

# Bilingualism and the Intellectual Advantage

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## ABSTRACT

Bilingualism has been becoming more common within today's generation as the significance and value of knowing more than one language increases. With the prominence of bilingualism, the purpose of this study is to determine whether there is a correlation between bilingual first/second generation Americans and the intellectual advantage. From previous research, many studies have considered the variables of socioeconomic status [SES], impacts of immigration and culture, and the differing language backgrounds of students. This study will address the gap of clear correlation between bilinguals and the intellectual advantage by determining the relationship between student executive functions and their bilingualism as first/second generation Americans. This was a three-part, quantitative correlational study. Subjects completed a 29.5 minutes three test study including Verbal Fluency Test, SAT passage, and the Stanford-Binet Test. There were eighteen participants for the research study. Of the eighteen, there were nine who were monolinguals and nine who were bilinguals from all grades within the high school. The results had shown increased scores for monolinguals among the three test experiments. Monolingual participants scored especially higher on the Verbal Fluency Test, Stanford-Binet test, and SAT scores. The SAT test scores were similar among both monolingual and bilingual groups. The goal of this experiment was accomplished. We were able to determine whether there was a potential correlation between bilingualism and the intellectual advantage including the factor of first/second generation Americans.

## Introduction

Although bilingualism is common among immigrants and first/second generation Americans, there is a well-known debate on the advantages and disadvantages that it brings. Bilinguals, specifically within the United States, could be fluent in both English and another language, or could be immigrants who have not yet learned English with their other languages.

Some say that "bilingual children and adults have significantly smaller vocabularies than monolingual speakers" (Bialystok & Shorbagi, 2021, pg. 469) while others show the significant linguistic advantages bilinguals have against monolinguals. This issue has caused a lot of controversy and discrimination against bilingual speakers as either they are more successful due to an intellectual advantage, or they require more governmental resources due to the disadvantages of bilingualism. As a result, immigrants/first generation Americans have had trouble adapting within the United States due to the language barrier.

So far, for immigrants, foreign governments have assisted in the struggle of immigrant bilinguals assimilating into societies through the use of CLIL programmes (Content and Language Integrated Learning). Specific to the United States, the government had administered the BEA (Bilingual Education Act) which is a "federal education program specifically intended for limited English proficient (LEP) children" (Feinberg, 1998, pg.2). Programs such as CLIL and BEA attempt to assist bilinguals, specifically those who are immigrants, in advancing their English level skills. However, within these programs, the development of the students' home-spoken language does not concur, causing them to lose the skills developed through bilingualism.

The research on bilingualism continues as Myriam Grajales-Hall, a doctoral student in the Department of Educational, School and Counseling Psychology in the College of Education, indicated a need for further

research. Dr. Grajales-Hall, experimenting the specific group of Mexican Americans, wanted to “study the motivations of Mexican American students” with data that “these students have more success in school than Mexican-American students who have lived in the U.S. their entire lives” analyzing whether immigrant or first generation Americans have a better advantage (Grajales-Hall, 2011). Although my research does not focus on the motivation of immigrant bilingual students, my study will determine whether there is a true intellectual advantage shown through first generation American bilingual students. To truly understand the positive and/or negative impacts of bilingualism, the intellectual advantage needs to be determined between bilingual students versus monolingual students. This raises the question: to what extent does bilingualism provide an intellectual advantage for first/second generation Americans when assessing executive function test scores for high school students in X county throughout the 2022-2023 school year?

## Literature Review

To grasp a firm understanding of the bilingualism aspect, the definitions of the terms executive function and language development have to be evident and clear. These definitions were derived from credible sources and from experienced researchers such as M.S Kovyazina, a researcher from Lomonosov Moscow State University, Moscow, Russia. The article “Executive Functions’ Impact on Vocabulary and Verbal Fluency...” defines executive function as “a group of cognitive skills which provide for purposeful problem-solving and the ability to adapt to new situation[s]” (Kovyazina et al., 2021). Language development was defined as a “complex phenomenon, by a whole number of mental processes related to children’s mastering of written and oral speech” (Kovyazina et al., 2021). These titles relating to bilingualism will clarify terms used throughout my research and experiment as they are crucial in understanding the significance of bilingualism.

When determining the true intellectual advantage bilinguals have, it is detrimental to consider variables derived from similar studies. Many studies have considered the variables of socioeconomic status [SES], impacts of immigration and culture, and the differing language backgrounds of students. It must be noted, when researching previous experiments, that each study assesses different bilingual groups, and each bilingual group will face different confounding variables.

In the study “Subtle Increments in Socioeconomic Status and Bilingualism Jointly Affect Children’s Verbal and Nonverbal Performance,” the researchers wanted to investigate the “impact on performance of verbal fluency tasks and executive function tasks” based on socioeconomic status for both bilinguals and monolinguals (Bialystok & Shorbagi, 2021). Although there were no groups with a difference of verbal fluency, children from backgrounds of higher SES were recorded to perform better showing a “positive relation between degree of bilingualism and EF [executive function]” and were established to influence essential cognitive development (Bialystok & Shorbagi, 2021). Researchers Ellen Bialystok and Sadek Hefni Shorbagi, from York University, Canada, established that bilinguals only benefited when from high SES levels. They addressed the situation by establishing complex models of analysis on bilinguals for further research. This study itself shows a perspective on how researchers studied the bilingual advantage by referring to the variable of socioeconomic status. Another study, “Bilingual Education in the United States,” has shown that English language learners [ELLs] struggled due to the “increased probability of living in poverty and having low parental education” (Kim et al., 2015). The resolution of the struggles of ELLs as well as the controversy associated with labeling bilingual learning has resulted in researchers from George Mason University creating evolved bilingual education program models. The two-way immersion program (TWI) had effective success as English-speaking and Spanish-speaking student groups had significant growth in the L1 and L2 development with an average growth in mathematics (Kim et al., 2015). In the TWI program, L1 stands for the language that is best attempted to not be lost with other aspects of the program and L2 stands for the second language that is trying to be best supported and enhanced by the program. Such data has shown that immersion students had advanced performance on the basis of academic achievement and cognitive ability. The overall study indicates how ELLs could be more

advanced addressing those with a low SES and a slight bilingual advantage. The studies presented show the variable socioeconomic status as a major factor aiding the research on the bilingual advantage in areas of academic achievement and cognitive development.

The impacts of immigration and culture is another perspective studied when attempting to understand whether there is a bilingual advantage. Within Bialystok and Viswanathan's study, a bilingual advantage was established considering a specific task when "performing conditions that required inhibitory control and switching but not response suppression" and a significant amount of cognitive flexibility (Bialystok & Viswanathan, 2009). Cultural impacts and immigration all are variables that established the bilingual advantage as both groups of bilinguals tended to speak a variety of non-English languages as opposed to monolinguals. This study establishes two variables that have been able to approach the debate of the bilingual advantage by proving this phenomenon through immigration and cultural terms. Ellen Bialystok, a renowned Canadian psychologist and researcher known for her studies in bilingualism, along with Raluc Barac, a research associate at the hospital for sick children, conducted an experiment regarding the variable of cultural background. Recent research has addressed the variable of cultural background as they concluded that "Chinese and Korean monolingual children show more advanced executive function performance than English monolingual children in North American and United Kingdom" showing a noticeable bilingual advantage (Bialystok & Barac, 2012). However, it was shown that such results on cultural background could be inconclusive as the correlation between language similarity and cultural background can only offer tentative conclusions.

Another variable that has been introduced in research regarding the bilingual advantage includes the differing language backgrounds of all students. Based on the diverse language backgrounds, there is an impact on cognitive development and linguistic advantages. Allison Briceno, a researcher at San Jose University has addressed the gap that, "while a number of studies have shown that language production is strongly related to reading comprehension, the complex relationship between language and reading is not well understood" (Briceno, 2021, pg. 151). Briceno wanted to develop a biliteracy to create efficient instruction for emergent Bilinguals by examining the reading behaviors of second grade Latinx students within the Dual Language Programs and explore how different language backgrounds influence instructional needs (Briceno, 2021, pg.151). It was concluded that different language backgrounds influenced student reading (Briceno, 2021, pg.151). "SimBs [Simultaneous Bilinguals] appeared to be more able to use their syntactic knowledge across E-languages than SeqBs [Sequential Bilinguals]" (Briceno, 2021, pg.161). The perspective of examining student language backgrounds assisted in determining whether bilinguals truly have an advantage under this variable.

## Gap in the Research

Some pre-existing studies have analyzed the variables of socioeconomic status, immigration and culture, and the impact of having various language backgrounds. However, these studies fail to conclude whether there truly is a bilingual advantage for first/second generation Americans. M.S Kovyazina, a researcher from Lomonosov Moscow State University, Russia, indicated that there are "clearly insufficient studies on the relationship between bilingual children's language and executive functions, while there are quite a few for monolingual children" (Kovyazina et al., 2021). My research will address this gap by determining the relationship between student executive functions and their bilingualism as first/second generation Americans. The bilingual advantage is a difficult topic to address as there are many confounding variables including home-spoken languages that may be more prominent in households and the different forms of education given to students. These confounding variables could potentially limit my experiment. However, considering the narrowed community and sample population of my experiment, the bilingual advantage can be explored in an accurate manner. The narrowed community that is addressed in my experiment limits the expansion of these confounding variables allowing for the bilingual advantage to be properly tested. Overall, as the prevalence of bilingualism persists, the significance of addressing this gap continues.

## Methodology Section

### Participants

There were eighteen participants for the research study. Of the eighteen, there were nine who were monolinguals and 9 who were bilinguals. Additionally, I took samples from all grades of high school students: 15 were juniors, one was a senior, and two were freshmen. This demographic of participants was chosen because the goal of the project is to explore the effects of bilingualism on the intellectual advantage among all high school students. With this, I tried to get participants from all grades, however, with the use of convenience sampling the difficulty of various demographics of participants increased. I used convenience sampling which is a non-probability sampling method. This method enabled the participants to be selected on the basis of availability and based on whether they want to be involved. Although there can be participant bias as volunteers may want to skew or curve results based on their beliefs, this is the best method especially for analyzing high school student scores. This method would also better ensure the availability of participants for the overall experiment. Additionally, all non-probability sampling methods have a risk of volunteer bias, however the significance of the study as well as the conditions under which it is taking place overshadows this chance of bias.

### Instruments

For my experiment, I used instruments of a Verbal Fluency Test, a SAT passage, and a Stanford-Binet Test to collect data on student executive functions. I created a questionnaire as well to gather information of grades, age, languages spoken, as well as whether they are a first or second generation American, which are all factors that could influence the results of the study (see *Appendix A*). Using these instruments, I was able to collect data from students both first/second generation Americans and monolinguals/bilinguals.

The Verbal Fluency test (*Appendix B*) determines an individual's Semantic and Phonetic Fluency, which could be impacted by knowing more than one language. During my previous background research on this topic, many researchers used the verbal fluency test or similar tests to assess the impact of bilingualism on such executive functions. This verbal fluency test would assess student executive control abilities which could impact their comprehension test scores. I also administered a SAT reading comprehension test, from May 2018, to each participant. The SAT reading passage (*Appendix C*) was used to assess the executive functions of bilinguals and monolinguals. The Stanford Binet Test (*Appendix D*) gave me a foundation/basis on whether there is an intellectual advantage among bilingual groups or monolinguals. There was slight instrument bias especially for the Stanford-Binet test as some calibration errors occurred, technologically, leading to inaccurate measurements. This data will still be analyzed but is not as reliable due to the lack of consistency with technological issues.

External validity is assessed by the instruments used so that the results of the study can be generalized from a sample to a population, which is why various participants are from different grades within high school. As various different ages, grades, and individuals were tested for, the sample group allowed for overall population generalizability. The Spearman Nonparametric correlation graph is a tool I will use to assess the results of my study and establish a correlation to determine whether there are linear relationships between the two variables. Since I am bilingual, there could be an indication of research bias for my experiment. However, when collecting data, I ensured my research bias did not hinder my test results by scoring the SAT reading passage and Verbal Fluency test using a general/prewritten answer key. Additionally, I was able to open the test to a wider audience through the use of convenience sampling. This allowed for an equal number of monolinguals and bilinguals to be presented, regardless of any limitation factors, showing reduced researcher bias.

## Design

This study measures the extent to which bilingualism provides an intellectual advantage for first/second generation Americans. This is essential in understanding how much one is impacted when learning another language. With this research we could answer what the implications are for learning another language and how that impacts one's executive functions. My hypothesis for this research is that there will be a significant correlation between bilinguals and their intellectual advantages, as measured by Verbal Fluency Test, SAT passage, and Stanford-Binet test, between high school students based on their executive functions.

A three-part, quantitative correlational study with eighteen participants was conducted. Subjects completed three tests including Verbal Fluency Test, SAT passage, and the Stanford-Binet Test. This method allowed for the participants to be tested for various executive functions under a controlled environment. My approach included an experimental design as I attempted to identify correlations between variables with the experimental group and control group. Specifically, the Quasi-Experimental design was used instead as it was increasingly difficult to do random assignments, which is the process of narrowing participants into an experimental and control group. The experimental approach consisted of quantitative data with tests conducted from similar research studies on the topic. This approach consisted of a survey, in which questions of one's age, grade, English class level, number of languages, etc., which is further discussed in the "Instruments" section. These survey questions are to allow for variables when analyzing the correlation between the test results of monolinguals and bilinguals.

This experimental approach with quantitative data allowed for specific information and data leading to a potential correlation which would not have been found if qualitative data was found. A correlational study was necessary because, based on my analysis of similar studies, not many have found a true correlation between bilingualism and an intellectual advantage. If a survey was conducted, this would not have been able to be assessed. Such qualitative methods of questionnaires and surveys would simply not be enough and would provide insufficient amounts of information with potential bias on opinions of bilingualism. Many studies that have had similar approaches to bilingual research have used an experimental approach to gain accurate data and enable further analysis on the issue. Therefore, a correlational study with an experimental approach was the best choice to establish whether there truly is a correlation between bilingualism and the intellectual advantage.

## Procedures

Upon agreement to participate in the study, the subjects completed a questionnaire with basic information that would be used during analysis. Eighteen students completed the questionnaire which had an attached consent form outlining the tests that would be taken. To ensure confidentiality, the questionnaire consisted of a consent notice, which was repeated during the test, to inform the participants that neither names of people nor the results of their tests would be disclosed. I needed to know the participants' names to compile their survey and test scores together, but within the data collection the participants' names were all anonymized. The IRB ensured that no ethical principles were violated and neither did the test conducted interfere with the county's instructional content.

After the survey was completed, participants started with the Verbal Fluency Test on paper. This test consisted of both the Semantic and Phonetic Fluency Test. Within the Semantic Fluency Test, the first question was to list all the animals that you can think of in 60 seconds. The second question was to list all the fruits that you can think of in 60 seconds. Within the Phonetic Fluency Test, my first question was to list all the words that start with 'F' that you can think of in 60 seconds. My second question was to list all the words that can start with 'A' that you can think of in 60 seconds. My third question was to list all the words that can start with 'S'

that you can think of in 60 seconds. After the Fluency tests, the SAT reading passage (May 2018) which compared two passages on paper. The time given was 12.5 minutes. After these tests, the Stanford-Binet tests were 12 minutes where students completed it on their phone or device. In total, the test took 29.5 minutes.

## Results

Data from a survey, verbal fluency tests (both semantic and phonetic), SAT reading tests, and Stanford-Binet tests were taken from 18 students that were both monolingual or bilingual/trilingual. The factors of being a first/second generation American and their ethnicities were also taken into account.

Within the survey, students were asked their age, grade, and how many languages they had spoken. Five participants were 17, 11 were 16, and two were 14. In terms of grade levels, 15 participants were in 11th grade, one was in 12th grade, and two were in 9th grade. Participants who were bilingual/trilingual had varied language combinations. For example, Participant C spoke English, Czech, Slovak, and Norwegian. These language combinations for bilinguals/trilinguals are shown in *Appendix F*.

Among the bilingual participants (*Table 1*), six participants spoke two languages, two participants spoke three languages, and one participant spoke four languages. Students were also asked whether they were first/second generation American and what their ethnicities were. Among these bilingual participants, all but one participant were first/second generation Americans. The ethnicities of the bilinguals/trilinguals varied. Two were Middle Eastern, four were Asian, one was Caucasian, and one was Hispanic.

**Table 1.** Bilingual Participants Responses from Survey

Bilingual Participants	Age	Grade	How many languages spoken?	First/Second Generation American	Ethnicities
Participant B	14	9	2	1	3
Participant C	17	11	3	1	7
Participant D	14	9	2	1	3
Participant G	16	11	2	1	1
Participant H	16	11	2	0	1
Participant J	17	12	3	1	3
Participant K	16	11	2	1	5
Participant P	16	11	4	1	3
Participant R	17	11	2	1	1

Among the monolingual participants (*Table 2*), all nine participants spoke one language. Among these participants, all but one participant were not first/second generation Americans. The ethnicities of the monolinguals varied slightly: seven Caucasian, one was Hispanic Latino, and one was African American.

**Table 2.** Monolingual Participants Responses from Survey

Monolingual Participants	Age	Grade	How many languages spoken?	First/Second Generation American	Ethnicities
Participant A	17	11	1	0	7
Participant E	17	11	1	0	7

Participant F	16	11	1	1	5
Participant I	16	11	1	0	7
Participant L	16	11	1	0	4
Participant N	16	12	1	0	7
Participant M	16	11	1	0	7
Participant O	16	11	1	0	7
Participant Q	16	11	1	0	7

The table below indicates the values of the numbers listed in Tables 1 and 2 in terms of the responses from the participants of whether they are first/second generation and what their ethnicities are.

**Table 3.** Values of first/second generation and ethnicity responses from participants.

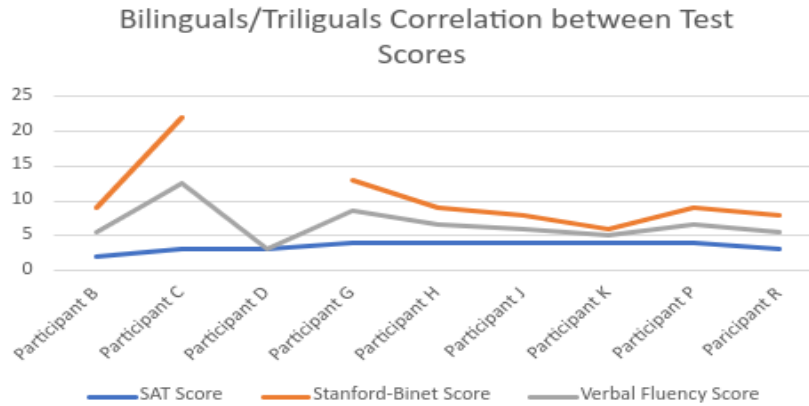
First/Second Generation	
Yes	1
No	0

Ethnicities	
Middle Eastern	1
American Indian	2
Asian	3
African American	4
Hispanic/Latino	5
Native Hawaiian/other Pacific Islander	6
White	7

## Correlation Data

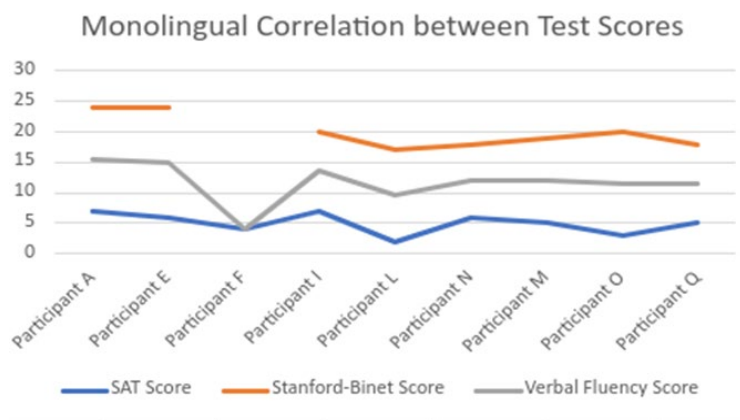
The information from the survey was compared with test results from the SAT reading passage, Verbal Fluency Tests, and the Stanford-Binet test. were used to generate the correlation data shown below between bilingual and monolingual students.

For the bilingual/trilingual participants (*Figure 1*), Participants B-R scored SAT values of 2-5 out of 11 points. Participants B, G-R scored between 5-10 on the Verbal Fluency Test (mean of semantic and phonetic fluency test scores between 18 participants). Participant D scored below a 6 on the Verbal Fluency Test. Participant C scored between a 10 and 15 on the Verbal Fluency Test. Participants B, H-R scored between a 5 and 10 on the Stanford-Binet Test (averaged values between 18 participants). Participant G scored between a 10 and 15 on the Stanford-Binet Test and Participant C scored between a 20 and 25. Participant D had no results/inconclusive results due to technological difficulties.



**Figure 1.** Bilingual/Trilingual Correlation Results between the Three Tests (Participants B-R)

For the monolingual participants (*Figure 2*), Participants N, M, Q, F scored SAT values of 4 or 5 out of 11 points. Participants L and O scored between a 2 or 3 on the SAT passage. Participants A, E, and I scored between a 5 and 10 on the SAT. For the Verbal Fluency Test (mean of semantic and phonetic fluency scores between 18 participants), Participants I-Q scored between a 10-15, Participant F scored below a 5, and Participants A-E scored a 15. On the Stanford-Binet Test (averaged values between 18 participants), Participants I-Q scored between 15 and 20 and Participants A-E scored between 20-25. Participant F had inconclusive/no results due to technological difficulties.



**Figure 2.** Monolingual Correlation Results between the Three Tests (Participants A-Q)

## Discussion

The results from my experiment were quite surprising and unexpected as compared to my hypothesis. My hypothesis for this research was that there will be a significant correlation between bilinguals and their intellectual advantages, as measured by Verbal Fluency Test, SAT passage, and Stanford-Binet test, between high school students based on their executive functions. However, the results directly contradict that. The more accurate statement would be that there is a significant correlation between monolinguals and their intellectual advantages.



The results had shown increased scores for monolinguals among the three test experiments. Participants scored especially higher on the Verbal Fluency Test, Stanford-Binet test, and SAT scores. The SAT test scores were similar among both monolingual and bilingual groups.

For the Verbal Fluency Test by monolinguals, participants I-Q scored the highest between a 10-15. However, for bilinguals the Verbal Fluency test scores were lower with Participants B, G-R scoring between 5-10. Simply from the VFT, a clear correlation is shown between an intellectual advantage and monolingual students.

The Stanford-Binet test also consisted of higher scores for monolinguals. For monolinguals, the Stanford-Binet Test for Participants A-E scored the highest scores between 20-25. However, for bilingual participants, only one participant, Participant C, scored between 20 and 25. For monolinguals, more participants were able to score higher on the Stanford- Binet test.

Lastly, the SAT results also contradict my hypothesis. For the monolingual participants, Participants A, E, and I scored the highest between a 5 and 10 on the SAT. While the bilingual/trilingual participants, Participants B-R scored SAT values of 2-5 out of 11 points. This data shows the varied scores of the SAT test for monolinguals. Three more monolingual participants were able to score higher than all of the bilingual participants.

These results show a negative correlation between bilingualism and an intellectual advantage and rather emphasize on the positive correlation between monolingualism and an intellectual advantage. This process also refers back to my gap where I was able to address this gap within my research by determining the relationship between student executive functions and their bilingualism as first/second generation Americans.

## Implications

The following results could be due to a variety of factors. It could be because a lot of bilingual participants were first/second generation Americans, sharing an indication that these individuals may focus more on other languages as well. Learning many languages definitely improves brain development and critical skills, however they may lower/stagnate the advancement in other languages, such as English in this case. However, this may not be true in all scenarios depending on other factors of upbringing, access to resources, higher development in another language, etc.

Additionally, first/second generation Americans have exposure to education from other countries which could differ from American education showing more advancements in other subjects, instead of English. It could also be a matter of upbringing and how bilingual participants' other languages are more refined as opposed to English. English class levels could also be a factor as more exposure to vocabulary and other critical skills are refined and developed in higher classes. This would also be a reason for some participants having extremely high scores in both monolingual and bilingual groups.

The school curriculum could extend the languages presented to them instead of the main romance languages of Spanish, French, Latin, and Chinese. An expansion of language classes could show student potential and their executive functions while learning/practicing another language. For those who are immigrants from foreign countries, bilingual education programs may need to be adjusted to focus on both their languages and English in order to advance both in an orderly fashion.

## Limitations

Apart from the contradiction of my hypothesis, limitations were present in my paper. This included technological difficulties when conducting the Stanford-Binet test, overall equipment, and time. Some were not able to access the link and for others the results were not coming up. I used a Stanford-Binet link that gave free access to short practice tests; however, it is not a legitimate proper test as the Stanford-Binet is. The full test was not available which could cause inconsistencies within this portion of my research. The kit for the Stanford-Binet test, which is more accurate, ranged from hundreds of dollars and was not plausible for this experiment.

Further, participant time was a key factor during the experiment. I had to be mindful of participant availability after school and how long one would be willing to stay for. Participants after a fatiguing school day sat for an hour doing three tests back-to-back, in which some had to do the Stanford-Binet test at home and others were not able to complete the test at all. This resulted in slight inconsistent results for the Stanford-Binet test. The fatigue presented by participants could have potentially skewed the results but was the only way the experiment could have been accomplished.

Another possible limitation to my research would be the participant grade level diversity is another aspect that needs to be taken into consideration. Trying to find participants from all grades was difficult, causing most participants to be in 11th, one to be in 12th, and 2 individuals to be in the 9th grade. This could definitely impact the audience to which the overall results could apply and be expanded to and may not be able to spread to a large population size such as the whole high school population. Participant grade level diversity would need to be improved, however in this case, convenience sampling was the best approach.

## Conclusion/Future Studies

The overall experiment, if conducted again, would need some changes to address the limitations. Instead of focusing on critical skills developed in Language composition classes including Verbal fluency, SAT reading, and Stanford-Binet, it could be aimed toward subjects of math, science, history, etc. Other subjects such as math or science could have potentially produced higher executive function results among bilinguals that are first/second generation. The tools used could be funded for or replaced including the Stanford-Binet test. A more accurate tool for the Stanford-Binet test would be the full test which consists of all questions, a scoring guide, etc. With proper funding, more accurate results could derive from the Stanford-Binet test enhancing the overall research.

This research definitely needed some improvement along the way of developing the research process. When doing my research, originally, I was only going to do one test which consisted of the verbal fluency test (semantic and phonetic fluency). However, with much research and analysis of similar studies, multiple different tests were conducted in relation to language composition to assess the correlation between bilingualism and intellectual advantage. The process of setting up the experiment was also a work in progress. I was originally not going to build a questionnaire, but created it to get participant information necessary to the project including first/second generation, number of languages spoken, etc.

Aside from the limitation, the goal of this experiment was accomplished. I was able to determine whether there was a correlation between bilingualism and the intellectual advantage including the factor of first/second generation Americans. It was determined that there was no correlation but a possible correlation between monolingualism and intellectual advantage was prevalent. The three tests overall had higher average scores for the monolinguals as opposed to bilinguals. This could be due to a variety of factors but to determine which factor is influencing the intellectual advantage the most would need more extensive research. Hopefully, future researchers take into consideration the research conducted on bilingualism and the intellectual advantage.

Much research needs to be conducted to come to a conclusion on this matter as the significance of being bilingual increases along with the developing benefits.

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