Personality Differences in Monolinguals and Bilinguals. An Exploratory Analysis

AUTHOR
Vanessa Whiteley

ABSTRACT
Previous research indicates that bilinguals have higher scores in certain personality traits than monolinguals; the present study examines further evidence for this claim. Participants (N = 256, F = 170, M = 86) completed a questionnaire-based survey, asking them about language use in up to four of their spoken languages, as well as their reasons for taking up each new language; they then completed the HEXACO 60-item personality inventory. To compare monolinguals and bilinguals, independent-sample t-tests were used to analyse differences in each of the six personality traits between the two groups. One-way ANOVAs were used to analyse personality differences between monolinguals, balanced bilinguals and unbalanced bilinguals. Content analysis of reasons for speaking a new language resulted in 5 extracted themes: education, relocation, native, leisure, and work. Bilinguals showed significantly higher openness to experience compared to monolinguals; ANOVAs showed that balanced bilinguals were significantly higher in honesty-humility than unbalanced bilinguals; balanced bilinguals were significantly higher in conscientiousness than monolinguals and unbalanced bilinguals; and monolinguals were significantly lower in openness to experience than both balanced bilinguals and unbalanced bilinguals. Content analysis revealed the main reason for taking up a new language was education, followed by leisure - involving reasons such as the longing to take up the language. This study adds to the literature of bilingualism and personality, while suggesting the importance of education in learning languages and highlighting the need to investigate the direction of the relationship between language learning and personality.

Correspondence Address
Vanessa Whiteley, BSc Student, University of Buckingham. Email: vanessa.whiteley@outlook.com

INTRODUCTION

Bilinguals and Monolinguals
The study of language is a significant part of cognitive psychology, while language learning is an important developmental stage, which occurs spontaneously and through observation, without conscious training. Given that there are almost 7000 different languages used by humans, there must be reasons why some people learn to speak multiple languages and others do not. Such differences could be linked to cognitive constraints, such as with individual memory limitations where there may be a personal weakness in short term memory during learning, or a weakness in long term memory when practicing, which can hinder linguistic development. There are of course individual differences in second language acquisition (SLA) between and within cultures, such as in learning methods, ethnic variables, and indeed linguistic styles and idioms. Pinker indicates that individual differences include attitude, exerted effort, amount of exposure, quality of learning, and raw talent.

It has been suggested that more than half of the world’s population speaks multiple languages, so is bilingual. However, it has long been considered that there is a difference between people who speak one language (monolinguals) and those who speak two or more languages proficiently (bilinguals). In this way, questions about whether bilinguals and monolinguals are in fact two distinct types of people, have brought to light questions concerning bilingualism and the bilingual brain.

It is therefore interesting to see if there might be a relationship between the reason for speaking more than one language, and one’s personality traits, so that researchers can identify why some people choose to learn languages during education.
while others do not – or why some people move abroad to be immersed in foreign languages and their cultures. These questions shed light on current and past research into the fields of cognitive, social, and linguistic psychology, whilst expanding the knowledge base to improve the understanding of linguists and their personality traits. Finally, questions about whether bilinguals have different reasons for becoming bilingual have seldom been researched, and less alongside measuring demographic information and personality traits. Answers to these questions could allow researchers to find out whether some individuals are superior at learning languages than others, and even help people to decide whether they should continue to learn a language if they are naturally gifted and predisposed to language learning.

A bilingual has been defined as someone who has spoken two or more languages proficiently, with balanced exposure to each, since before the age of 12. It can also be defined as a person who is able to produce meaningful utterances in two (or more) languages, and the ability to alternate between several languages. Although these are the two definitions guiding this current study, there are many other ways of defining the term bilingual. Both definitions are valid, so by combining them, this study seeks to understand the differences in people who have a strong grasp of only one language, and those who have significant language abilities in more than one language, whether they began learning their extra language before or after the age of 12. Furthermore, research also uses the term ‘multilingual’, but in a way of defining a person who can process and employ many different languages, rather than focusing on just two. In this way, multilingual research focuses on subjects who speak numerous languages, but fails to assess the role of second language abilities in relation to the first language. In addition to this, and due to a much higher abundance of research using the term bilingual, this word is employed here instead of multilingual.

One of the most prevalent differences between monolinguals and bilinguals is cognitive control, a term defined as the cognitive and goal-directed ability to switch between languages, which takes place more generally as executive functions, such as in task switching. Similarly, researchers have looked at attention, memory, and language processing differences between monolinguals and bilinguals and findings revealed that bilinguals have stronger abilities in these capacities. Sorge, Topplak, and Bialystok found higher attentional abilities and executive functioning among bilinguals. Bak and colleagues found bilingualism as a preventative for cognitive decline during ageing. Furthermore, Wen, Mota, and McNeill found improved use of and ability in working memory of bilinguals. These studies demonstrate that bilinguals benefit cognitively from learning and maintaining another language; however, this research does not investigate the relationship between number of spoken languages and personality.

There are many advantages of being bilingual, specifically cognitive advantages such as improved cognitive control, as suggested by the adaptive control hypothesis. They argue that not only does language control increase with language use, but it is governed by the cognitive processes themselves. Green and Abutalebi put forward eight processes that are involved in adaptive control, including interference suppression and opportunistic planning. They comment that when the two languages are sufficiently balanced, there is less need for inter-language control when switching between languages.

Such abilities have been demonstrated by the speed and ease of switching between languages, as shown by ‘balanced bilinguals’. These are defined by Wang as someone who has spoken two or more languages proficiently, with balanced exposure to each prior to the age of 12 and by Lin as someone who has equal or very similar proficiency in two or more languages. It is therefore important to employ both exposure and proficiency perspectives in current research. In addition, children learning an extra language before the age of 8 have been more successful in learning a new language if they have better parental attachment and self-control. This could suggest that children with strong attachment form stronger social ties and therefore succeed in learning new languages.

Notwithstanding, being bilingual is not all-advantageous, such that research shows that bilingual children experience a receptive-expressive gap between their two spoken languages – thus exhibiting a larger discrepancy between their language reception and expression compared to their monolingual counterparts. In contrast, an unbalanced bilingual is someone who speaks two or more languages but is dominant in one. The term ‘unbalanced’ has been replaced by other terms such as ‘pseudo-bilinguals’, which
is defined as bilinguals with a clear dominant language out of their two or more languages. Moreover, other researchers have approached the definition of unbalanced bilinguals in a systematic way, by describing the subjects as either coordinate bilingual, possessing two semantic systems and two linguistic codes and learning two languages in distinct contexts or subordinate bilingual, where there is just one semantic system, one language code, where the weaker language is interpreted through the stronger language. Finally, they were also defined as a compound bilingual, having one semantic system and two linguistic codes – someone who has learnt two languages in a similar context. In this way, learning a language very much depends on the three following features: the age of acquisition, learning methods, and similarities and differences between the spoken and desired languages. These definitions add distinct sides to bilingualism, but they fail to explain the reasons for late-learners or for underdeveloped language use among unbalanced bilinguals. It is reasonable to suggest that a combination of these theories must be used in current research.

Furthermore, Volterra and Taeschner proposed the unitary language system hypothesis which suggests that in children, via three developmental stages, one rule is applied to the two (or more) languages, which is then used to aid syntactic and lexicon development in each language. The first stage focuses on one system for words in both languages; followed by the stage where the syntax and lexicon for each language is developed. The third is the reinforcement of the second but represents the individualisation of each language corresponding to the learner, such that they will have their own style of bilingualism for each language. In light of this hypothesis, Genesee and Nicoladis carried out supporting research, which showed that bilinguals develop cognitive skills between two languages in a homogenous manner.

However, Genesee proposed a separate language system hypothesis, which suggests that children growing up bilingual are utilizing two distinct systems for developing their two languages. In this way, it is shown that bilingual children develop the ability to differentiate their two (or more) languages depending on the context and situation, thus negating the unitary system hypothesis, as bilingual children do not mix or confuse their two languages. De Houwer’s research supports this hypothesis, showing that in bilinguals, from early on the morphosyntactic development of the second language, does not in any way depend on that of the first language, demonstrating in utterances specific to each learnt language. Considering these two perspectives, the separate system hypothesis is currently more supported than the theoretical unitary system theory as it demonstrates the differences in second language expression when compared to the mother tongue.

Being and becoming bilingual, not only affects our cognitive processes but also our brain plasticity. Stein and colleagues found with voxel-based morphometry (VBM) that learning a second language can influence brain structure changes in the left inferior frontal gyrus. Use of a second language has also been shown to influence motivation and opportunity to learn further languages, thus suggesting that language learners, with a second language, will often find motivation to learn a third and fourth.

**Personality**

Personality can be defined as consistent patterns of actions and practices, which are demonstrated over time in all different life situations.

Situated within the framework of individual differences, personality has been recognised as a faculty of its own since the 1890s and has transformed throughout the 20th Century to become the contemporary perspective of many researchers when linking this area to analyses in sociocultural phenomena, dynamics, and consequences.

Personality trait scales can be used to assess and evaluate participants, while allowing them to be as truthful as possible about their behaviors and motivations. Further definitions have been used to guide this research; for example, Haslam suggested that personality affects humans’ motivations, thought patterns, and behaviors, while Ryckman states that personality is a set of characteristics which impacts the individual’s cognitions, motivations and behaviors, which can change according to the situation. Consequently, by combining the explanations, this study aims to utilise the HEXACO personality inventory, to investigate the traits of each participant and language group, together with those of similar personalities.

Therefore, although every human has a personality representing their unique nature-driven characteristics, where our DNA underpins our behavior, it is intriguing to find out how these are expressed in someone’s behaviors so that connections can be identified between the
traits and trait-expression. In this way, Bahrami showed that personality type influences memory, cognition, and perception, thus providing a schematic view of personality.

In the author’s model, personality is effective in cognitive processes such as attention, task efficiency, and memory, as well as in expressed behaviors. In addition, personality types can be expressed in three components: psychological core, which is constant and internal; the typical responses, which can be observed in the social environment; and the dynamic role-related behaviors, which is expressed and observed in the social environment.  

In terms of studying personality, there are several main areas of research: the psychodynamic approach, which is now rather outdated and disused, the trait approach, which involves Cattell’s 16-PF, using 16 factors extracted from his initial 4500 trait terms by exploratory methods, while, Eysenck and Eysenck’s continuum was theory-driven and combined four humors, resulting in the two well-known traits: extraversion and introversion. The contemporary approaches include the NEO-PI-R which uses 5 labels – openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism – by originally matching English adjectives with personalities of other cultures, to describe the human psyche and personality, and the HEXACO which uses six established factors in a self-report or observer-report questionnaire format to find out an individual’s unique combination of traits. The situation approach provides the notion that behaviors depend solely on situational factors, and that traits simply predispose a person to act in a particular way but cannot wholly influence behaviors, such as with Bandura’s social learning theory, where it is clear that the children developed aggressive behaviors after observing adults’ violent behavior towards the dolls. The Interpersonal Approach proposes that behaviors are determined by both, the person and their environmental and situational interactions. Similarly, Vealey used a phenomenological approach, proposing that a person’s understanding and reflection of their self and environment are critical in developing their personality.

In view of these approaches, the HEXACO is being used because it combines the well-used NEO-PI-R the contemporary H-factor (honesty-humility) and has been used in a great deal of research to date, as well as showing good validity and reliability. Moreover, studies have seldom used the HEXACO to investigate bilingualism, thus the study is filling a gap in research.

**Personality and Bilingualism**

“Learn a new language and get a new soul”.

Personality traits have been explored to find out the effects of not only taking up a second language, but also immersing yourself in a new language; however, the scarcity of such research suggests the need for further studies into trait-bilingualism connections. The 60-item HEXACO scale measures six personality traits: honesty & humility (measuring modesty and sincerity), emotionality (measuring anxiety and sentimentality), extraversion (measuring sociability and liveliness), agreeableness (measuring forgivingness and flexibility), conscientiousness (measuring prudence and organisation), and openness to experience (measuring creativity and inquisitiveness).

The HEXACO allows this research to assess many different long-established traits, alongside the newest and most unique in its relationship with communication and care-giving performance.

Research shows that four of the HEXACO traits are higher in bilinguals: agreeableness, extraversion, openness to experience and conscientiousness: Chen and colleagues used a personality questionnaire and conversation observations to evaluate perceptions of cultural norms in the second language, finding that such norms were adopted according to the cultural context. Also, Ramírez-Esparza and colleagues used a personality questionnaire alongside four cultural-frame-switching (CFS) tasks involving a personality questionnaire and interviews in both spoken languages, measuring and comparing personality trait consistency across languages. Their results showed no difference in understanding each language for bilinguals, suggesting a consistency in personality in each language, but a significant effect of CFS in both Spanish and English. Results imply that language is not just expression-specific, but that speaking another language also involves cultural immersion, thus showing the personality changes between languages.

Hofstede and McCrae, using the NEO-PI-R, found that extraversion was higher in individualistic cultures and conscientiousness was positively associated with more underdeveloped cultures and countries. Emotionality has also
been shown as higher in bilinguals compared to monolinguals, the results indicating that emotion-inducing tasks and images produced stronger emotional responses in bilinguals compared to monolinguals. Similarly, Pavlenko also found higher emotionality together with higher use of emotion words and concepts among bilinguals, using qualitative data. Furthermore, agreeableness was found to be higher among bilinguals compared to monolinguals, while self-reported personality and others’ perception of your personality, were found to be highly malleable between cultural contexts and thus changeable, depending on the language- and culture-specific cues.

It is therefore hypothesised (H1) that there will be higher extraversion, agreeableness, conscientiousness, openness to experience, and emotionality among bilinguals compared to monolinguals. The rationale for this hypothesis is to replicate previous research with a new participant sample, by using the HEXACO where previous research has used the NEO-PI-R.

This hypothesis is more exploratory compared to findings of previous research. It is expected that there will be differences in personality traits between balanced and unbalanced bilinguals. It is therefore hypothesized (H2) that there will be a difference in personality scores between balanced and unbalanced bilinguals, for instance, that unbalanced bilinguals will be higher in traits associated with choosing to learn new languages and about new cultures, such as openness to experience and agreeableness.

**Reasons for Language Learning**

Furthermore, the reasoning behind taking up new languages and becoming bilingual certainly differs between cultures, genders, ages, and possibly even in personality traits. In terms of age, children are often enrolled at foreign-language schools by their parents. López found the main cause of this to be that mothers believed their children would have improved communication and cognitive abilities and are provided with more opportunities later in life, with the latter being supported by Wesely. In addition, Hu, Tor and Whitman, showed that parents believe future career success is positively influenced by bilingualism. These beliefs are supported by findings that bilinguals outperformed monolinguals across a range of academic subjects after 4-7 years of bilingual education. Although further studies are needed to identify these positive effects in adults.

Children predominantly have no choice in becoming bilingual, and although Wang defines a bilingual as grasping two or more languages before the age of 12, many adults call themselves bilingual after taking up the language after 12 years old, whilst, Gleitman and Newport describe children who learn languages before the age of 6 or 7 as natives in those languages.

The reasons why adults become bilingual are many, including: moving abroad, career choice, and for a partner. However, despite choosing to take up extra languages for various social or personal reasons, neural benefits have been found even among adult bilinguals showing white matter maintenance and corpus callosum integrity during normal ageing.

It is exciting to be able to identify trends among people who choose to learn languages abroad, or even choose to take up a post in a foreign country. This study therefore asks: Why do bilinguals speak multiple languages?

The rationale for asking participants, “How did you come to speak this language?”, is to explore the variety of reasons for becoming bilingual and to investigate whether personality does indeed expand its influence into the languages we choose to speak, together with identifying themes for reasons for learning new languages.

**METHOD**

**Design**

This study employs a mixed method survey design, allowing for a richer collection of data, by using quantitative analysis of the reasons for taking up a language, and correlational analyses between the measures of personality traits, proficiency in and exposure to extra languages, reasons for taking up such further languages. Data was collected online (and uploaded by the researcher if collected in person) using Survey Monkey.

**Participants**

A power calculation made using G* Power, with alpha = 0.05 and power = 0.8* suggested at least N = 130. Participants were recruited by an opportunity sampling technique. The link to the survey was circulated around the University of Buckingham student and staff emails, as well as the researcher’s family and friends via email. The link was also published on the researcher’s personal Facebook, Twitter, and LinkedIn pages – connections were asked to share the link too, so
that a snowball technique may occur. A total of 357 people started the survey, \(N = 256\) completed the whole survey (\(M = 86\), \(F = 170\)) of which 90 said they spoke one, 67 spoke two, 56 spoke three, 28 spoke four, and 15 said they spoke five languages. Data was taken for up to 4 languages.

**Measures and Materials**

Survey Monkey is the sole data collector, using questions formed by the researcher to obtain demographic information. A list of 143 languages was found online and used for participants to select their spoken languages, an ‘other’ option was inserted if their language did not feature in the list. The 60-item HEXACO-PI-R questionnaire was used to measure honesty and humility, emotionality, extraversion, agreeableness, conscientiousness, and openness to experience. The HEXACO shows strong internal reliability (\( \alpha \) is between .76 and .80 for self-report), and low correlations between the factors (mean inter-item correlation is no higher than .29); each factor is consistent with its theoretical expectations.

**Procedure**

Participants provided demographic data: age, gender, nationality, country of residence, and languages spoken. They were then asked: ‘Do you consider yourself to be bilingual?’ ‘Do others consider you to be bilingual?’ – Both questions were asked to allow participants to think about their self-perspective as well as others’ perspectives on their opinion of what bilingualism means, so that subjectivity could be avoided.61 Participants gave the number of languages they spoke and selected their spoken language(s) from a list. Participants gave their reasons for becoming bilingual by answering an open-ended question: *How did you come to speak this language?* – This qualitative data was coded and organised into themes to show common reasons for taking up a second language.

Participants rated themselves on a Likert scale for proficiency out of 20 (speak, understand, read, write) from: not at all, poor, fair, good, excellent, followed by another Likert scale for exposure out of 25 (reading, writing, thinking, dreaming, speaking) from: never, rarely, sometimes, frequently, always. This was repeated for each language from 1 to 4.

After each language, participants were asked: “Do you speak another language?” If yes, they continued to answer questions about their further language(s); after participants had answered questions on all their languages, they completed the 60-item HEXACO questionnaire. The whole survey took no longer than 15 minutes to complete.

**Data Analysis**

The data was exported from Survey Monkey, organised in Excel, and arranged into separate workbooks under the labels: all data, HEXACO, qualitative, exposure and proficiency, as well as two working sheets for calculating totals, and arranging the qualitative data. In SPSS, the data was organised into separate files according to the worksheets: HEXACO, qualitative, and exposure and proficiency. For the HEXACO file, the syntax files were run in the following order: HEXACO reverse scoring, HEXACO factor reliability, HEXACO factor and facet scores. Descriptive statistics were run to obtain N, maximum, minimum, mean, and SD for each of the six factors. For analysis, correlations (using Pearson’s \( r \) and Spearman’s \( \rho \)) were run to check for correlations between the L2 exposure, L2 proficiency, and L2 total scores, and each factor. T-tests were run to investigate differences between monolinguals and bilinguals. The HEXACO scores were then analysed using one-way ANOVAs with language use: monolingual, balanced bilingual and unbalanced bilingual, using Levene’s test.62 for homogeneity each time. If significant (at the \( p < .05 \) threshold), post hoc comparisons were also carried out, using Bonferroni adjustment.

**Ethical Implications**

No major ethical implications were identified with no risk of direct physical or psychological harm. The issues of informed consent, anonymity (using the Anonymous Responses option in Survey Monkey), confidentiality, and permission for data to be used were guaranteed without pressurizing the participants to participate. The participants were asked to read the information page and tick consent boxes on prior to completing the survey.

They were also informed of their right to withdraw during the online survey, but that retrospective withdrawal was not possible as all data was anonymised. Participants were not given the option to omit questions.

No risks were expected, but in the debrief form participants were encouraged to seek help from their GP if they felt in need of support following participation.
RESULTS

As shown in Table 1, participants were separated into monolinguals if they selected one spoken language; if they selected two or more they were grouped into bilingual. Bilingual participants were further separated into balanced bilingual and unbalanced bilingual, based on objective criteria: the median split score for total proficiency (out of 20) and exposure (out of 25) was 31. Therefore, if their combined exposure and proficiency score was more than or equal to 31 out of 45 for the second language (L2), they were assigned to the balanced bilingual group. Similarly, if their combined exposure and proficiency scores for L2 were less than or equal to 30, they were assigned to the unbalanced bilingual group.

A simple independent samples t-test revealed that monolinguals ($M=38.11, SD=16.33$) were older than bilinguals ($M=35.06, SD=13.39$), though not to a statistically significant degree ($p=.12$).

Below is table 2, showing most common frequencies of nationality, country of residence, and spoken language.

![Table 2: Showing the most common nationalities, countries of residence, and languages spoken](image)

Below is table 3, showing the data and criteria taken into consideration when deciding which language group to allocate anomalous participants to; all the participants in table 3 said they spoke 2 languages, but after selecting their languages from a list, and answering questions about their first language, they said they did not speak another language. Table 4 shows the mean scores for proficiency and exposure in each language, as well as the mean combined scores.
Furthermore, many of the participants who were balanced bilinguals between language 1 (L1) and language 2 (L2), were unbalanced with their third (L3), and even fourth language (L4), if they had one). Therefore, the overall language use grouping was allocated according to the L2 to L1
proficiency. Such that, 29 participants were counted as balanced across L2 and L3, and 7 participants were balanced across 4 languages, from L1 to L4.

**Quantitative Analysis**

Independent-samples t-tests were run to determine whether there were any differences in the scores for each of the personality traits of monolinguals and bilinguals. Below is table 5, showing the results.

Thus, only openness to experience was significantly different between monolinguals and bilinguals. The mean openness to experience scores were higher among bilinguals ($M = 3.86$, $SD = .54$) than monolinguals ($M = 3.61$, $SD = .62$), a statistically significant difference, $M = .25$, 95% CI [.16, .7], $t(254) = -3.33, p = .001$, $d = .43$, to a medium effect size. Below is Figure 1, showing the significant difference between bilinguals ($N = 175$) and monolinguals ($N = 81$).

![Figure 1: a boxplot showing the significant difference in openness to experience scores, between monolinguals and bilinguals](image_url)

One-way ANOVAs were conducted to determine whether scores for each of the six traits were different between language groups: monolingual ($N = 82$), balanced bilingual ($N = 99$), or unbalanced bilingual ($N = 75$).

**Honesty-Humility**

The assumption of homogeneity of variance (Levene’s equal variances, $p = .387$) was not violated. A significant effect of honesty-humility was observed, $F(2, 253) = 3.73, p = .03$, $\eta^2 = .03$. Interpretation of eta square using Cohen’s guidelines suggests the effect is approaching medium.

Post hoc Multiple Comparisons (Bonferroni) revealed that there was an increase in honesty-humility from the unbalanced bilinguals ($M = 3.58$, $SD = .07$) to the balanced bilinguals ($M = 3.82$, $SD = .06$), a mean increase of .24, 95% CI [.01, .47], which was statistically significant ($p = .04$). There was no statistically significant difference in honesty-humility scores between the monolinguals and the other language groups ($p > 0.05$). See Figure 2 below.

**Emotionality**

The assumption of homogeneity of variance (Levene’s equal variances) was violated ($p = .05$), thus accepting the null hypothesis: error variance of the emotionality is equal across groups. A non-significant effect of emotionality was observed, $F(2, 253) = 1.11, p = .33, \eta^2 = .01$.

Interpretation of eta square using Cohen’s guidelines suggests the effect is small. There was also no statistically significant difference in emotionality scores between the monolinguals and the other language groups ($p > 0.05$).
Extraversion

The assumption of homogeneity of variance (Levene’s equal variances) was not violated ($p = .14$). A non-significant effect of extraversion was observed, $F(2, 253) = .54$, $p = .58$, $\eta^2 = .004$. Interpretation of eta square using Cohen’s guidelines (1988) suggests the effect is very small. There was also no statistically significant difference in extraversion scores between the monolinguals and the other language groups ($p > .05$).

Agreeableness

The assumption of homogeneity of variance (Levene’s equal variances) was not violated ($p = .14$). A non-significant effect of agreeableness was observed, $F(2, 253) = 1.4$, $p = .25$, $\eta^2 = .01$. Interpretation of eta square using Cohen’s guidelines suggests the effect is very small. There was also no statistically significant difference in agreeableness scores between the monolinguals and the other language groups ($p > 0.05$).

Conscientiousness

The assumption of homogeneity of variance (Levene’s equal variances) was not violated ($p = .84$). A significant effect of conscientiousness was observed, $F(2, 253) = 3.24$, $p = .04$, $\eta^2 = .03$. Interpretation of eta square using Cohen’s guidelines (1988) suggests the effect is approaching medium. See Figure 3 below.

Post hoc Multiple Comparisons (Bonferroni) revealed that there was an increase in conscientiousness from the unbalanced bilinguals ($M = 3.63$, $SD = .54$) to balanced bilinguals ($M = 3.81$, $SD = .56$), a mean increase of .18, 95% CI [-.4, .02], which was statistically non-significant ($p = .10$). There was also no statistically significant difference in conscientiousness scores between the monolinguals and the other language groups ($p > 0.05$).
Openness to Experience

The assumption of homogeneity of variance (Levene’s equal variances) was not violated. A significant effect of openness to experience was observed, $F(2, 253) = 5.34$, $p = .005$, $\eta^2 = .04$.

Interpretation of eta square using Cohen’s guidelines suggests the effect is approaching medium.

Post hoc Multiple Comparisons (Bonferroni) revealed that there was an increase in openness to experience from the unbalanced bilinguals ($M = 3.84$, $SD = .52$) to balanced bilinguals ($M = 3.88$, $SD = .52$).
Whiteley

Personality Differences in Monolinguals and Bilinguals

SD = .55), a mean increase of .04, 95% CI [-.25, .17], which was statistically non-significant (p = 1.0). However, there was a statistically significant difference in openness to experience scores between the monolinguals and the other language groups: monolinguals (M = 3.62, SD = .62) with balanced bilinguals (M = 3.88, SD = .55), a mean increase of .04, 95% CI [-.25, .17], which was statistically significant (p = .006). Also, between monolinguals (M = 3.62, SD = .62) and unbalanced bilinguals (M = 3.84, SD = .52), there was a mean increase of .22, 95% CI [-.44, -.006], which was statistically significant (p = .04). See Figure 4 above.

Qualitative Analysis

For the qualitative analysis, content analysis was performed to identify themes among the reasons for coming to speak each language. All 564 of the responses were used to identify codes and themes in the answers. Below is Table 6, showing the totals for each language.

<table>
<thead>
<tr>
<th>Language</th>
<th>Total responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>239</td>
</tr>
<tr>
<td>L2</td>
<td>167</td>
</tr>
<tr>
<td>L3</td>
<td>111</td>
</tr>
<tr>
<td>L4</td>
<td>47</td>
</tr>
<tr>
<td>TOTAL</td>
<td>564</td>
</tr>
</tbody>
</table>

In terms of coding, some researchers suggest looking to previous research to form and develop the initial codes before looking at the data. However, to obtain the richest of data and allow the participants to direct the themes, theme groups were extracted from the data: education, relocation, native, leisure, and work. The themes were checked and verified by a peer of the researcher, who was asked to look through the reasons and say either they had been correctly assigned to one of the five groups, or that they felt it did not fit any of the themes and that a new one should be invented. Every response was coded once, and while many answers were very long, where participants gave a combination of having an interest in the language as well as studying it at university, before finally moving abroad or taking holidays there, the theme was allocated by using the first reason given in the list.

Within education, the data ranged from ‘learned at school’ to ‘university module’ – thus education was allocated to any answer which suggested learning or scholastic reasons for taking up a language.

Meanwhile, those who stated they had ‘moved’, or ‘relocated’ were assigned to the relocation theme. Others expressed they had learnt the language through their family, and hence grasped it from a young age – many due to being brought up in diglossic communities, such as one participant who speaks Tamil at home, as well as Malayalam among friends and neighbors in their home country. Participants meeting these or similar criteria were placed in the family group. In addition, those who explicitly said their reason for speaking the language was through familial connections, such as: ‘native’ or ‘father [or mother] tongue’ were also placed in the native theme group. Leisure themes were applied to answers which expressed either a desire to learn the language, through travel, or through having a partner or friends of that nationality: for example, ‘hispanophone friends’ or ‘wanted to learn’.

The work theme was assigned if participants expressed that they had learnt the extra language through work or due to work, for example: ‘military necessity’ or ‘worked in Spain’. The theme relocation is distinct from work, as the participants did not explicitly say for what reason they ‘relocated’, nor whether they learnt the language at work, in their country of residence, or they had moved abroad to work and live there, hence the difference between the two themes. Originally, seven participants expressing that they had learnt the language through their family or a relative were placed in a group called ‘family’, but the theme-finder peer suggested that they would be best in the native group, as the participants suggested they had grown up learning and speaking the L2 alongside the L1.

All the reasons given for taking up L1 were native, so no data is shown for these. Below is Table 7 showing the reasons for taking a second language.
Table 8 showing the reason for taking up L3, frequency given in percentage

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Education</th>
<th>Leisure</th>
<th>Native</th>
<th>Relocation</th>
<th>Work</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>74</td>
<td>19</td>
<td>3</td>
<td>10</td>
<td>3</td>
<td>109</td>
</tr>
</tbody>
</table>

Table 9 showing the reason for taking up L4, frequency given in number and percentage

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Education</th>
<th>Leisure</th>
<th>Native</th>
<th>Relocation</th>
<th>Work</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>27</td>
<td>11</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>47</td>
</tr>
</tbody>
</table>

Table 7 showing the reason for taking up L2, frequency given in percentage

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Education</th>
<th>Leisure</th>
<th>Native</th>
<th>Relocation</th>
<th>Work</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>90</td>
<td>21</td>
<td>33</td>
<td>18</td>
<td>8</td>
<td>170</td>
</tr>
</tbody>
</table>

DISCUSSION

Monolinguals and Bilinguals

This study compared personality traits for monolinguals and bilinguals. Through, supporting the first hypothesis, the main finding was that scores for openness to experience were higher for bilinguals compared to monolinguals. Honesty-humility was also higher among bilinguals compared to monolinguals, which, according to research, is a trait which corresponds to sincerity, modesty, and fairness. These two traits, showing significantly higher scores in bilinguals than monolinguals, could suggest the individuals’ eagerness to learn new things. To want to learn a language is a willingness to be open-minded, to travel and explore beyond your own country. This requires a mind-set prior to taking on the new language, which could suggest why people not born bilingual choose to take up a second language. However, for those native in two or more languages, the survey assessed cross-cultural personality traits rather than language learners’ personalities given that they had little or no choice in taking up their parents’ languages. In this way, studies have shown that religious cultures are higher in not only conscientiousness, but also honesty-humility. Previous research highlighted this trait as complex, in terms of its tendencies to be high in certain cultures (such as Switzerland and Germany), whilst it was lower in other cultures (such as China and India), and also higher in males than females.

Nevertheless, Duñabeitia and colleagues found that bilingual children do not significantly differ from monolingual children in cognitive abilities suggesting that these cognitive advantages perhaps only arise after the brain is fully developed. Similarly, Weimer and Gasquoine found no differences between bilingual and monolingual children in emotion understanding and belief reasoning.

In terms of bilingualism, although this study was not focused on defining the term, it is
important to note the relevant explanation from previous research, to form a rounded and objective perspective of the term. These two definitions focus on exposure to the extra language(s), and the cognitive aspects. Meanwhile, a layperson’s definition of bilingualism differs between age groups and second language exposure, thus by asking whether not only they themselves but also others considered them to be bilingual could eliminate this issue of self-report bias.

**Monolinguals, Balanced Bilinguals, and Unbalanced Bilinguals**

This study compared personality traits for monolinguals, balanced bilinguals, unbalanced bilinguals. Honesty-humility was significantly higher for balanced bilinguals than unbalanced bilinguals. Former research suggests this could be why some people decide to take up a language and continue practising it. As previously mentioned, this trait measures fairness and sincerity on a large scale which could show how people who engage in other cultures and languages are humbler and thus more willing to welcome in people from foreign societies.

Conscientiousness was higher among unbalanced bilinguals than balanced bilinguals. This shows that participants with high conscientiousness are more willing to exert themselves, while also being high in prudent and perfectionist tendencies. These characteristics could suggest why the unbalanced bilinguals more often choose to take up a language – signifying the expression of their personality. Meanwhile, the balanced bilinguals may have been brought up speaking more than one language and continue to learn this extra language despite their personality traits.

Openness to experience was significantly higher for both balanced and unbalanced bilinguals compared to monolinguals. Monolinguals are perhaps lower in openness to experience and thus less likely to engage in novel experiences, such as art or nature from other cultures – especially if demonstrating high scores for unconventionality (one of the four opposite facets of openness to experience) – which exhibits attraction towards radical or strange ideas.

These higher scores in honesty-humility, conscientiousness, and openness to experience could show how language learning not only attracts but also favors those who are lovers of foreign things, and relish being correct in the aspects which accompany foreign languages: grammar, spelling, and vocabulary.

The other three traits also had differences across the three language groups, but none were significant, showing that more stringent criteria are required for separating the participants into their language groups; a higher score for exposure and proficiency than the median could have been used to make sure that only very proficient people could be considered as balanced bilinguals.\(^70\)

In terms of balanced bilinguals, who have generally been brought up from a young age learning and speaking two or more languages within their communities, the extent of their bilingualism stretches further than that of an unbalanced bilingual since they have had initial exposure at a much younger age than the latter. In this way, Rosselli and colleagues found that proficiency significantly affected word retrieval in the Boston Naming Task. Thus, di- and triglossia terms, coined by Ferguson, expressed such aforementioned individuals, whose societies or communities employ more than one local language or dialect, such that the majority of their populations will be brought up bilingually.\(^71\) There is hence a need for more research to identify whether linguistic abilities are specific to certain people or cultures, like personality, or whether there is a stronger need for intrinsic motivations, or for extrinsic motivations.

Furthermore, researchers have investigated not only the linguistic properties but also the learning approaches for different students. For example, Chen et al. tested the Whorfian hypothesis – which states that language influences thought and cognitive processes – by focusing on the effects of basic properties of language use on thought, behavior, and even perception.\(^72\) This would therefore suggest that by becoming bilingual, one’s thought processes transformed by lexical, semantic, syntactical, and pragmatic aspects of the language.\(^73\) This could suggest an effect of language learning on personality, thus showing a bidirectional relationship.

Studying bilinguals offers another perspective to linguistic relativity, such that they offer an extremely favorable basis from which to test the Whorfian Hypothesis.\(^74\) In this way, future studies must investigate not only cultural effects on thought and behavior, but also the effects of language learning on cognition. Meanwhile, later research has looked more profoundly and discovered a difference in Broca’s area activation according to native and second language, showing spatially distinct representations for each
language. Therefore, although all 7000 languages are superficially distinct, they have all been cast from the same original mould – hence proposing no difference in merely speaking languages, but in fact the importance of cultures and societies in determining characteristic diversity. This could be why some cultures have more tendency to have certain characteristics than others.

Reasons for learning an extra language

There are many reasons for taking up a new language, and education evidently has a large role to play. Results from content analysis demonstrated five thematic codes, which explained a large component of the reasons why people take up languages.

Education

This theme mainly indicates the exogenous influence for taking up a foreign language, such as being taught it at school – a choice often made by the parents. This theme supports previous findings, displaying that education plays a major part in foreign language learning. However, this study shows that it is not only an aspect of children whose parents feel they need to study foreign languages, but also of adults who choose to take up language classes. Perhaps this theme should have been separated into intrinsic motivation to learn a new language, and extrinsic motivations – by one’s own desire and by one’s parents’ obligation respectively. This could have further separated participants into wishing to learn a foreign language and being involuntarily encouraged to learn an extra language.

Relocation

This theme is one which strongly suggests immersion in the language, which is best for foreign language development. This is showing those who decided to move abroad – though unclear whether for work or leisure reasons – and total immersion is necessary and thus could suggest the extent of their language abilities through increased exposure. Moreover, since being bilingual not only incorporates switching between languages according to each situation but also adopting the cultural norms of each spoken language – further data could have been collected investigating whether the participants felt they understood and adopted the cultural norms of the country whose language they speak.

Native

This theme incorporates just balanced bilinguals, who have been brought up speaking two or more languages, aided by their family and culture. Though few were natives after L2, this theme still carried over 2% of the frequency for each language.

Leisure

This theme indicates the second most popular reasons for taking up a language as a desire to learn about a new culture or country. It is interesting that education is seemingly distinct from this topic, given that many of the responses were allocated to education because of the word ‘university’. Though this suggests their own desire to study this subject further, which could allocate them to both themes. More profound answers are required if one is to separate choosing a topic at university from desire to engage with a language.

Work

This theme was partly used as an extension of education, whereby someone’s job is the reasons why they need to take up a new language – such as in the military or if your company moves abroad. In terms of thriving in SLA, Gargalianou and colleagues found that not only was gender a moderator for foreign language anxiety (FLA), but also that conscientiousness predicted FLA. These traits could thus influence people’s decisions to take up foreign language learning.

An interesting question is whether one can differentiate between active choice and passive encouragement to take up a new language – this would allow researchers to further distinguish between those who desire to learn a language, and continue, and those who are effectively forced into learning a language through education or parental relocation for work reasons, for example. However, the data is not detailed enough to confidently distinguish personal choice and parental obligation.

Likewise, as inferred by Chomsky and colleagues, bilinguals may be able to switch between personalities by switching between languages. Therefore, perhaps with a more established exposure and proficiency in a foreign language, a person can more easily and definitively switch their personality between languages. Future studies could investigate the effects of not only language use but also cultural immersion on HEXACO personality traits.
Strengths and Limitations

With regards to methodological issues, some were brought up by participants following completion of the survey. For instance, an interesting feedback comment alluded to the fact there could have been a question towards the end of the language use section, asking ‘do you have the intention of learning any new languages?’ – This would have been useful for separating the passionate linguistics from those who have little interest in foreign culture and language despite perhaps being bilingual. This could be a point for further research, to investigate whether people who currently speak more than one language are thus motivated to learn even more languages, and analysing this variance with HEXACO personality traits.

Furthermore, additional studies could use studies of twins raised in different cultures (and with different languages) to see whether their characteristics differ, compared to their genetic similarities.

Moreover, while content analysis has such a flexible nature and the lack of a firm definition of and procedures for such an analysis potentially limit its application, some authors suggested that this flexibility can lead to a simplistic description of data, as well as resulting in a mere counting game of the codes. However, this current study acknowledged these risks and indeed benefited from such malleability, by adapting the qualitative data alongside its quantitative counterparts and obtaining an even richer sample of data to encourage future research to fill the gaps in personality and bilingualism research.

Concluding Comments

The hypothesis that monolinguals and bilinguals differ in personality is supported, though there is still more research to be carried out in the field of bilingualism and cognitive psychology. Although not generalizable, this study’s results have pioneered the steps towards identifying differences between balanced bilinguals, unbalanced bilinguals, and monolinguals. The expected implications of this study include establishment of a relationship between SLA and personality, and a better understanding of and interest in cognitive differences between monolinguals and bilinguals. This study will successfully inform research around the cognitive mechanisms involved in being and becoming bilingual.

BIBLIOGRAPHY


See Levene’s (1960)


See Berelson, B. (1952). Content analysis in communications research.


Reynolds, A. G. (2014). Bilingualism, multiculturalism, and second language learning:


