

Relationship between Multilingualism and Openness of the Big Five Factor Model

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Abstract: The benefit of multilingualism is one of the key topics of research today. Researchers have predominantly found that bilingual individuals have cognitive advantages, yet there is still a lack of research and knowledge on the socioemotional advantages of multilingualism. Therefore, this study aims to produce further evidence that supports the socioemotional advantages of being multilingual. This paper explores the relationship between multilingualism and open-mindedness by collecting data on multilingual international students' language acquisition and open-mindedness through an online questionnaire. A positive correlation exists between multilingualism and open-mindedness in up to three languages with no significant correlation seen for more than three languages. The results indicate that bilinguals and trilinguals are relatively more open-minded. Yet, at the same time, learning more languages doesn't necessarily make one more open or diverse. It is suggested that children acquire one to two foreign languages to foster their openness.

Keywords: multilingualism, openness, five factor model, cognitive advantages, language

1. Introduction

Openness is one of the Big Five personality traits indicating open-mindedness. People who are high in openness are typically willing to expose themselves to new or challenging experiences and ideas, while those who are low in openness tend to be more conservative and cautious about new experiences. As personality traits are shaped both by the environment and genes, the different language environments of multilingual likely affect their openness. For instance, aside from their primary culture, multilingual will be exposed to other cultures that may often be different or even have opposite values. However, since cultural exposure and multilingualism aren't necessarily mutually inclusive, one can master more than one language, but not be exposed to the corresponding culture. Thus, in this study, in addition to classifying the participants based on the number of languages they know, there will be a further classification based on how the multilingual acquired their second language. Based on such classification, I will be able to have a general idea of their cultural exposure level. For instance, a bilingual child who is also an immigrant will be classified as having a relatively high cultural exposure level compared to self-taught bilinguals. This will allow me to test the prediction of multilingual being more open due to their interaction with multiple cultures.

Despite the relatively few numbers of research conducted on multilingualism and openness, other research explores a broader concept, such as whether multilingualism shapes personality. Dewaele

and Botes found that multilingualism had a significant positive correlation with open-mindedness, along with other personality subscales, such as flexibility and social initiative [1]. Through their findings, they concluded how multilingualism/multiculturalism can contribute to shaping one's personality profile. Similar to my study, they used the "Big 5" questionnaire as a measurement of the participant's personality. However, their participants were far more diverse in terms of multilingual, including bilinguals, trilinguals, quadrilingual, dentilingual, septualingual, and those who reported knowing seven or more languages [1]. This research relates to my study since their results are consistent with my hypothesis of multilingualism being positively correlated to open-mindedness. A similar research study has also been conducted regarding multilingualism/multiculturalism and personality. The results of the study suggested that the multi-dominant group or those who are dominant in more than one language scored lower on emotional stability while scoring significantly higher on open-mindedness [2]. This study used the Multicultural Personality Questionnaire (MPQ) as a measurement of their personality, which includes five dimensions: cultural empathy, open-mindedness, social initiative, emotional stability, and flexibility.

The majority of previous research was focused on the cognitive advantages of bilingualism, with the least number of research conducted on socio-emotional advantages [3]. Furthermore, within the research conducted on socio-emotional advantages, a great deal examines bilingualism's effect on emotional concepts, and only a handful of research on how bilingualism positively affects open-mindedness. However, existing research on bilingualism and open-mindedness show how bilingualism makes children more open in general, due to their indirect learning of multiple cultures [3]. As an extension of this research, this study will not only examine bilinguals but also trilinguals and quadrilingual and their level of openness. The significance of this study is that the results will offer insight into fostering open-mindedness within children. One of the defining characteristics of this new generation is increased diversification and progressive view towards things like gender, worldviews, societal norms, etc. To thrive in such an environment, openness as a personality trait becomes increasingly helpful and necessary. Thus, by conducting this study, I will be able to offer insights into how multilingualism may enhance openness to experiences and ideas.

By conducting this study, I seek to find an answer to this research question: is there a positive relationship between multilingualism and openness of the Big Five personality theory? Aside from this general question, I also aim to find whether or not cultural exposure is a potential contributing factor to the level of multilinguals' openness. Given insights and findings from previous research, I hypothesize that multilingualism and openness will be strongly positively correlated. Similarly, I believe the higher cultural exposure one experiences, the higher the level of openness. However, the number of languages one knows will likely not lead to a higher openness score, since there are no indications of that in previous research

2. Methodology

2.1. Participants

In this study, a total of 111 international students participated, who were mostly high school and university students. However, after examining the responses of the 111 participants, 19 responses were invalid (i.e., didn't finish the questionnaire, filled in the same answers for all the questions), thus leaving 92 valid responses. As is often the case for this kind of study, there was a strong gender imbalance (60 females, 32 males) [4]. The youngest participant was 8 years old with the oldest being 29. The majority of the participants' nationality was Japan (n=32), followed by the U.S. (n=16), China (n=12), Taiwan (n=8), and less than 5 participants each from other nationalities. Participants were composed of 35 bilinguals, 40 trilinguals, 13 quadrilingual, and 4 other participants who reported knowing more than 4 languages.

The study used purposive sampling to gather participants. Given a limited period to gather over 100 international students, this method provided the advantage of being able to gather target participants (international students) within a short period of a month. The questionnaire was spread through direct invitations as well as asking participants to spread the link to other international students.

2.2. Instruments

Other than a few questions where participants reported the number of languages they knew and how they acquired those languages, their openness level was assessed using the Big-Five Factor Markers from the International Personality Item Pool (IPIP) [5]. Since this study focuses on the relationship between multilingualism and open-mindedness, only one (openness) of the five scales (extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience) of the IPIP measure was used. The openness assessment was on a 20-item scale, where participants rate each item on a 5-point scale, ranging from very inaccurate to very accurate. The 20 items used are each grouped into "+keyed" and "-keyed", indicating the numerical values of each IPIP item response. For instance, for a +keyed item, such as "I have a rich vocabulary", the response "very accurate" is given a value of 5 when calculating the total scale score of openness. For a -keyed item, such as "I have difficulty understanding abstract ideas", the response "very accurate" is given a value of 1. Since this study only measures one of the five scales, the order of the 20 items was carefully considered to produce a more valid openness score by implementing the suggestions when administering IPIP measures [5]. Specifically, the 20 items are distributed in a way so that they alternate between +keyed and -keyed items. By doing so, the participants will have to pay attention to the wording of the 20 items, thus increasing the probability of giving a varied and valid response [6].

3. Results

Figure 1 shows the result of the relationship between the number of languages the participants know and their openness score. The openness score was calculated by adding up the numerical values of each response (i.e., "very accurate"). As mentioned in the previous section, the same responses will yield a different score value depending on whether the item is +keyed or -keyed. For the +keyed item the value was given in the following way: very inaccurate=1, moderately inaccurate=2, neither accurate nor inaccurate=3, moderately accurate=4, very accurate=5. For -keyed item the value was given in the following way: very inaccurate=5, moderately inaccurate=4, neither accurate nor inaccurate=3, moderately accurate=2, very accurate=1.

This scaling is due to +keyed item representing statements that supports openness, such as "I spend time reflecting on things", while -keyed items representing statements that don't support openness, such as "I am not interested in abstract ideas". As shown in Figure 1, the general trend was an upward trend, suggesting a higher openness score as the number of languages increased. However, due to the majority of the sample being bilinguals and trilinguals, a valid positive relationship can only be said between those two groups of participants. The highest openness score for both bilinguals and trilinguals was 96. The lowest openness score was seen in a quadrilingual participant, scoring 43. Most of the participants scored between 55 and 80. While dentilingual and septualingual scored significantly higher than other participants, the number of these groups of participants was not enough to make a valid conclusion.

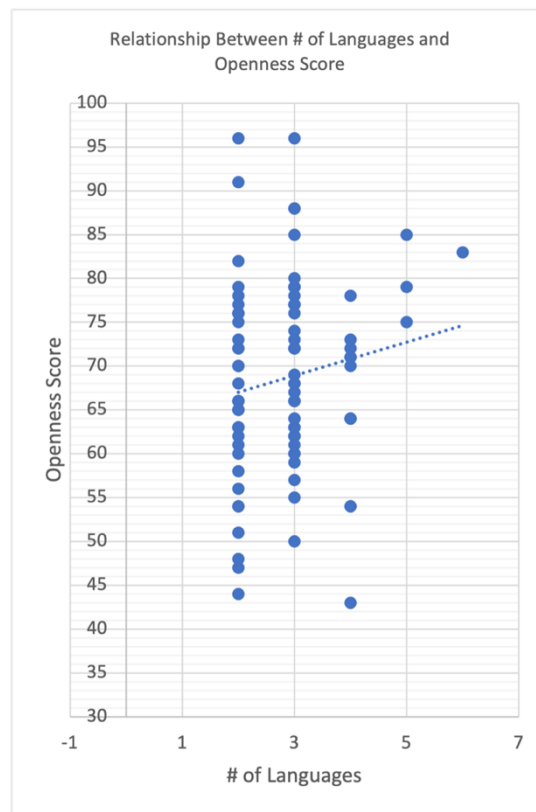


Figure 1 Relationship between the number of languages a participant knows and their openness score.

Despite the gender imbalance, the openness score of female and male participants was almost identical (female average=68.6, male average=68.7). There was no significant difference seen between the mean openness value of participants who rated their ability in their foreign language(s) as "proficient" or "advanced" (68.889) and those who rated as "intermediate", "elementary" or "beginner" (68.459). 45 participants learned their foreign language studying/living abroad, with a mean openness score of 68. The rest of the 47 participants who either learned foreign languages on their own or at school resulted in a mean openness score of 69, marking higher than those studying abroad. Both the highest and lowest openness score was seen among participants who weren't living or studying abroad.

Based on the results of the study, the main hypothesis proposed regarding the relationship between multilingualism and openness score proved to be partially correct. While the highest openness score was equal for both bilinguals and trilinguals, the lowest score for bilinguals was lower than that of trilinguals. However, regarding the hypothesis on cultural exposure, measured by their avenue of language acquisition, positively affecting openness score wasn't observed. Comparing participants' mean openness scores both by language proficiency and way of language acquisition, there were no significant differences seen. The values were approximately similar.

4. Discussion

Due to the few numbers of participants in other groups, including quadrilingual, pentalingual, and septualingual individuals, the results showed a valid positive relationship only among two groups of participants, bilinguals and trilinguals. The unequal distribution of participants in each group is due to the length of time the data for this study was collected. In a short period, it is difficult to reach out to a wide variety of participants merely through purposive sampling. With a longer period, it is more

likely that the questionnaire will be spread to a larger population of international students and thus increase the number of participants in each group. Another inconsistency seen between the results and hypothesis is the effect of cultural exposure on the level of openness. The major reason this inconsistency was seen is the problem with the method of measuring cultural exposure. In this study, to the question: "Where have you learned/are learning these languages?", the participants could answer multiple choices among 4 choices: home, school, on my own, and study/live abroad. Based on the 4 choices, the level of cultural exposure was assumed to be the greatest for those who learned their foreign languages by studying or living abroad. However, this method is not enough to conclude about one's cultural exposure, thus resulting in no significant relationship between cultural exposure and one's openness level.

The concept of open-mindedness and the concept of multilingualism are not something new to the research fields [7, 8]. It should be rather said that these concepts are sometimes misgiving and easily getting misunderstood [9, 10]. The experiment and data can lead to a more effective way for researchers to get rid of hinders from the old concepts and proceed with new findings.

For future studies, it is suggested that the period of data collection be at least half a year to ensure the collection of a wide variety of participants. To examine the cultural effect on one's openness level, it would be encouraged for future researchers to also collect data on which country the participants spent most of their life in. Doing so will prevent overestimating the degree of cultural exposure. Another suggestion is that when measuring personality factors, researchers should measure all 5 variables of the Big Five Factor markers. In this research, the participants likely realized that the 20 items were all measuring the same variable, which may have resulted in an inaccurate reflection of one of the aspects of their entire personality. As all research does, this study also has its limitations. First of all, since the questionnaire only included one of the Big Five Factor markers, the participants likely lost patience in responding to 20 items that measure the same variable. Another limitation is a common limitation seen in all personality questionnaires, which is the accuracy of self-reported data. On top of the study being a self-reported questionnaire, the questionnaire link was spread by encouraging potential participants to participate in this study, which decreases the participants' level of seriousness in filling out the questionnaire. However, to collect a specific type of participants, such as trilinguals and quadrilingual, it is still necessary to select the most suitable sample. Thus, it is suggested that the data collection be held for at least half a year to allow participants from the suitable sample to voluntarily fill in the questionnaire.

5. Conclusion

Through the study, this paper found a higher openness score among trilingual international students compared to bilingual students. The study was unable to reach a valid conclusion regarding pentalingual and sextalingual participants, due to a significantly low number of participants compared to bilingual and trilingual students. However, with the data on hand, there was still an upward trend in openness score as the number of languages one knew increased. The study also aimed to observe the effect of cultural exposure on openness scores yet resulted in no significant relationship between the two. Based on these findings, it is concluded that compared to bilinguals, the relationship between trilingual students and openness level is stronger. It is thus likely that learning foreign languages will foster open-mindedness within children. Trilinguals likely had a higher openness score among other participants due to learning foreign languages abroad. In future studies, several improvements are suggested: a longer period for data collection, collecting data on where the participants spent most of their life, choosing a suitable sample, and making participants voluntarily fill in the questionnaire. To make it manifest again, this paper explores the relationship between multilingualism and open-mindedness by collecting data on multilingual international students' language acquisition and open-mindedness through an online questionnaire. A positive correlation exists between multilingualism

and open-mindedness in up to three languages with no significant correlation seen for more than three languages. The results indicate that bilinguals and trilinguals are relatively more open-minded. Yet, at the same time, learning more languages doesn't necessarily make one more open or diverse. It is suggested that children acquire one to two foreign languages to foster their openness.

The main contribution of this paper is that it doesn't fully support a higher openness level among multilingual students, which was a result seen in previous studies [1]. This study also found a higher openness score for trilinguals over bilinguals, which is a relatively new finding among existing studies on multilingualism and personality. Since most research is focused on bilingual children or adults, this paper will provide insight into international students' number of acquisitions and their relationship with open-mindedness.

Current research has several limitations in terms of the time length of data collection and participant varieties. Thus, future research should spend at least half a year collecting data and ensure the collection of a wide variety of participants, to observe the relationship between multilingualism and open-mindedness.

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