                         | 20                |                  | 6        | 7                    | 7       | 6                        | 0                       | 7       | 2                    | 6           | 1                  | 3                        | 0                       | 2           | 1                  | 3              | 0                      | 5              | 4              | 7                               | 3              |
| 36          | 28                  | 30            | 29            | 30                       | 4                                       |                     | 2                       |                         | 2                 |                  | 8        | 8                    | 9       | 5                        | 8                       | 10      | 8                    | 9           | 9                  | 8                        | 2                       | 9           | 9                  | 8              | 3                      | 8              | 5              | 10                              | 5              |

|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |   |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|----|----|----|---|
| 37 | 13 | 19 | 13 | 19 | 0  | 0  | 6  | 7  | 8  | 7  | 2  | 0  | 5  | 4  | 4  | 5  | 2  | 0  | 4  | 4  | 4  | 0 | 4  | 4  | 6  | 5 |
| 39 | 2  | 5  | 5  | 8  | 3  | 17 | 1  | 7  | 8  | 1  | 7  | 8  | 0  | 4  | 5  | 0  | 5  | 10 | 3  | 0  | 1  | 3 | 2  | 6  | 4  | 4 |
| 44 | 11 | 16 | 14 | 16 | 0  | 0  | 0  | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |    |    |    | 5  | 5  | 0 | 10 | 4  | 7  | 2 |
| 45 | 6  | 17 | 10 | 16 | 30 | 5  | 0  | 2  | 7  | 8  | 10 | 4  | 5  | 1  | 5  | 4  | 3  | 2  | 5  | 4  | 4  | 1 | 1  | 6  | 6  | 0 |
| 47 | 0  | 25 | 20 | 25 | 0  | 0  | 0  | 3  | 8  | 6  |    | 0  | 3  | 0  | 0  | 0  | 3  | 0  | 1  | 0  | 0  | 0 | 0  | 9  | 10 | 0 |
| 59 | 6  |    | 7  |    | 0  | 0  | 6  | 2  | 6  | 6  | 2  | 0  | 2  | 8  | 0  | 4  | 0  | 0  | 0  | 4  | 4  | 6 | 3  | 6  | 10 | 0 |
| 50 | 11 | 14 | 11 | 14 | 1  | 0  | 10 | 10 | 10 | 10 |    | 10 |    |    | 10 |    |    |    |    | 10 | 10 |   | 2  | 1  | 1  |   |
| 54 | 1  | 3  | 6  | 10 | 6  | 20 | 4  | 10 | 10 | 10 | 2  | 10 | 2  | 0  | 6  | 8  | 1  | 10 | 2  | 2  | 1  | 0 | 3  | 0  | 0  | 1 |
| 55 | 11 | 20 | 11 | 17 |    | 5  | 5  | 8  | 10 | 9  | 7  | 2  | 5  | 0  | 2  | 0  | 10 | 0  | 0  | 0  | 4  | 0 | 5  | 5  | 2  | 8 |
| 51 | 29 |    | 29 | 29 | 5  | 6  | 0  | 4  | 4  | 5  | 2  | 0  | 2  |    | 1  | 1  | 2  | 0  | 1  | 1  | 2  | 1 | 3  | 6  | 10 | 2 |
| 5  | 3  | 17 | 0  | 0  | 0  | 23 | 0  | 10 | 10 | 0  | 7  | 10 | 0  | 7  | 6  | 0  | 3  | 7  | 3  | 4  | 4  | 3 |    | 7  | 10 | 0 |
| 6  | 14 | 18 | 14 | 18 |    | 6  | 0  | 7  | 8  | 5  | 7  | 1  | 6  | 2  | 8  | 3  | 6  | 1  | 6  | 7  | 2  | 0 | 9  | 2  | 2  | 7 |
| 23 | 8  | 20 | 8  | 20 | 3  |    | 3  | 7  | 7  | 5  | 4  | 7  | 0  | 0  | 0  | 0  | 5  | 7  | 0  | 0  | 0  | 0 | 0  | 6  | 5  | 1 |
| 25 | 0  | 6  | 5  | 8  | 0  | 36 | 5  | 8  | 10 | 10 | 8  | 8  | 8  | 0  | 0  | 4  | 2  | 8  | 2  | 2  | 2  | 0 | 1  | 1  | 1  | 1 |
| 27 | 1  | 3  | 0  | 0  | 6  | 20 | 0  | 6  | 7  | 1  | 1  | 10 | 0  | 0  | 3  | 1  | 1  | 6  | 0  | 0  | 0  | 0 | 0  | 9  | 10 | 0 |
| 31 | 27 |    | 27 |    | 4  | 8  | 0  | 4  | 4  | 3  | 3  | 0  | 3  | 0  | 1  | 0  | 4  | 0  | 2  | 0  | 2  | 0 | 3  | 7  | 8  | 5 |
| 35 | 13 | 25 | 13 | 26 | 12 | 3  | 0  | 0  | 7  | 8  | 9  | 6  | 9  | 6  | 8  | 7  | 8  | 2  | 8  | 6  | 6  | 1 | 8  | 5  | 3  | 3 |
| 40 | 25 | 28 | 28 | 29 | 20 | 20 | 5  | 8  | 8  | 8  | 10 | 10 | 10 | 9  | 10 | 9  | 10 | 10 | 10 | 10 | 10 | 8 | 10 | 0  | 7  | 5 |
| 42 | 10 | 16 | 12 | 15 |    | 0  | 0  | 10 | 5  | 10 | 10 | 5  | 5  | 0  | 5  | 0  | 5  | 5  | 10 | 5  | 5  | 5 | 5  | 7  | 7  | 1 |
| 48 | 20 | 24 | 23 | 25 | 0  | 0  | 6  | 7  | 7  | 8  | 9  | 2  | 9  | 5  | 3  | 2  | 9  | 3  | 5  | 4  | 7  | 1 | 7  | 6  | 8  | 5 |
| 53 | 14 | 19 | 14 | 19 | 1  | 1  | 0  | 7  | 8  | 8  | 10 | 5  | 8  | 0  | 4  | 3  | 3  | 0  | 4  | 5  | 5  | 0 | 5  | 5  | 9  | 5 |
| 8  | 11 |    | 11 | 50 | 0  | 2  | 0  | 4  | 5  | 6  | 1  | 1  | 8  | 10 | 8  | 6  | 1  | 1  | 8  | 8  | 8  | 6 | 4  | 8  | 10 | 0 |
| 10 | 17 | 17 | 17 | 17 | 1  | 1  | 1  | 6  | 7  | 4  | 3  | 8  | 6  | 8  | 6  | 0  | 4  | 10 | 7  | 0  | 0  | 0 | 7  | 5  | 3  | 6 |
| 15 | 6  |    | 9  |    |    | 5  | 0  | 7  | 6  | 7  | 3  | 3  | 7  | 7  | 3  | 0  | 3  | 0  | 3  | 8  | 1  | 3 | 5  | 4  | 8  | 0 |
| 56 | 3  | 15 | 10 | 14 | 26 | 6  | 0  | 8  | 9  | 9  | 10 | 0  | 4  | 0  | 6  | 3  | 3  | 0  | 5  | 1  | 3  | 0 | 3  | 3  | 3  | 2 |
| 17 | 25 | 30 | 25 | 30 | 14 | 3  | 0  | 4  | 5  | 4  | 10 | 0  | 6  | 10 | 3  | 3  | 8  | 0  | 6  | 2  | 6  | 0 | 8  | 10 | 10 | 3 |
| 21 | 9  | 16 | 10 | 15 | 0  | 0  | 0  | 5  | 3  | 2  | 1  | 0  | 2  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0 | 1  | 7  | 10 | 2 |
| 57 | 14 | 27 | 14 | 27 | 0  | 0  | 0  | 7  | 8  | 8  | 0  | 0  | 8  | 0  | 10 | 8  | 0  | 0  | 2  | 2  | 2  | 0 | 3  | 5  | 4  | 3 |
| 65 | 29 |    | 30 |    | 6  | 0  | 4  | 5  | 8  | 8  | 7  | 6  | 8  | 8  | 8  | 6  | 4  | 4  | 5  | 5  | 7  | 7 | 8  | 8  | 9  | 5 |
| 70 | 5  | 8  | 8  | 10 | 0  | 0  | 5  | 2  | 7  | 7  | 0  | 0  | 5  | 0  | 10 | 0  | 0  | 0  |    | 0  | 0  | 0 |    | 8  | 8  | 1 |
| 63 | 25 | 30 | 35 | 35 | 0  | 0  | 0  | 5  | 8  | 8  | 2  | 0  | 5  | 0  | 3  | 0  | 2  | 0  | 5  | 0  | 5  | 0 | 0  | 7  | 10 | 0 |
| 7  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |   |
| 14 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |   |
| 16 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |   |
| 22 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |   |
| 60 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |   |
| 62 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |   |
| 64 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |    |    |    |   |

| Response ID | L4                  |               |               |                          |   |                     |                         |                         |                  |                   |          |               |                      |                          |                         |         |                      |                   |                    |                          |                         |             |                    |         |                        |                |                |                                 |                |
|-------------|---------------------|---------------|---------------|--------------------------|---|---------------------|-------------------------|-------------------------|------------------|-------------------|----------|---------------|----------------------|--------------------------|-------------------------|---------|----------------------|-------------------|--------------------|--------------------------|-------------------------|-------------|--------------------|---------|------------------------|----------------|----------------|---------------------------------|----------------|
|             | Age at which you... |               |               |                          | How long spent where language is spoken |                     |                         |                         |                  | Proficiency level |          |               | Contributing factors |                          |                         |         |                      | Language exposure |                    |                          |                         |             |                    |         | Self appraisal         |                |                |                                 |                |
|             | began acquiring     | became fluent | began reading | became fluent in reading | is spoken?                              | is spoken (months)? | Spoken in a family (yy) | Spoken in a family (mm) | school/work (yy) | school/work (mm)  | speaking | understanding | reading              | Interacting with friends | Interacting with family | Reading | CDs/Self instruction | Watching TV       | Listening to radio | Interacting with friends | Interacting with family | Watching TV | Listening to radio | Reading | CDs / self instruction | Internet usage | foreign accent | accent identified as non-native | code-switching |
| 49          | 11                  | 15            | 11            | 12                       | 0                                       |                     | 0                       |                         | 0                |                   | 1        | 9             | 10                   | 0                        | 0                       | 10      | 0                    | 1                 | 1                  | 0                        | 0                       | 1           | 0                  | 8       | 0                      | 1              | 0              | 0                               | 2              |
| 38          | 8                   | 16            | 11            | 15                       | 0                                       |                     |                         | 1                       | 0                |                   | 4        | 7             | 5                    | 9                        | 10                      | 7       | 7                    | 1                 | 1                  | 7                        | 8                       | 2           | 2                  | 5       | 5                      | 5              | 7              | 10                              | 3              |
| 46          | 9                   | 15            | 12            | 15                       | 0                                       |                     | 0                       |                         | 9                |                   | 6        | 7             | 8                    | 3                        | 2                       | 7       | 6                    | 6                 | 0                  | 3                        | 3                       | 6           | 0                  | 6       | 7                      | 0              | 1              | 10                              | 0              |
| 52          | 11                  | 14            | 11            | 14                       |   | 3                   |                         | 3                       |                  | 0                 | 8        | 9             | 8                    | 2                        | 0                       | 10      | 0                    | 6                 | 1                  | 2                        | 0                       | 5           | 1                  | 6       | 0                      | 5              | 3              | 10                              | 3              |
| 41          | 23                  | 28            | 23            | 30                       | 0                                       |                     | 0                       |                         | 0                |                   | 7        | 7             | 7                    | 10                       | 0                       | 7       | 0                    | 0                 | 0                  | 0                        | 0                       | 0           | 0                  | 0       | 0                      | 0              | 5              | 5                               | 0              |
| 11          | 10                  | 11            | 12            | 12                       | 0                                       |                     | 0                       |                         | 0                |                   | 10       | 10            | 10                   | 5                        | 5                       | 5       | 0                    | 10                | 5                  | 5                        | 5                       | 5           | 5                  | 5       | 0                      | 0              | 2              | 0                               | 0              |
| 34          | 18                  | 18            | 18            | 18                       | 0                                       | 0                   | 0                       | 0                       | 1                | 0                 | 5        | 6             | 5                    | 0                        | 6                       | 0       | 3                    | 0                 | 0                  | 6                        | 6                       | 0           | 0                  | 0       | 0                      | 0              | 2              | 0                               | 0              |
| 43          | 12                  | 16            | 12            | 16                       |   | 6                   | 0                       |                         | 5                |                   | 9        | 9             | 9                    | 10                       | 0                       | 10      | 2                    | 1                 | 1                  | 10                       | 0                       | 1           | 1                  | 10      | 1                      | 10             | 4              | 5                               | 1              |
| 58          | 25                  | 27            | 25            | 27                       | 0                                       |                     | 0                       |                         | 0                |                   | 5        | 5             | 5                    | 5                        | 0                       | 5       | 5                    | 2                 | 0                  | 2                        | 0                       | 2           | 0                  | 2       | 2                      | 0              | 6              | 7                               | 1              |
| 66          | 11                  | 17            | 11            | 15                       | 0                                       | 0                   | 0                       | 0                       | 7                | 0                 | 3        | 7             | 6                    | 0                        | 0                       | 6       | 2                    | 0                 | 0                  | 0                        | 0                       | 2           | 0                  | 7       | 1                      | 0              | 10             | 10                              | 0              |
| 72          | 13                  | 18            | 13            | 25                       | 0                                       |                     | 0                       |                         | 0                |                   | 4        | 7             | 7                    | 4                        | 0                       | 1       | 7                    | 1                 | 0                  | 1                        | 0                       | 1           | 0                  | 1       | 0                      | 0              | 2              | 2                               | 0              |
| 61          | 16                  |               | 16            |                          | 0                                       |                     | 0                       |                         | 2                |                   | 5        | 5             | 5                    | 7                        | 3                       | 6       | 0                    | 9                 | 1                  | 5                        | 2                       | 9           | 0                  | 2       | 0                      | 4              | 3              | 3                               | 1              |
| 67          | 8                   | 36            | 12            | 26                       | 0                                       |                     | 0                       |                         | 15               |                   | 6        | 7             | 8                    | 8                        | 2                       | 9       | 3                    | 5                 | 0                  | 7                        | 2                       | 2           | 0                  | 8       | 0                      | 6              | 5              | 8                               | 2              |
| 69          | 32                  |               | 32            |                          | 0                                       |                     | 7                       |                         | 0                |                   | 2        | 2             | 0                    | 8                        | 10                      | 0       | 4                    | 0                 | 0                  | 8                        | 10                      | 0           | 0                  | 0       | 0                      | 0              | 4              | 2                               | 5              |
| 73          | 12                  | 15            | 17            | 21                       |   | 4                   |                         | 2                       |                  | 2                 | 4        | 4             | 4                    | 5                        | 5                       | 6       | 4                    | 4                 | 4                  | 3                        | 3                       | 6           | 3                  | 3       | 3                      | 7              | 8              | 8                               | 5              |
| 13          | 11                  |               | 11            |                          | 0                                       |                     | 0                       |                         | 7                |                   | 3        | 3             | 3                    | 1                        | 0                       | 5       | 1                    | 0                 | 0                  | 1                        | 0                       | 0           | 0                  | 1       | 0                      | 0              | 9              | 6                               | 0              |
| 18          | 11                  |               | 11            |                          | 0                                       |                     | 0                       |                         | 0                |                   | 1        | 2             | 2                    | 0                        | 0                       | 0       | 1                    | 0                 | 0                  | 0                        | 0                       | 0           | 0                  | 0       | 0                      | 0              | 10             | 10                              | 0              |
| 19          | 10                  | 17            | 10            | 16                       | 0                                       |                     | 0                       |                         | 0                |                   | 5        | 6             | 7                    | 0                        | 2                       | 2       | 3                    | 3                 | 3                  | 0                        | 1                       | 1           | 2                  | 2       | 1                      | 0              | 0              | 2                               | 1              |
| 20          | 12                  |               | 12            |                          | 38                                      | 0                   | 0                       |                         | 0                |                   | 8        | 9             | 8                    | 0                        | 0                       | 8       | 9                    | 9                 | 9                  | 0                        | 0                       | 10          | 9                  | 8       | 9                      | 10             | 6              | 8                               | 1              |
| 32          | 19                  | 20            | 0             | 0                        | 0                                       |                     | 2                       |                         | 0                |                   | 4        | 1             | 0                    | 9                        | 0                       | 0       | 0                    | 0                 | 0                  | 9                        | 0                       | 0           | 0                  | 0       | 0                      | 9              | 5              | 10                              | 1              |
| 33          | 14                  | 20            | 14            | 16                       |   | 6                   |                         | 0                       |                  | 3                 | 5        | 7             | 6                    | 6                        | 0                       | 6       | 1                    | 1                 | 1                  | 1                        | 0                       | 1           | 1                  | 4       | 0                      | 8              | 6              | 6                               | 5              |
| 26          | 15                  | 18            | 18            | 18                       | 0                                       |                     | 0                       |                         | 0                |                   | 4        | 4             | 2                    | 0                        | 6                       | 0       | 0                    | 0                 | 0                  |                          | 8                       |             |                    |         |                        |                | 9              | 10                              | 0              |
| 28          | 42                  |               | 42            |                          | 0                                       |                     | 0                       |                         | 0                |                   | 1        | 3             | 3                    | 0                        | 0                       | 0       | 10                   | 0                 | 0                  | 0                        | 0                       | 0           | 0                  | 0       | 10                     | 0              | 9              | 9                               | 0              |
| 29          | 12                  | 18            | 12            | 18                       | 0                                       | 0                   | 0                       | 0                       | 6                | 0                 | 4        | 4             | 6                    | 7                        | 0                       | 7       | 7                    | 6                 | 6                  | 10                       | 0                       | 7           | 7                  | 7       | 7                      | 2              | 7              | 6                               | 0              |
| 24          | 35                  |               | 36            |                          | 0                                       |                     | 0                       |                         | 3                |                   | 2        | 4             | 3                    | 1                        | 0                       | 1       | 1                    | 1                 | 0                  | 1                        | 0                       | 0           | 0                  | 0       | 0                      | 0              | 5              | 9                               | 0              |
| 36          | 20                  | 21            | 21            | 22                       | 0                                       |                     | 5                       |                         | 0                |                   | 7        | 8             | 8                    | 0                        | 0                       | 8       | 9                    | 3                 | 1                  | 3                        | 7                       | 2           | 3                  | 5       | 2                      | 7              | 8              | 10                              | 5              |

|    |    |    |    |    |   |    |   |    |    |    |    |    |    |    |    |   |    |   |    |    |    |   |   |   |    |   |
|----|----|----|----|----|---|----|---|----|----|----|----|----|----|----|----|---|----|---|----|----|----|---|---|---|----|---|
| 37 | 11 | 18 | 11 | 15 | 0 | 0  | 7 | 7  | 8  | 7  | 0  | 0  | 3  | 0  | 2  | 2 | 3  | 0 | 1  | 1  | 2  | 0 | 2 | 4 | 6  | 1 |
| 39 | 11 | 15 | 11 | 15 | 0 | 0  | 8 | 3  | 7  | 6  | 4  | 0  | 6  | 7  | 8  | 0 | 1  | 0 | 7  | 7  | 7  | 6 | 6 | 8 | 10 | 1 |
| 44 | 13 |    | 14 |    | 0 | 0  | 0 |    | 10 |    | 10 | 10 |    |    | 10 |   |    |   | 10 | 10 |    |   | 6 | 9 | 1  |   |
| 45 | 1  | 6  | 13 | 25 | 1 | 36 | 0 | 10 | 10 | 5  | 5  | 5  | 5  |    |    | 5 | 5  |   |    |    |    |   | 3 | 2 | 0  |   |
| 47 | 28 |    | 28 |    | 7 | 0  | 0 | 1  | 3  | 3  | 3  | 0  | 3  |    | 3  | 0 | 4  | 0 | 4  | 0  | 3  | 3 | 3 | 9 | 10 | 0 |
| 59 | 14 |    | 15 |    | 0 | 0  | 0 | 1  | 3  | 2  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0 | 0  | 0  | 0  | 0 | 0 | 3 | 10 | 1 |
| 50 | 14 | 19 | 14 | 17 | 0 | 0  | 0 | 10 | 10 | 10 |    | 10 | 10 | 10 |    |   | 10 |   | 10 |    | 10 |   | 5 | 3 | 3  |   |
| 54 | 13 | 19 | 13 | 14 | 0 | 0  | 6 | 8  | 10 | 6  | 1  | 0  | 2  | 7  | 8  | 8 | 0  | 0 | 1  | 7  | 5  | 6 | 2 | 3 | 6  | 1 |
| 55 | 16 | 16 | 16 | 16 | 2 | 2  | 2 | 3  | 6  | 5  | 10 | 1  | 0  | 0  | 1  | 0 | 10 | 0 | 1  | 0  | 0  | 0 | 0 | 8 | 10 | 8 |
| 51 | 23 |    | 23 | 23 | 6 | 0  | 1 | 3  | 4  | 6  | 1  | 0  | 3  |    | 2  | 2 | 1  | 1 | 1  | 1  | 1  | 1 | 1 | 0 | 7  | 1 |

| Response ID | L5                  |               |               |                          |   |                     |                         |                         |                   |                  |          |                      |         |                          |                         |         |                      |             |                    |                          |                         |                 |                    |         |                        |                |                |                                 |                |  |
|-------------|---------------------|---------------|---------------|--------------------------|---|---------------------|-------------------------|-------------------------|-------------------|------------------|----------|----------------------|---------|--------------------------|-------------------------|---------|----------------------|-------------|--------------------|--------------------------|-------------------------|-----------------|--------------------|---------|------------------------|----------------|----------------|---------------------------------|----------------|--|
|             | Age at which you... |               |               |                          | How long spent where language is spoken |                     |                         |                         | Proficiency level |                  |          | Contributing factors |         |                          |                         |         | Language exposure    |             |                    |                          |                         | Self ap-praisal |                    |         |                        |                |                |                                 |                |  |
|             | began acquiring     | became fluent | began reading | became fluent in reading | is spoken?                              | is spoken (months)? | Spoken in a family (yy) | Spoken in a family (mm) | school/work (yy)  | school/work (mm) | speaking | understanding        | reading | Interacting with friends | Interacting with family | Reading | CDs/Self instruction | Watching TV | Listening to radio | Interacting with friends | Interacting with family | Watching TV     | Listening to radio | Reading | CDs / self instruction | Internet usage | foreign accent | accent identified as non-native | code-switching |  |
| 49          | 9                   | 18            | 10            | 18                       | 0                                       |                     | 0                       |                         | 15                |                  | 7        | 9                    | 9       | 6                        | 0                       | 8       | 1                    | 8           | 10                 | 7                        | 0                       | 9               | 9                  | 7       | 0                      | 6              | 5              | 6                               | 2              |  |
| 38          | 0                   | 12            | 6             | 19                       | 2                                       |                     | 17                      |                         | 2                 |                  | 4        | 5                    | 1       | 9                        | 10                      | 6       | 4                    | 5           | 1                  | 4                        | 9                       | 7               | 3                  | 3       | 2                      | 3              | 7              | 10                              | 3              |  |
| 46          | 13                  | 16            | 20            | 20                       | 0                                       |                     | 0                       |                         | 3                 |                  | 10       | 8                    | 4       | 6                        | 3                       | 4       | 2                    | 10          | 2                  | 6                        | 2                       | 10              | 2                  | 0       | 0                      | 0              | 3              | 10                              | 1              |  |
| 52          | 16                  | 18            | 16            | 18                       |   | 0                   |                         | 0                       |                   | 0                | 7        | 7                    | 7       | 1                        | 0                       | 7       | 0                    | 5           | 0                  | 1                        | 0                       | 5               | 0                  | 5       | 0                      | 5              | 3              | 10                              | 1              |  |
| 41          | 32                  | 36            | 32            | 36                       | 0                                       |                     | 0                       |                         | 0                 |                  | 7        | 6                    | 7       | 5                        | 0                       | 9       | 10                   | 8           | 9                  | 6                        | 0                       | 6               | 9                  | 0       | 0                      | 0              | 3              | 5                               | 5              |  |
| 11          | 12                  | 13            | 12            | 12                       | 0                                       |                     | 0                       |                         | 5                 |                  | 10       | 10                   | 10      | 5                        | 5                       | 10      | 5                    | 5           | 5                  | 0                        | 6                       | 0               | 0                  | 6       | 0                      | 0              | 2              | 0                               | 0              |  |
| 34          | 20                  | 20            | 20            | 20                       | 0                                       | 2                   | 2                       | 0                       | 0                 | 0                | 5        | 7                    | 3       | 0                        | 5                       | 0       | 1                    | 0           | 0                  | 0                        | 7                       | 0               | 0                  | 0       | 3                      | 2              | 3              | 5                               | 3              |  |
| 43          | 18                  | 20            | 18            | 45                       | 2                                       |                     | 0                       |                         | 5                 |                  | 2        | 2                    | 2       | 8                        | 0                       | 5       | 5                    | 0           | 0                  | 8                        | 0                       | 0               | 0                  | 5       | 5                      | 1              | 6              | 7                               | 0              |  |
| 58          | 23                  |               | 23            |                          | 0                                       |                     | 0                       |                         | 0                 |                  | 2        | 5                    | 5       | 1                        | 0                       | 5       | 3                    | 5           | 0                  | 1                        | 0                       | 2               | 2                  | 2       | 2                      | 0              | 6              | 6                               | 0              |  |
| 66          | 12                  |               | 12            |                          | 0                                       | 0                   | 0                       | 0                       | 1                 | 0                | 1        | 4                    | 5       | 0                        | 0                       | 0       | 0                    | 0           | 0                  | 0                        | 0                       | 0               | 0                  | 0       | 0                      | 0              | 10             | 10                              | 2              |  |
| 72          | 17                  | 22            | 17            | 22                       | 0                                       |                     | 0                       |                         | 0                 |                  | 2        | 3                    | 4       | 0                        | 0                       | 8       | 0                    | 0           | 0                  | 0                        | 0                       | 0               | 0                  | 1       | 0                      | 0              | 4              | 6                               | 0              |  |

| L6          |                     |               |               |                          |   |                     |                         |                         |                  |                  |                   |               |         |                          |                         |         |                      |             |                    |                          |                         |             |                    |         |                        |                 |                |                                 |                |
|-------------|---------------------|---------------|---------------|--------------------------|---|---------------------|-------------------------|-------------------------|------------------|------------------|-------------------|---------------|---------|--------------------------|-------------------------|---------|----------------------|-------------|--------------------|--------------------------|-------------------------|-------------|--------------------|---------|------------------------|-----------------|----------------|---------------------------------|----------------|
| Response ID | Age at which you... |               |               |                          | How long spent where language is spoken |                     |                         |                         |                  |                  | Proficiency level |               |         | Contributing factors     |                         |         |                      |             |                    | Language exposure        |                         |             |                    |         |                        | Self ap-praisal |                |                                 |                |
|             | began acquiring     | became fluent | began reading | became fluent in reading | is spoken?                              | is spoken (months)? | Spoken in a family (yy) | Spoken in a family (mm) | school/work (yy) | school/work (mm) | speaking          | understanding | reading | Interacting with friends | Interacting with family | Reading | CDs/Self instruction | Watching TV | Listening to radio | Interacting with friends | Interacting with family | Watching TV | Listening to radio | Reading | CDs / self instruction | Internet usage  | foreign accent | accent identified as non-native | code-switching |
| 49          | 16                  | 22            | 16            | 18                       |   | 6                   | 0                       |                         | 13               |                  | 2                 | 5             | 6       | 9                        | 0                       | 7       | 7                    | 7           | 6                  | 9                        | 0                       | 7           | 4                  | 7       | 2                      | 8               | 6              | 6                               | 2              |
| 38          | 6                   | 20            | 6             | 20                       | 0                                       |                     | 0                       |                         | 2                |                  | 3                 | 4             | 4       | 6                        | 6                       | 6       | 5                    | 8           | 0                  | 7                        | 6                       | 8           | 0                  | 6       | 5                      | 5               | 9              | 10                              | 1              |
| 46          | 19                  | 20            | 0             | 0                        | 0                                       |                     | 0                       |                         | 0                |                  | 3                 | 8             | 1       | 10                       | 0                       | 0       | 0                    | 6           | 0                  | 9                        | 0                       | 5           | 0                  | 0       | 0                      | 0               | 1              | 10                              | 1              |
| 52          | 24                  | 28            | 24            | 28                       |   | 1                   |                         | 1                       |                  | 0                | 5                 | 5             | 5       | 4                        | 8                       | 7       | 3                    | 7           | 1                  | 4                        | 8                       | 7           | 1                  | 7       | 3                      | 6               | 5              | 10                              | 2              |
| 41          | 10                  | 14            | 10            | 13                       | 0                                       |                     | 0                       |                         | 0                |                  | 7                 | 7             | 7       | 0                        | 0                       | 0       | 7                    | 0           | 0                  | 0                        | 0                       | 5           | 0                  | 0       | 0                      | 0               | 5              | 5                               | 0              |
| 11          | 15                  | 36            | 15            | 35                       | 0                                       |                     | 0                       |                         | 3                |                  | 5                 | 7             | 5       | 5                        | 0                       | 10      | 10                   | 6           | 5                  | 5                        | 7                       | 0           | 10                 | 7       | 0                      | 5               | 3              | 0                               | 0              |

# Appendix C

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## Choice of Online Survey Tool

| Criterion                     | Priority  | Reason   |
|-------------------------------|-----------|--|
| Price/Month (CHF)             | V. High   | Limited budget. Strong preference for free or student version                                |
| No. Of Answers/Month          | Essential | Assuming 100 participants and 60 questions --> 6000 possible answers                         |
| No. Of Surveys/Month          | Low       | 1 or 2 should be enough (plus test-runs)   |
| Email invitation              | V. High   | Much easier to manage and identify participants, dispatch invitations and automate reminders |
| Limit start/end of survey     | Low       | Nice to have, assuming result data can be exported at any time                               |
| Export to Excel               | Essential | Absolutely essential for post-processing analysis and display of data                        |
| Reporting --> PDF             | Medium    | Nice to have for quick overview (e.g. whilst survey is still running)                        |
| Logic: Skip Questions         | Essential | Essential: otherwise every participant has to click through all 6 languages                  |
| Optional/Compulsary Questions | V. High   | For open questions, has to be optional. Most must be compulsory.                             |
| No. Of Question Types         | Medium    | For good ergonomics, need a variety of types   |
| Realtime Results              | V. High   | Important to track progress and check for possible problems                                  |

Table 1: Criteria for Choice of Online Survey Tool

## Decision Matrix for Choice of Online Survey Tool

| Product Name                    | Product version |  |  |  |  |
|---------------------------------|-----------------|--|--|--|--|
|                                 |                 | <a href="http://www.surveio.com/">www.surveio.com/</a> | <a href="http://www.surveymonkey.com/">www.surveymonkey.com/</a> | <a href="http://www.esurveyspro.com/">www.esurveyspro.com/</a> | <a href="http://www.surveygizmo.com/">www.surveygizmo.com/</a> |
| Price/Month (CHF)               | S               | 0.00   | 0.00   | 0.00   | 35.00  |
|                                 | M               | 11.90  | 35.00  | 89.60  | 75.00  |
|                                 | L               | 29.90  | 97.40  | 179.10   | 199*   |
| No. Of Answers/Month            | S               | 100  | 100/survey   |  | 10'000   |
|                                 | M               | 10'000   | 1'000  | 1'000  | unlimited  |
|                                 | L               | 100'000  | unlimited  | 100'000  | unlimited  |
| No. Of Surveys/Month            | S               | 5  | DS   | unlimited  | unlimited  |
|                                 | M               | 100  | DS   | unlimited  | unlimited  |
|                                 | L               | unlim.   | DS   | unlimited  | unlimited  |
| Email invitation                | S               |  | X  | X  | X  |
|                                 | M               |  | X  | X  | X  |
|                                 | L               | X  | X  | X  | X  |
| Limit start/end of survey       | S               | X  | DS   | X  | X  |
|                                 | M               | X  | DS   | X  | X  |
|                                 | L               | X  | DS   | X  | X  |
| Export to Excel                 | S               |  | DS   |  | X  |
|                                 | M               | X  | DS   | X  | X  |
|                                 | L               | X  | DS   | X  | X  |
| Reporting --> PDF               | S               | X  |  | X  | X  |
|                                 | M               | X  | X  | X  | X  |
|                                 | L               | X  | X  | X  | X  |
| Logic: Skip Questions           | S               |  |  |  | X  |
|                                 | M               | X  | X  | X  | X  |
|                                 | L               | X  | X  | X  | X  |
| Additional/Compulsary Questions | S               | X  | DS   | X  | X  |
|                                 | M               | X  | DS   | X  | X  |
|                                 | L               | X  | DS   | X  | X  |
| No. Of Question Types           | S               | 19   | 15   | 14   | 23   |
|                                 | M               | 19   | 15   | 14   | 23   |
|                                 | L               | 19   | 15   | 19   | 23   |
| Realtime Results                | S               |  | X  | DS   | X  |
|                                 | M               |  | X  | DS   | X  |
|                                 | L               | X  | X  | DS   | X  |

\*) 14-day free trial



# Appendix D

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## The Questionnaire (English version)

### 1. Page One

1. Age (years)

2. Gender

3. Please list all the languages you know in order of dominance:

L1

L2

L3

L4

L5

L6

4. Please list all the languages you know in order of acquisition (your native language first):

*First Language Acquired*

*Second Language Acquired*

*Third Language Acquired*

*Fourth Language Acquired*

*Fifth Language Acquired*

*Sixth Language Acquired*

5. Please list all the languages you know in order of emotionality (the language you prefer to use when expressing yourself emotionally first):

*First Language*

*Second Language*

*Third Language*

*Fourth Language*

*Fifth Language*

*Sixth Language*

6. Please list what percentage of the time you are currently and on average exposed to each language.

L1

L2

L3

L4

L5

L6

*Total : 100%*

**7. When choosing to read a text available in all your languages, in what percentage of cases would you choose to read it in each of your languages? Assume that the original was written in another language, which is unknown to you.**

*L1*

*L2*

*L3*

*L4*

*L5*

*L6*

*Total : 100%*

**8. When choosing a language to speak with a person who is equally fluent in all your languages, what percentage of time would you choose to speak each language? Please report percent of total time.**

*L1*

*L2*

*L3*

*L4*

*L5*

*L6*

*Total : 100%*

**9. How many years of formal education do you have?**

**10. Please specify your highest education level (or the approximate equivalent to a degree obtained in another country):**

*Less than High School*

*High School*

*Some College*

*First Degree (Bachelor)*

*Masters*

*Doctorate (PhD, MD, JD)*

*Other*

**11. In which country do you currently live?**

**12. How long have you been living in that country?**

*Years Months*

**13. In which other countries have you lived (minimum of 1 year's residence)**

*Country*

*Earliest residence*

*next...*

*next...*

*next...*

*next...*

**14. Have you ever had problems with any of the following? If yes, please explain (including any corrections):**

*Vision Hearing Language Learning Impairment/disability*

*Comments:*

## 2. Language History L1

**15. Age (years) when you began acquiring L1**

**16. Age (years) when you became fluent in L1**

**17. Age (years) when you began reading L1**

**18. Age (years) when you became fluent in reading L1**

**19. How long have you spent in environments where L1 is spoken?**

*Years Months*

*A Country*

*A Family*

*A school/working environment*

**20. Please select your level of proficiency in L1**

*speaking :*

*understanding :*

*reading :*

**21. How much did the following factors contribute to you learning L1**

*Interacting with friends :*

*Interacting with family :*

*Reading :*

*CDs/Self instruction :*

*Watching TV :*

*Listening to radio :*

**22. Please rate to what extent you are currently exposed to L1 in the following contexts:**

*Interacting with friends :*

*Interacting with family :*

*Watching TV :*

*Listening to radio :*

*Reading :*

*CDs / self instruction :*

*Internet usage :*

**23. In your perception, how much of a foreign accent do you have in L1**

*none*

*almost none*

*very light*

*light*

*some*

*moderate*

*considerable*

*heavy*

*very heavy*

*extremely heavy*

*pervasive*

**24. Please rate how frequently others identify you as a non-native speaker based on your accent in L1**

*never*  
*almost never*  
*very occasionally*  
*occasionally*  
*half the time*  
*sometimes*  
*usually*  
*often*  
*very often*  
*extremely often*  
*always*

**25. How frequently do you use L1 words and expressions when conversing in other Languages**

*never*  
*almost never*  
*very occasionally*  
*occasionally*  
*half the time*  
*sometimes*  
*usually*  
*often*  
*very often*  
*extremely often*  
*always*

### 3. Language History L2

...as L1

### 4. Language History L3

...as L1

### 5. Language History L4

...as L1

### 6. Language History L5

...as L1

### 7. Language History L6

...as L1

### 8. Final Questions

**48. Language immersion, or simply immersion, is a method of teaching a second language in which the learners' second language (L2) is the medium of classroom instruction. Did you attend such a school and did you have instruction in a language other than L1?**

**49.**

**This is an optional question**

**As a bilingual/polyglot you may have heard of some advantages or disadvantages that multilinguals have. Describe briefly a maximum of 3 such myths or facts that you have heard. Do you find, from your own experience, they are true?**

**50. Is there any feedback on this questionnaire that you would like to give?**

**51. Your interest in this project and your perseverance in finishing the survey is very much appreciated.**

**Would you be interested in receiving a copy of the finished paper (this will be towards the end of 2014)?**

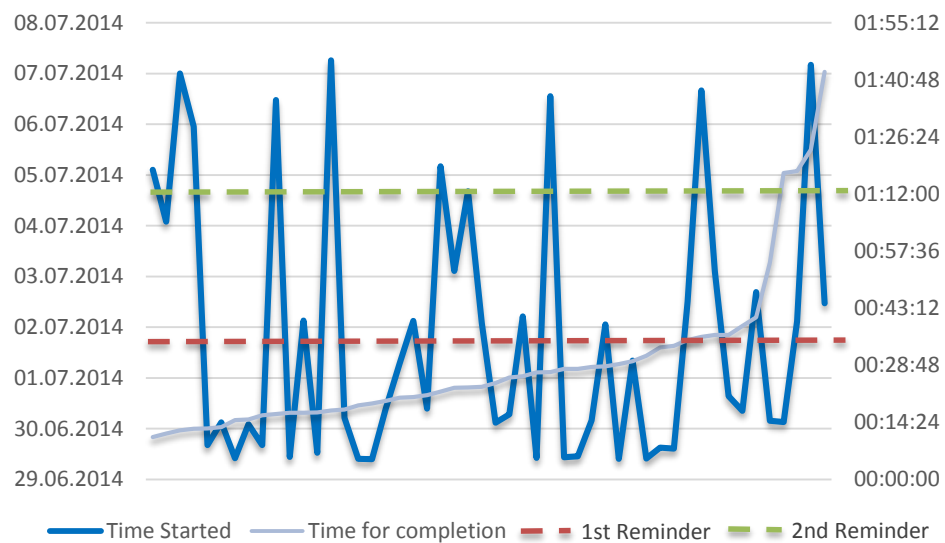
*No thank you / Yes, please do send me a PDF of the finished paper*

#### **9. Email-Address**

**52. Please enter the email account to which the finished paper should be sent**

# Appendix E

## Details of survey completion times



**Figure 28: Dates and Speed of Completion (< 2h)**

In Figure 28 it is apparent that a roughly normal distribution of completion-times ranging from 11 to 40 minutes was achieved and that there is a grouping of activity at 4 dates: during the first 24 hours of the survey, after each of the 2 reminders and just before closing the survey on 8<sup>th</sup> July.

# Selbstständigkeitserklärung

---

Ich erkläre hiermit, dass ich die Maturaarbeit selbständig verfasst und keine anderen als die angegebenen Quellen benutzt habe.

Das „Merkblatt Plagiate für Maturandinnen und Maturanden“ ist mir bekannt. Ich weiss auch, welche Konsequenzen es hat, wenn ich ein Teil- oder Vollplagiat abliefern.

Bern, Oktober 2014

Janice Butler \_\_\_\_\_