

**Language Retention Amongst Alumni of Bilingual Education Programs in U.S. Public
Schools**

Kylah Fanning

A thesis submitted in partial fulfillment of the requirements for the degree of Bachelor of the
Arts in Linguistics

Bryn Mawr College

December 2019

Advisor: Dr. Shizhe Huang

My deepest thanks go to my faculty advisor, Dr. Shizhe Huang, for her detailed, insightful commentary and mentorship throughout the writing of this thesis. Thanks go to my second faculty reader, Dr. Miranda Weinberg, my LING 090 professor, Dr. Emily Gasser, and the members of my senior seminar, Jessie Chen, Synthia Feng, and Nicole Talvacchia, for their feedback and guidance throughout the writing of this thesis, as well. I would also like to thank all of the participants in the research presented in this thesis for their time.

Abstract

Access to bilingual education has been a contentious political subject throughout United States history, despite significant evidence of the cognitive, psychological, cultural, academic, professional, and communicative benefits of bilingualism. While much of the existing research largely focus on the experiences and linguistic proficiencies of students in bilingual education, there is a lack of research on the relationship between bilingual education and language retention. This thesis uses qualitative surveys of alumni of bilingual and monolingual education programs to evaluate the relationship between bilingual education and language retention, and proposes that both bilingual education and continued language use in a variety of contexts are predictive factors for strong language retention post-K-12 education for alumni of United States public schools.

Key words: education, bilingualism, multilingualism, language retention

Table of Contents

1 Introduction

2 Background

2.1 History of Bilingual Education in the U.S.

2.1.1 English-Only Education

2.1.2 U.S. Court Cases Concerning Language Instruction Policy

2.1.3 Rights to Linguistic Equity

2.1.4 Funding Bilingual Education

2.1.5 State Laws in the Past Thirty Years

2.2 Criticisms of Bilingual Education

2.3 Benefits of Bilingualism

2.3.1 Cognitive Effects of Bilingualism

2.3.2 Psychological Health

2.3.3 Cultural Connections

2.3.4 Academic and Professional Success

2.3.5 Increased Communication

2.4 Types of Bilingual Education

2.4.1 90-10 Bilingual Education Programs

2.4.2 50-50 Bilingual Education Programs

3 Methods

3.1 Previous Research Design

3.2 Methodological Design for This Thesis

3.2.1 Age of Participants

3.2.2 Analysis of Individuals vs. Programs

3.2.3 Contextualizing Analysis in the Experiences of Participants

3.2.4 Survey of Attendees of Monolingual Education Programs

3.3 Key Survey Questions

3.3.1 Participants' Linguistic Backgrounds

3.3.2 Assessment of Language Retention

3.3.3 Contextualization of Data within Participant Experiences

3.4 Methodology Implementation

4 Findings

5 Discussion

5.1 Discussion of Survey Results and Implications

5.2 Discussion of Methodology and Applications

6 Conclusion

References

“The problems of language always involve ideological questions and, along with them, questions of power.”

Paulo Friere

1 Introduction

Public schools in the United States have used a variety of approaches to bilingual education, or the use of two or more languages for instruction with the goal of students becoming proficient in each language (Nieto 2009). Continually shifting prevailing attitudes in language policy and public sentiment have dictated the support and suppression of bilingualism in schools over the course of United States history (Nieto 2009). While many communities have fostered bilingual schools, “English Only” education has been used as a suppressive tool, often intended to silence the voices of already marginalized groups in the U.S. since the rise of U.S. nationalism in the early 1900s (Macedo 1999; Hartman 2003). Since “education is by nature... political,” the language of instruction certainly carries the political leanings of those in power (Friere 1987). Especially in linguistic minority communities, access to bilingual education can be an essential aspect of decolonizing educational practices and community spaces. Additionally, bilingualism enables people to maintain a broader scope of communication, and bilingual people experience cognitive, social, psychological, and economic benefits, as well (Marian & Shook 2012).

Today, across the U.S., there are a variety of configurations of bilingual education curriculums in schools. This thesis focuses on the two that are most prevalent in practice both according to the existing literature, and within the responses received for this study: 90-10 bilingual education programs, and 50-50 bilingual education programs. 90-10 bilingual education programs cater to students hoping to learn a second language, in addition to their home language,

with the students spending the greater amount of their class time devoted to instruction in the language that they are less familiar with, while they are instructed in their home language for certain subjects (Center for Applied Linguistics 2016). The primary focus in a 90-10 bilingual education program is on students gaining proficiency in a second language. 50-50 bilingual education programs, by contrast, involve about half the classroom time devoted to each language being taught, with the goal of students simultaneously becoming proficient in both languages.

90-10 and 50-50 bilingual education programs have been previously analyzed within case studies of specific programs, and with regards to the academic success of individual students attending a variety of programs (García & Kleifgen 2018). The focus of research on students currently placed in bilingual education programs has left long-term language retention by attendees of bilingual education programs under-analyzed. A methodology is proposed and used in this thesis that aims to examine language retention among alumni of bilingual education programs in the U.S., and to do so within the context of the linguistic experiences of the participants. Analyzing the success of 90-10 and 50-50 bilingual education programs through the lenses of language retention and the linguistic experiences of attendees post-high school will shed light on the significance of bilingual education in fostering bilingualism in adulthood. Research on the long-term effects of receiving a bilingual education in U.S. K-12 public schools can provide meaningful practical support for future policy and program design.

This thesis investigates language retention at the intersection of the amount of instruction received in the language and the continued use of that language in daily life. In order to contextualize the educational experiences of the research participants, a brief outline of the history of the implementation of bilingual education, and the policies and attitudes concerning bilingual education will be presented. Both the criticisms and benefits of bilingual education and

bilingualism will be explored through a review of recent literature on these topics. Furthermore, an outline of the types of bilingual education that are most commonly implemented in U.S. public schools will provide further context for the educational experiences of participants in the research presented in this work.

The methodology proposed and used in this research has been designed to fill in gaps in the information collected in previous studies about bilingual education in the United States, and is intended to explore any correlations that exist between receiving a bilingual education and retaining the languages used in that education. The correlation between retention and the continued usage of instructional languages in a variety of contexts, representing aspects of bilingualism that have been found to be beneficial, is explored as well, in order to place long-term language retention in a more holistic context. Both attendees of bilingual education programs and attendees of monolingual education programs will be included in the research, in order to assess whether there is a difference in retention levels between those who attended bilingual education programs, and those who did not. Three hypotheses will therefore be examined:

H₁ There will be a positive correlation between attending a bilingual education program and language retention.

H₂ There will be a positive correlation between use of a language in a variety of contexts and language retention.

H₃ Attendees of bilingual education programs will demonstrate stronger retention of their languages of instruction than attendees of monolingual education programs will demonstrate of the 2nd language that they learned in school.

2 Background

2.1 History of Bilingual Education in the U.S.

Bilingual education in the United States has a complex history, visibly shaped by court cases and laws, and less-visibly shaped by individual and community linguistic tensions, generation after generation (Nieto 2009). This section will trace the social and political developments that have shaped the landscape of bilingual education throughout the history of the United States.

2.1.1 English-Only Education

Proponents of “English Only” education, or education in which instruction is given in English, and only in English, argue that the use of a single common language in a nation as diverse as the United States will serve to unify the country, and regularize the educational experiences of students across the country (Hartman 2003). English-Only Education gained popular support in the nationalist movements that emerged in the United States around World War I (Hartman 2003; Hornberger 2016). It is no accident that English has been chosen as the language to use as that unification tool, as it has been the language of the most privileged in the U.S. (Hartman 2003). “English Only” curriculum has been used as an arm of colonialism throughout U.S. history, to the present day (Hartman 2003). In a settler nation comprised of immigrants with many linguistic backgrounds, the U.S.’s “English Only” educational policies privilege English, and specifically a dialect of English spoken by white, middle- and upper-class people (Hartman 2003). In the U.S., racial and ethnic inequalities intersect with linguistic inequalities, and these inequalities are emphasized through English Only education, which suppresses the linguistic identities of those who are already systemically marginalized, and at the same time falsely promises that assimilation can alleviate the difficulties that marginalized people face (Hartman 2003).

English Only policies in schools inherently seek to wipe out any other languages spoken by students, and to replace those languages with English (Macedo 1999). This devaluing of languages other than English goes hand-in-hand with the devaluing of minority cultures in the United States. As English Only curriculum seeks to erase students' knowledge of their minoritized languages, the linguistic identities of these students are othered, and pushed further from mainstream understanding (Macedo 1999).

2.1.2 U.S. Court Cases Concerning Language Instruction Policy

Various linguistic minority communities have asserted their rights to bilingual educations. Even when states have passed laws limiting instruction of languages other than English, these communities have fought back. Cases such as *Meyer v. Nebraska* and *Farrington v. Tokushige* have been brought before the Supreme Court, and overturned laws prohibiting the instruction of foreign languages (Nieto 2009). *Meyer v. Nebraska*, which came before the Court in 1923, struck down a law banning instruction in a foreign language on the basis of the Court finding that the law violated the Fourteenth Amendment's guarantee of individual inalienable rights (Nieto 2009). *Farrington v. Tokushige*, in 1927, overturned a law banning foreign language instruction by ruling that the prohibition of instruction in languages other than English violates Fifth Amendment rights (Nieto 2009).

2.1.3 Rights to Linguistic Equity

In the 1960s and 70s, the Civil Rights movement in the United States advanced the protected rights of citizens, including their linguistic rights. Of the key cases and laws related to the protection of linguistic rights, Title VI of the Civil Rights Act and *Lau v. Nichols* hold particular significance (García & Kleifgen 2018). Title VI "prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial

assistance” (U.S. Department of Justice 2016). While Title VI doesn’t explicitly prohibit linguistic discrimination, it sets a precedent for the illegality of discrimination in programs using federal funding. As a federally funded program, U.S. public schools fall under Title VI protections. *Lau v. Nichols* used the precedents of Title VI, as well as the equal protection clause of the Fourteenth Amendment, to specifically argue for linguistic protections for emergent multilingual learners, also called English language learners in the context of education in the U.S. (García & Kleifgen 2018). The Supreme Court decision called for school districts to take “affirmative steps” to mitigate educational inequalities experienced by emergent multilingual learners, and a set of guidelines, known as the Lau Remedies, published by the Office for Civil Rights a few years after the decision, recommended bilingual education on the elementary school level (García & Kleifgen 2018). Though the Lau Remedies never became legal requirements, they, like the case itself, outlined a right to linguistic equity in school.

2.1.4 Funding Bilingual Education

In 1968, Congress passed the Bilingual Education Act, or Title VII of the Elementary and Secondary Education Act, a landmark law that encouraged schools to explore bilingual education pedagogies through funding, especially in communities with high populations of emergent multilingual learners (Nieto 2009). While the *Lau v. Nichols* decision did not cite Title VII as a precedent, the Lau remedies clearly fall in line with the goals of Title VII. Taken together, Title VII and the Lau Remedies indicate structural funding and legal support for bilingual education in the late 1960s and early 1970s. Together with other laws and court cases, these legal measures continue to provide scaffolding for schools to provide bilingual education, even in times when segments of public opinion sway away from favoring it.

2.1.5 State Laws in the Past Thirty Years

In recent years, bilingual education in the U.S. has yet again faced existential challenges. California's 1998 Proposition 227 mandated English-Only instruction, severely limiting access to bilingual education in the state, which was only permissible through a restrictive waiver system (García & Kleifgen 2018). After the passage of Prop 227, the number of emergent multilingual learners who were unable to become proficient in English after 6 years increased significantly (García & Kleifgen 2018). Yet the proponents of Prop 227 argued that the rise in standardized test scores that emergent multilingual learners showed around this time could be attributed to Prop 227, despite the trend of teaching to the test better explaining this rise (Hartman 2003). Ron Unz, chairman of English for the Children, and the key advocate for the passage of Prop 227, proceeded to advocate for the passage a similar law in Arizona in 2000, Proposition 203, which went on to ban bilingual education programs in the state altogether (García & Kleifgen 2018). Likewise, a proposition banning bilingual education was passed in Massachusetts in 2002, and emergent multilinguals performed poorly as a result, with only 20% of emergent multilingual learners in Massachusetts achieving grade level studies after 5 years in English-Only programs (García & Kleifgen 2018). In addition to these state laws, No Child Left Behind (henceforth NCLB), the national educational reform put in place by the Bush administration, sought to standardize the process of reaching English proficiency, and only English proficiency (García & Kleifgen 2018). While NCLB focused more resources on emergent multilingual learners reaching English proficiency, it did so at the exclusion of developing bilingual proficiency for any students (García & Kleifgen 2018).

Both the California and the Massachusetts laws were eventually overturned by new laws that reversed the bans on bilingual education (García & Kleifgen 2018). Additionally, the Seal of Biliteracy, which is a recognition given to students who demonstrate proficiency in two

languages at the time of their graduation from high school, has gained popularity (García & Kleifgen 2018). The concept for the Seal of Biliteracy was originated by Californians Together in 2008, and was passed into California state law in 2011 (Californians Together 2019). As of today, 37 states and the District of Columbia have adopted the Seal, for which students qualify by passing district-designed assessments, AP, or IB exams in their target languages (Californians Together 2019). Yet the Seal is still optional wherever it has been adopted, and the acceptance of and encouragement of bilingual education is as in flux as ever in the U.S.

2.2 Criticisms of Bilingual Education

While there are criticisms of bilingual education from privileged groups seeking to maintain their power, and who want to implement English-Only education policies as a mode of safeguarding their own status, there are criticisms that suggest modifications to existing bilingual education structures in order to better center minoritized language speakers (Valdes 1997). Guadalupe Valdes discusses the exchange that typically occurs in a bilingual education setting between speakers of privileged languages and speakers of minoritized languages (Valdes 1997). In a bilingual classroom with a mixture of students whose home language is a privileged language and students whose home language is a minoritized language, not only do minoritized language speakers gain access to the privileged language, but privileged language speakers gain access to the minoritized language, as well. Yet the linguistic exchange doesn't inherently shift the power dynamics of students' privilege. Valdes raises the point that there can be danger in "giving [minoritized languages] casually away to the children of the powerful", because minoritized languages might simply be taken as tools with which the powerful could more specifically target minority groups, while taking away the safety of having a language that the powerful do not care to understand (Valdes 2007; 393). She recommends intentional

implementation of bilingual education that supports and centers minoritized students by explicitly addressing the power dynamics of a classroom and languages shared by those who hold racial and linguistic privilege and those who do not (Valdes 1997).

Other critiques address the scope of bilingual education: that bilingual education doesn't go far enough to promote multilingualism, as it prioritizes only two languages. Thus, on the front edge of bilingual educational theory and practice, several heteroglossic instruction models have arisen in recent years. Heteroglossic instruction models encompass non-traditional forms of teaching with two or more languages present in the classroom as instructional languages (García & Kleifgen 2018). Heteroglossic programs, like 90-10 and 50-50 bilingual programs, have the goal of educating students to become proficient in two or more languages (García & Kleifgen 2018). Unlike the 90-10 and 50-50 models, however, heteroglossic instruction models often deviate from strict separation of languages into certain times of day, and may or may not include the use of more than two languages as languages of instruction (García & Kleifgen 2018).

This thesis discusses 50-50 and 90-10 bilingual education specifically, since these are the most practiced forms of bilingual education in the United States. Additionally, the term “bilingual education” is used in this thesis, as opposed to “multilingual education”, because it describes the most common format of non-monolingual education in the U.S., because the usage of the term “bilingual education” is consistent with the academic and political work surrounding non-monolingual education in the United States, and because “bilingual education” encompasses the goal of conversational and academic proficiency in two or more languages used for instruction (Gómez, Freeman, & Freeman 2005).

2.3 Benefits of Bilingualism

2.3.1 Cognitive Effects of Bilingualism

Extensive studies in the U.S. have explored the variety of cognitive benefits that bilingualism has to offer. García & Kleifgen's 2018 edition of their book, *Educating Emergent Bilinguals*, presents a wide variety of research on bilingually educated children and adults. For example, bilingual 10-year-olds were found to have greater mental flexibility and greater ease with concept formation than their monolingual peers in Peal and Lambert's 1962 study (García & Kleifgen 2018). Bialystok and her colleagues (2011, 2012, 2013, 2015, 2016) have shown in a variety of studies that executive function tends to be stronger in bilingual people due to their need to efficiently selectively manage attention across two languages (García & Kleifgen 2018). Several researchers, including Bialystok, Craig, & Luk (2012), Abutalebi (2012), and Green (2011), have found that bilingual people have stronger than average control mechanisms and, according to Krizman, Marian, Shook, Skoe, & Kraus (2012), bilingual people have strong auditory attention (García & Kleifgen 2018). In studies of children specifically, Bialystok (2004, 2007, 2016) found that bilingualism leads to more metalinguistic awareness, while Ricciardelli (1992), Torrence, Gowan, Wu, & Aliotti (1970) found that bilingualism leads to more creativity, and Ben-Zeev (1977) found that bilingualism leads to more communicative sensitivity (García & Kleifgen 2018).

2.3.2 Psychological Health

Access and denial to language can have an immense impact on one's psychological well-being. To deny access to language is to deny access to a key portion of identity, and to deny a person's ability to communicate (Valdes 1997). Members of minoritized language communities are particularly at risk of developing low self-esteem and struggling with mental health due to policies like English-Only (Santa Ana 2004). Otto Santa Ana's collection of essays, short stories, and poetry, *Tongue-Tied*, reflect the experiences of members of minoritized language

communities in the U.S. (2004). The book catalogues the struggle against silencing that many speakers of minoritized languages and dialects face in U.S. schools as they are forced to assimilate to using the privileged form of English that is used in schools (Santa Ana 2004). The authors featured in Santa Ana's collection attest to the sense of one's tongue being tied within English-Only educational settings, leading to a loss of confidence and desire to communicate, and the denial of portions of one's identity, including one's linguistic identity, as well as intersecting identities closely tied to language, such as race, class, and immigration status (Santa Ana 2004). On the flip side, validating the linguistic identities of students in the classroom can enable them to bring the creativity and problem-solving skills that multilingualism helps to develop into the classroom, leading to positive self-esteem and better emotional and mental health (García & Kleifgen 2018). Positive self-esteem and emotional well-being in turn facilitate better memory formation and learning (Sousa 2017).

In addition to the effects that access to or denial of bilingual education can have on mental health in both immediate and long-term time-frames, in the long-term, bilingualism can have additional psychological benefits. These benefits prominently include the delay of Alzheimer's for up to 5 years (Nacamulli 2015). Additionally, those who become bilingual as children have a more holistic understanding of social and emotional contexts in both languages (Nacamulli 2015).

2.3.3 Cultural Connections

In education, as with other social and political arenas, linguistic identity intersects with other aspects of identity, including race, class, gender, (dis)ability, etc. (Valdes 1997; Santa Ana 2004). Linguistic pedagogies are influenced by the socio-linguistic context of the languages being taught. For example, indigenous communities in the U.S. face the challenges of

constructing language revitalization programs in many cases when English has been a colonizing tactic forced upon their communities for centuries. Language revitalization programs may occur in bilingual schools, but may also occur outside of traditional schooling structures, especially since so many of the experiences that indigenous communities have with schools involve the forced assimilation that endangered their languages in the first place (Reyhner 2011). Another example can be found within d/Deaf and Hard of Hearing communities, who for years have fought to have sign languages recognized as real languages (Swanwick 2016). Teaching bilingually in ASL and English has been a hard-won right in the U.S., and also contains bicultural-bilingual elements in instruction (Swanwick 2016). Bilingual education in these contexts seeks to balance the benefits to mental and community health that instruction in the community language provides with the cultural capital that instruction in English provides.

2.3.4 Academic and Professional Success

A number of studies have addressed the professional and academic benefits of bilingualism, as well. According to Ferguson (2006), academic development of multiple languages, and demonstrated support for the usage of home languages of linguistically minoritized students in the U.S., leads to “higher long-term academic attainment” (García & Kleifgen 2018). Thomas and Collier’s 2002 study of five school districts across the United States found that minority students enrolled in bilingual education programs outperformed students enrolled in monolingual education programs in all subject areas (García & Kleifgen 2018). The creativity and selective attention abilities common to people who are bilingual also enable them to achieve both academic and professional success, and proficiency in two or more languages can be a desired skill among employers, as well (García & Kleifgen 2018).

2.3.5 Increased Communication

In addition to the above benefits of bilingualism, those who can speak more than one language can communicate with a greater number of people, and interact with ideas presented in a greater variety of languages.

2.4 Types of Bilingual Education

This research will focus on two types of bilingual education that are most commonly implemented in the United States: the 90-10 and 50-50 models. The names of these models refer to the amount of instruction time allotted to each language used for instruction in the given model. Although variations on these time allotments exist, for example, 80-20 or 70-30 splits of time allotments, these variations are less common in practice. Additionally, models that use translanguaging techniques have been proposed as theoretical models, and have been implemented in some places, but are also uncommon models in the U.S., and need more consistent development to be studied as an overarching model or set of models.

2.4.1 90-10 Bilingual Education Programs

90-10, or one-way dual-language immersion programs, are educational programs designed to immerse students in a language that is not their first language, or the language spoken at home, with the goal of becoming proficient in that language, in addition to their home language (Center for Applied Linguistics 2016). Typically, instruction in a 90-10 program is given in a language other than the home language for 90% of the day, while the other 10% of instruction is in the home language of the students. Instruction in each language is kept within the allotted time. In the U.S., these students may come from families where a language other than English is spoken at home, or from families where English is spoken at home, and the language immersion program is intended to help the students become proficient in their second language (Center for Applied Linguistics 2016). Not only are 90-10 bilingual programs designed to

introduce students to a second language, but they are also designed to help students become bi-cultural, as well (Pack-Zia). Emergent multilingual learners enrolled in strong one-way dual-language programs outperform their peers enrolled in non-dual-language programs by the fourth grade, and their test scores, on average, reach the 50th percentile in reading and writing by the seventh grade, far surpassing their peers in non-dual-language programs (Pack-Zia).

Prince George's County Public School (PGCPS) district in Maryland offers one-way immersion programs in its K-12 schools in Spanish, French, and Mandarin (PGCPS 2018). The district's website states that "the program language will be used as the main language in mathematics, science and social studies and reading/language arts" (PGCPS 2018). In their Chinese and Spanish immersion programs, specifically, PGCPS emphasizes that math and science will be taught in the target language (PGCPS 2018). The one-way immersion programs in PGCPS aim to conduct 100% of instruction in core content areas in the target language, with the district hoping to add specials in the target language as the program expands, and English taught in an English language arts class beginning in the second grade (PGCPS 2018).

2.4.2 50-50 Bilingual Education Programs

50-50 bilingual education programs generally encompass programs where two languages are used for instruction, with about half the time spent using each language. Like the 90-10 model, the languages are generally kept within separate instructional times, and not intermingled in a lesson.

Two-way dual-language schools are a common type of 50-50 bilingual education program, and enroll a balance of native speakers of their two instructional languages (Pack-Zia). In the U.S., this mixture typically consists of native English speakers and native speakers of a second language, with the goal of students becoming proficient in both languages (Center for

Applied Linguistics 2016). Like Emergent Multilingual Learners, or EMLLs, enrolled in strong one-way dual-language programs, EMLL students enrolled in strong two-way dual-language programs outperform their peers enrolled in non-dual-language programs by the fourth grade (Pack-Zia). Their test scores, on average, reach the 60th percentile in reading and writing by the seventh grade, showing 50-50 bilingual programs to provide the strongest support of English Language Learners (Pack-Zia).

Madison Metropolitan School District, in Wisconsin, offers 50-50 bilingual education in its K-12 schools (MMSD 2016). The district offers Spanish and English as its languages of choice, with students entering a lottery for placement in kindergarten classes (MMSD 2016). Madison schools split instruction time between Spanish and English, with each day centered around a common theme, and teachers checking in for comprehension throughout instruction in both languages (MMSD 2019). Like Prince George's County, Madison is in the process of expanding its bilingual programs by introducing bilingual curriculum in a growing number of schools, across grade levels (MMSD 2019).

3 Methods

3.1 Previous Research Design

Scholars have employed a variety of methods to measure the structure and success of various bilingual education programs. These measurements usually focus on the immediate school-based indicators of student success in achieving the goals of their respective bilingual programs.

Many rely on assessments of school-aged children in bilingual education programs. For example, the Center for Applied Linguistics partners with institutions for its Center for Research on the Education Achievement and Teaching of English Language Learners (CREATE)

initiative, which assesses science language and literacy skills of middle school English Language Learners using data on their academic achievement (CAL 2019). A study comparing the reading comprehension of Navajo students in dual language, full immersion, and sheltered English immersion programs, used standardized benchmarks of academic achievement to analyze gains in reading comprehension over time (Jackson 2008). A study examining the effectiveness of two-way bilingual immersion programs examined data from elementary school students (Sanders 2010). These studies provide useful data on the success of students in achieving proficiency in the languages that they are using in the bilingual classrooms, but cannot provide information on the students they examine beyond the school-specific ages at which the data is collected.

Other research involves case studies of specific schools that follow bilingual education models. Research linking theory with practice involved a case study of a school in Massachusetts that had implemented two-way bilingual education (de Jong 2002). Likewise, a paper examining the practices of ten bilingual schools it deemed “exemplary” involved case studies of these schools themselves (Robledo Montecel & Cortez 2002). These studies provide valuable insight into the structure and design of specific programs, and to an extent the success of the students in these programs in gaining proficiency in the languages they use in the classroom. The studies do not, however, provide an overarching look at the success of bilingual education programs in general.

While each type of information present in these studies can somewhat inform what the other type leaves out, there are still gaps in the information that they present. For example, a comparison between the data provided in the studies that examine data from school-aged students, as well as the program case-studies, may address both the larger cross-program scope that exists in the first set of studies, while incorporating school-specific examples, but the age of

participants is still limited. Additionally, at their core, these two types of studies choose either the program or the individual student as their basis, upon which they determine the efficacy of bilingual education. And while research has been done in particular on the relationship between linguistic experiences and culture, or economic success, or academic success, that research tends to focus on one of these scopes, rather than taking into account the overlap between them in shaping the experiences of the speaker. There are additional angles that can be explored through further study that will provide new information about the ways in which successful bilingual education can be implemented.

3.2 Methodological Design for This Thesis

The methodology employed in this research was designed with the limitations of previous scholarly work in mind. The previous research provides a solid foundation on which to build a more complete and clearer picture of successful implementation of bilingual education programs. There are three components in particular with which this research seeks to improve upon the methodology used in previous studies. The first component is the use of older participants, with the goal of examining longer-term effects of bilingual education than previous study structures have allowed. The second component is the choice to collect data from individual participants, rather than from broader bilingual programs, in order to present a different perspective on the long-term effects of bilingual education. The third component is the consideration of individual students' experiences as the basis of determining the most reliable and successful strategies for implementing bilingual education.

3.2.1 Age of Participants

In order to explore the long-term effects of receiving a bilingual education in the U.S., this study shifts the age of the participants from school-aged to adult. For the purposes of this

study, participants will be considered an adult once they have both turned 18 and have graduated from high school. Examining the linguistic experiences of adults takes the focus off of the immediate effectiveness of bilingual instruction within the school setting and transfers it to the signs of the effectiveness of bilingual instruction over time.

The merit of exploring the long-term retention and use of the languages used in a bilingual education program lies in the determination of whether the goals of bilingual education have truly been met. Students may be able to use the languages they are learning in school, but if the goal of bilingual education is proficiency in two languages, then the student should be able to continue to use the languages they learn outside of the classroom, as well as inside of it. Additionally, a number of the benefits of being bilingual only present themselves over the long term, and even more benefits are certainly useful over the long-term, as well. Delaying Alzheimer's, using a language in one's professional life, and connecting with one's linguistic community are examples of benefits that either take an extended period of time to manifest, or require the sustained retention and use of a language (García & Kleifgen 2018). Studying the levels of language retention in adults not only fills in a gap in the literature, it answers an arguably essential question: whether students in bilingual education programs go on to become adults with proficiency in each of the languages that they studied.

3.2.2 Analysis of Individuals vs. Programs

The research in this thesis is also structured around the experiences of individuals, as opposed to case studies of bilingual education programs. While case studies provide valuable information about the specific practices used in bilingual education programs, they can only cover the reasons why their given programs are successful or not successful in educating students to become proficient in two languages. The goal of this research is to analyze the long-term

success of 90-10 and 50-50 bilingual education programs. Variation in individual experiences occurs due to the nature of the large scale of nationally implemented programming. For research on nationally-applicable programming, data from as great a breadth of the country as possible is the ideal measurement. While the research presented in this thesis is limited by the available resources, it is worth setting forth the research design model that encompasses a broad sampling of former public school students in the United States. Of the two types of designs present in previous research, data on the experiences of individuals seems most applicable over case-study data to use in this research, especially considering the distance in life experience that the participants have from their bilingual education programs.

3.2.3 Contextualizing Analysis in the Experiences of Participants

The decision to collect data from individuals who attended various types of programs, especially both 90-10 and 50-50 bilingual programs, ties into a recognition of the variety of experiences among students and graduates of bilingual education programs. Students bring their own experiences into the classroom, develop experiences within the classroom, and continue to gain experiences beyond the classroom upon graduation. Their experiences include not only their academic linguistic experiences, but their experiences that center on their home language(s), race, gender, class, (dis)ability, sexuality, nationality, and other aspects of their identity (Valdes 1997; Santa Ana 2004). These identities intersect with each other, and a person's understanding of experiences often sits at the convergence of multiple aspects of their identity (Valdes 1997; Santa Ana 2004).

In order to precisely assess how bilingual education programs might enable the greatest possible number of students to become proficient in two languages, the diversity of experiences and identities of the students must be considered. Within the context of studying the language

retention among participants who have had time between their participation in this study and their education in a bilingual education program, the research design must take into account the compounding of experiences and identities that participants have beyond school. By including participants who attended a variety of programs and by asking them about their experiences with language use in various contexts, this research seeks to expand upon the narrative of the effects of bilingual education on students. By recognizing the variety of reasons that participants might choose to continue using the languages they used in school, this study design aims to introduce nuance into the meaning of ‘successful’ with regards to bilingual education programs. This research seeks to center a perspective of ‘success’ in bilingual education programs around the usefulness of the bilingual education that participants received, within the context of their individual experiences and identities, through the measure of language retention after completion of their bilingual education programs.

3.2.4 Survey of Attendees of Monolingual Education Programs

In order to provide meaningful analysis on the effects of receiving a bilingual education in the United States, analysis of a second group of participants, those who attended monolingual programs with instruction in a second language as a foreign language, are used in this research as a comparison group. In the United States, where receiving a monolingual education with second language instruction is more common than receiving bilingual education in public schools, key differences might be visible between the group of attendees from bilingual programs, and the group from monolingual programs. Where attendees of bilingual programs have received instruction specifically intended to enable them to achieve competency in both languages of instruction, attendees of monolingual programs have only received this type of targeted attention towards one language. Even when they receive instruction in a second language, within the

monolingual education design, equal achievement in this second language is not expected or the goal. Due to the key difference in learning goals for these types of programs, a group of monolingual participants can serve as a comparison group with which the results of the bilingual participants' surveys can be contrasted. This research therefore includes surveys of monolingual education attendees, with the results from both groups presented side-by-side in order to display any similarities or differences between participants of different linguistic educational experiences. The survey for monolingually educated participants mirrors the survey for bilingually educated participants in the order of questions and in the questions asked, but participants are only asked to respond with regards to the second language that they learned in school.

3.3 Key Survey Questions

The data for the research in this thesis was collected through a survey which addresses the essential tenets of the hypotheses. These hypotheses are that a positive correlation exists between attending a bilingual education program and language retention, that a positive correlation exists between using a language in a variety of contexts and language retention, and that attendees of bilingual education programs will retain both languages more strongly than their peers in monolingual programs will retain a second language taught in school.

3.3.1 Participants' Linguistic Backgrounds

The survey begins by addressing the linguistic background of the participants, both prior to and during school. Participants are asked to list the languages they spoke at home prior to formal schooling. They are then asked the number of years that they attended a bilingual education program, the languages used in that program, and the approximate percentage of time spent in each language in the classroom. Of the information provided in this background section,

the information pertaining to the amount of time spent using each language in school represents the key component needed for analysis of language retention with respect to amount of instruction time. We might expect that the longer a participant spent using a language within a bilingual program, the more they would retain that language in their adult life. The measurement used to determine the amount of time that a participant was instructed in each language is determined by multiplying the number of years spent with instruction in that language by the percentage of time that the language was used in the classroom, which produces an approximate total amount of time spent using that language in the bilingual program.

There are certain limitations to this calculation methodology. In many bilingual education programs, the amount of instruction time in each language might fluctuate from year to year. Additionally, it is possible that a participant might have continued formal education in a language after leaving a bilingual education program through the use of a foreign language class. Participants were thus given the opportunity to share details like fluctuation or additional instruction time upon completion of the bilingual education program in a follow-up question at the end of this first set of questions.

3.3.2 Assessment of Language Retention

The second section of the survey consists of three questions indicating the retention of each language that the participant used in school. The questions in this section ask the participant to indicate their current frequency of language use, confidence in language use, and ability to discuss a variety of topics for each language that they used in school. These three gauges for self-assessment for language ability are based on Levelt's (1989) model of L2 knowledge, both implicit and explicit (Ellis 2009). The model includes three dimensions of L2 production: articulation, formulation, and conceptualization (Ellis 2009). For the qualitative self-assessment

of language proficiency employed by this research, participants will be asked to provide information that gives insight to the components of the Levelt model. Articulation is difficult to address, since this research focuses on self-reported observations of language knowledge. Confidence measures will be used to indicate formulation ability, and range of topics to indicate conceptualization ability.

For each language, the participant is asked to rank their frequency, confidence, or range of discussion topics on a five-point qualitative scale. Frequency of language use is measured through the participant's selection of language use as daily, weekly, monthly, a few times a year, or never, and highlights the participant's continued time practicing and reinforcing language ability. For confidence and range of discussion topics, each point on the scales compares the participant's current confidence or range of discussion topics to their confidence or range of discussion topics upon completion of high school. The scale for confidence, for example, ranges from much less confident using a language currently than at the participant's completion of high school. More specifically, the participant can indicate whether they currently feel that they are much less, somewhat less, somewhat more, much more, or equally confident in using each language than when they graduated high school. Likewise, they can say whether they are currently able to discuss far fewer, somewhat fewer, somewhat more, far more, or about the same number of subjects as when they completed high school.

Taken together, the factors of language-use frequency, confidence, and range of discussion topics allow a comparison between the participant's current language abilities and their abilities during their education in each language. Participants can be considered to have retained the languages they used in school if their current frequency, confidence, and range of discussion topics are overall the same, or greater than, their high school levels of frequency,

confidence, and range of discussion topics. In order to express the overall retention rates of each participant according to their frequency, confidence, and range of discussion topics, each answer will be given a score between one and five for each answer, with one representing never using the language, much less confidence using the language, or the ability to discuss far fewer topics using the language, and five representing using the language daily, having much more confidence using the language, or the ability to discuss far more topics using the language. On this scale, a three represents monthly use of a language, and current confidence and a range of discussion topics equal to the confidence and range of discussion topics at the completion of high school. A minimum score considered representative of retention for each question in this section is therefore a three. For each of a participant's languages, the scores for each of the three categories used to determine retention will be averaged to produce an overall retention score for that language, with a score of three continuing to be considered the minimum score indicating overall language retention. A score of less than three would therefore indicate language loss between high school and the present day. This process will be repeated for each language used by each participant.

The score will represent a level of overall retention for each participant that can then be compared to the participant's amount of instruction time, and to number of contexts in which they currently use each language, in hopes of finding a potential correlation between amount of instruction time and retention, as well as a potential correlation between the number of contexts in which the participant uses each language and their retention. The scores of each language used by a given participant can likewise be compared to determine whether the languages were retained at similar levels, and if language retention significantly changes based on the number of years that have passed since a participant graduated from high school.

The challenge in assessing language retention through a qualitative survey arises in relying on participants to accurately assess their language abilities. For this reason, this section of the survey is not phrased in terms of absolute fluency. Instead, it asks participants to directly compare their current experiences with their perception of their experiences at a fixed point in time, their completion of high school. In essence, the survey asks them to assess whether their language abilities generally decreased, increased, or stayed the same over time. They do not need to know their exact proficiency at the end of high school to communicate the general trend of their ability to use a language.

In addition to this trend-focused data collection, concrete indicators were selected to measure language retention and use. Frequency, confidence, and range of discussion topics are all easily observable— a participant can estimate the frequency of their language use, the confidence they feel when using a language, and the number of topics they feel comfortable discussing in a language, without too much effort. Taken together, these factors build a solid qualitative estimation of participants' language retention, with subjective data assessed as an individual's trend over time, so that each individual's trend can become a single unit of information, relevant and useful to the research. Additionally, when comparing a participant's assessment of their own retention in two different languages, the subjective biases of that individual presumably remains the same for their assessment of retention for each language, and we can determine a direct, qualitative comparison between the retention level of each language.

3.3.3 Contextualization of Data within Participant Experiences

The third section of the survey covers the contexts in which participants might use each language that they speak. More specifically, the survey asks participants to select contexts they might use a language in from a list comprised of social contexts in which a language might

commonly be used, as indicated in the background research presented in this thesis. The list is comprised of a range of contexts that might motivate a participant's choice to use a particular language, and that represent the cultural, academic, professional, and communicative benefits that bilingual people experience, as found in Section 2.3. These contexts include using a language to communicate in the workplace, to communicate at home, to communicate within the community, to communicate with friends, to communicate with family, to connect with culture, to participate in language revitalization efforts, to engage with art and media, to travel, and a category for any previously unnamed context. Each participant can select all of the categories that apply to them, and in doing so, demonstrate the motivations that might lead them to retain and use each language in their daily lives. By totaling the number of contexts that a participant selects as the environments in which they are motivated to use a language, and comparing that total with the participant's language retention score, we can examine the correlation between language retention and the amount of different contexts in which participants use that language.

A limitation of using contextual motivation as a variable is that the motivations themselves are certainly worth studying of their own accord, as evidenced by the research cited in Section 2. The choice has been made in crafting this survey not to give more weight to some motivating contexts over others, because each participant would likely rank the importance of these contexts differently from the next. The purpose of this section of the survey is not to determine which of these factors is the most motivating factor, but to determine if having the motivation to use a language in a greater number of areas in one's life correlates with better retention of the language in use. It is likely that the amount of instruction time spent learning in a language, in addition to the continued use of that language, will lead to the strongest levels of language retention, and this portion of the survey provides a standard by which we can measure

continued use through the number of contexts in which the participant is motivated to use each language.

3.4 Methodology Implementation

The survey used in this research was distributed through social media as a Qualtrics survey of twenty-two questions. The survey consisted of a brief online questionnaire with some multiple choice and some open-ended questions, that took no more than 15 minutes to complete. One survey was collected per participant. In order for a respondent to submit a survey, they were required to complete the final questions regarding demographics. Surveys were accepted from participants in programs with 50-50 and 90-10 instruction-time breakdowns, as well as 60-40, 70-30, and 80-20 instruction-time breakdowns. All completed, submitted responses were accepted within the 3-week period that the survey was open to bilingual education participants. The monolingual participant survey was then open for 2 weeks, which was the amount of time that it took to receive a comparable amount of completed responses to the survey for bilingual education participants.

The pool of participants involved in the research included alumni of bilingual schools who chose to fill out the survey, and alumni of monolingual education programs who took a second language class in school. The surveys filled out by attendees of monolingual schools will primarily be used to provide a baseline comparison for the responses of the bilingual school attendees with regards to their retention of the second language that they learned in school. All of the participants were adults, with the participants ranging in age. The identities of the participants remained anonymous. Participants in the survey were not asked for their names, and only broad demographic information was requested: age, gender, and race, and optionally the school that the participant attended. The data was stored in a passcode-locked, personal

computer, and backed up to a Bryn Mawr OneDrive. Participants were notified through the initial social media postings that they could opt out at any time, without any penalty, and were again assured of this when asked for consent, knowing they could withdraw from the survey, without any consequences, at any time. As the online survey was an anonymous survey, it is unlikely that any conflicts of interest would arise.

4 Findings

In total, 55 completed survey responses were submitted: 29 responses represented attendees of bilingual programs, while 26 represented attendees of non-bilingual programs. At the time of their responses to the survey, the age range of the attendees of bilingual programs was 18 to 33 years old, and the age range of the attendees of monolingual programs was 18 to 50 years old. Of the monolingual program attendees, all but one was below the age of 28, making the samples roughly comparable not only in terms of sample size, but in terms of age, as well. The average age at the time of the survey responses of the bilingual program alumni was 25 years old, with the most common age being 23, while the average age of the monolingual program alumni was 22, which was also the most common age of the respondents.

Of the respondents who attended bilingual programs, prior to starting school, 26 of the participants used only English at home, and two of the participants used only Spanish, while one participant used both Spanish and English.

The most common length of time for a participant to have been in their bilingual education program was 6 years, with 11 participants involved in 6-year programs. The next most common lengths of time for participants to be involved in a bilingual program were 7 and 9 years, with 6 participants each. The lengths of participation time for the entire group of participants ranged from 1 year to 13+ years.

Of the participants who elected to share which bilingual program they attended, ten programs were represented from seven states across the United States. All of the participants' programs used two languages, and English was included in every program. In addition to English, participants learned Spanish, Japanese, or French. After English, Spanish was the most common language of instruction, with 24 participants using Spanish in school. Four participants were enrolled in programs that used Japanese, and one in a program that used French.

The most common types of programs represented are 90-10 and 50-50 bilingual education programs. 13 participants indicated that they attended a 90-10 program, and 11 participants indicated that they attended a 50-50 program. The remaining 5 participants reported participating in 80-20, 70-30, or 60-40 programs. These participants may have attended the comparatively smaller number of programs that follow these less standard models, or they may have mis-estimated the amount of time that the programs that they attended designated for each language in their self-reported data. 22 respondents detailed changes in the percentages of instruction time spent in each language at their school over the course of the years that they attended. Among these responses, most programs began with a skew towards time spent in one of the languages, with the time percentage gap narrowing over time towards similar percentages of time. The gap in instruction time then sometimes widened again to skew in favor English. While participants indicated the time-split model that they participated in for the majority of their bilingual education, this question highlights a prevalence of transitioning between the 90-10 and 50-50 model, with younger children placed in the more immersive 90-10 model, before transition to the more evenly split, and potentially more successful 50-50 model.

With a retention score of 3 or higher denoting current proficient language ability, 69% of the respondents from those who attended bilingual programs are considered proficient in the

languages they used in school. 55% of the monolingual English school participants are proficient in the second language that they learned in school, by comparison. Note that Figures 1 and 2 have different scales due to the flatter distribution of responses across the domain of monolingual education participants in Figure 2, as well as the difference in volume between the responses to each survey. The bilingual survey responses include data on two languages per participant, while the monolingual data only includes data on one language per participant. In Figures 3-6, as well, each data point is representative of each language reported in each response, rather than each individual participant. The y-axis in Figures 1 and 2 represent the number of responses represented in each retention category on the y-axis.

Figure 1: Histogram of Retention: Bilingual Education Participants

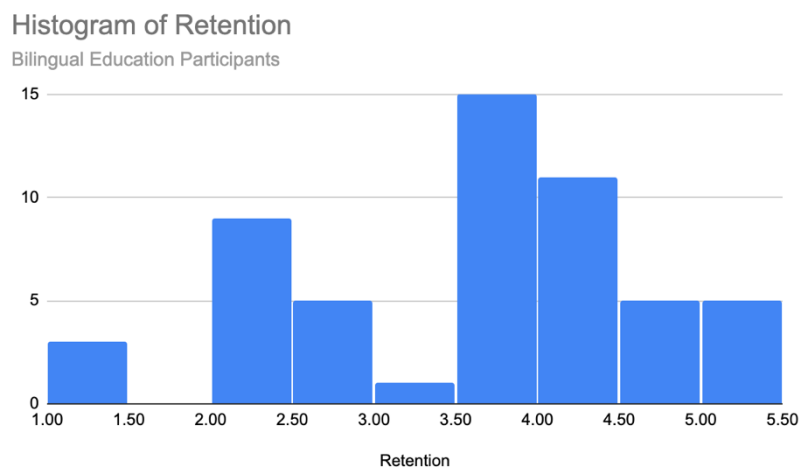
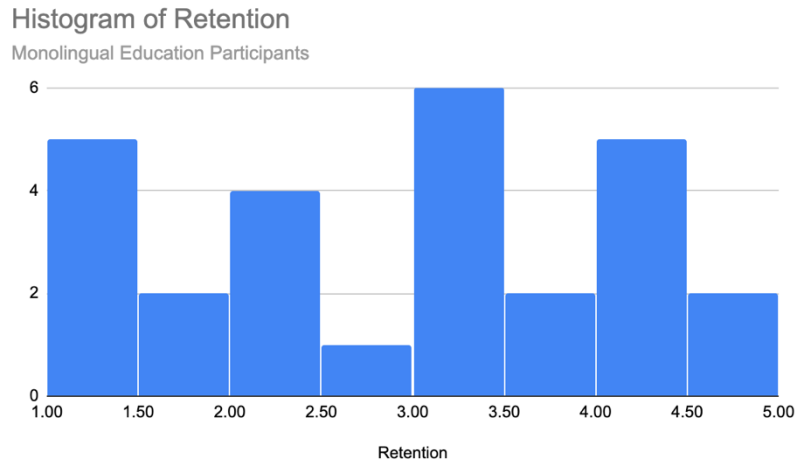


Figure 2: Histogram of Retention: Monolingual Education Participants



In specifically comparing the correlation between instruction time and language retention, both bilingual school participants and monolingual school participants appeared to experience a slight decrease in language retention the longer they used a language in school. This slight decrease is somewhat unexpected, and will be discussed further in Section 5. Meanwhile, there was a far stronger, positive correlation between retention and language usage in many contexts for both alumni of bilingual schools, and alumni of monolingual schools.

Figure 3: Instruction Time vs. Retention: Bilingual Education Participants

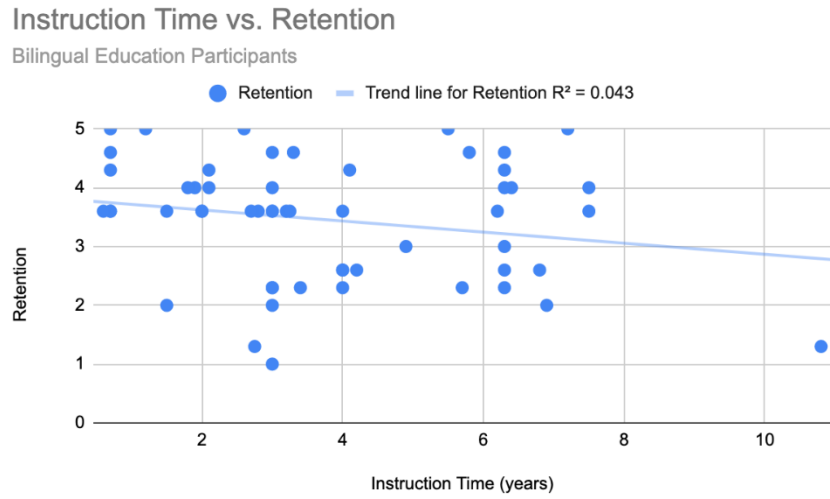


Figure 4: Instruction Time vs. Retention: Monolingual Education Participants

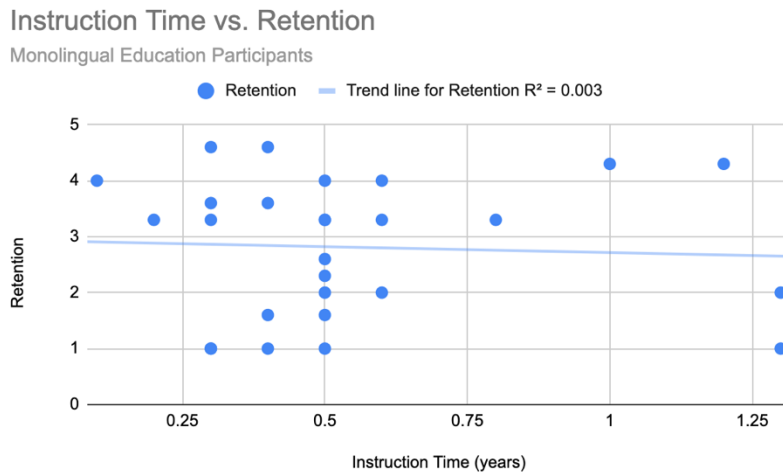


Figure 5: Context vs. Retention: Bilingual Education Participants

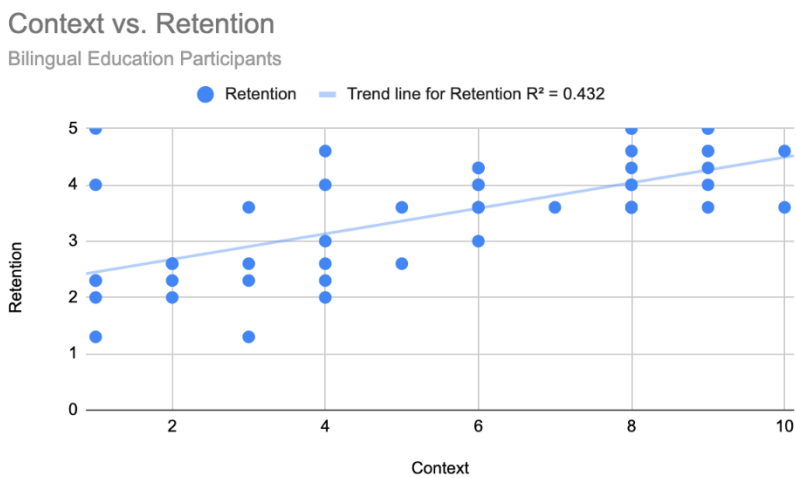


Figure 6: Context vs. Retention: Monolingual Education Participants



Notably, the strongest correlations between both retention and instruction time, and retention and the number of contexts where the language is used, as represented by R^2 are found in the bilingual alumni sample.

5 Discussion

5.1 Discussion of Survey Results and Implications

The results of the survey of attendees of bilingual education programs confirmed much of the existing research on the types of bilingual programs that are most widely used. 90-10 and 50-50 programs were definitively the most common type of program attended by those surveyed. It was not uncommon, however, for the distribution of instruction time to change for these participants over the course of their bilingual education. There are case studies of specific schools and programs that change the amount of instruction time in each language depending on the age of the student, but this change in allotted time appears to be fairly common across the board, according to the results of this study.

This survey also showed trends in the length of bilingual programs, with 6-, 7-, and 9-year programs being the most common. Considering that the respondents' programs of this length generally cover elementary school, or elementary and middle school, we might postulate that they are designed to educate students bilingually through the period of their lives when they

have the strongest neuroplasticity and aptitude for language learning (Li, Legault & Litcofsky 2014). These programs then potentially finish in middle school as second language classes become available to students in U.S. public schools at the high school level.

Compared to the baseline of respondents who attended monolingual schools and learned a second language through a language class, there was a significant increase in language retention amongst alumni of bilingual programs. Alumni of bilingual education programs self-assessed their proficiency as higher than alumni of monolingual education programs.

Looking more closely at the factors that might influence language retention— amount of instruction time in school, and number of contexts in which the language is currently used— we can see that having a higher number of contexts in which a participant uses a language is more strongly correlated with stronger retention than the amount of instruction time that they had in that language. A higher number of contexts is more strongly correlated with retention regardless of whether the participant attended a bilingual program or a monolingual program. Language usage in a larger number of contexts means that certain participants are more frequently utilizing the pathways in their brains in which linguistic information is stored, leading to a stronger retention of language proficiency. By continually practicing and using a language, participants who attended either monolingual or bilingual schools can enable stronger retention and language ability.

Somewhat surprisingly, there was a slight negative correlation between longer instruction time in a language and retention. It would seem that more instruction time in a language would mean more practice and usage of the language overall, which enables stronger proficiency by way of creating stronger connections between the neurons that enable language memory (Sousa 2017). It is unclear why this doesn't appear to hold true for the participants of this study, both for

those in bilingual programs, and for those in monolingual programs. It is entirely possible that a larger pool of survey respondents might demonstrate a different trend, since the R^2 values of both the bilingual and monolingual survey respondents' retention-to-instruction-time comparisons are very low, indicating a lack of a strong, reliable trend in the data. The overall take-away that we can gather from this lack of a strong trend in the data is that the amount of instruction time in a language may not matter as much as the use of a language for instruction rather than as the focus of study for a single class. Since alumni of bilingual programs demonstrate the strongest language retention overall, it appears that the direct instructional use of the languages in bilingual programs, where the goal is proficiency in two languages, is the strongest indicator that proficiency will in fact be reached in two languages. Proficiency can then be maintained and strengthened into adulthood with consistent usage of these languages in a variety of contexts.

5.2 Discussion of Methodology and Applications

By surveying adults who have completed their education, whether bilingual or monolingual, we gain a more comprehensive sense of the educational experiences of the participants. The participants are able to reflect over the completed course of their K-12 education, with the aid of hindsight at their disposal. They can assess, for example, the full arc of changes in time allotted to instruction in each language in their school over time. They are also removed from the K-12 educational setting, which allows us to gain a greater sense of the long-term effects of the type of linguistic education they received.

Analyzing a plurality of individuals from a variety of schools showcased patterns in bilingual education, which could provide new insight into the structure of bilingual programs with future study. For example, this study demonstrates a likelihood for variation in instruction time in each language in a bilingual program across a variety of programs in a variety of states,

which case studies would be hard pressed to do, with their narrow foci. Though the sample size for this survey is small, it had representatives from a relatively high number of schools, and within this sample there was a high proportion of schools that modified the percentage of instruction time in each language from year to year. Similar studies with larger sample sizes could determine if this trend of modifying the percentage of instruction time persists on a larger geographic scale and across more individual schools. The breadth of this study in surveying individuals from a variety of programs as opposed to a single program also showcased the conventional knowledge of the prevalence of 50-50 and 90-10 structures for bilingual programs. There does additionally seem to be a prevalence of fluid implementation of 90-10 and 50-50 models, where the same program will switch between models as the program progresses. While these programs appeared to be the most prevalent models, the data collected did not show either to be more successful in contributing to language retention than the other. The data simply showed that bilingual models generally contribute to stronger language retention experienced by alumni of bilingual education programs, when compared with their peers in monolingual educational programs. Therefore, this study shows no significant distinction between implementing a 90-10 model versus implementing a 50-50 model.

Contextualizing the retention data within the experiences of the recipients, and in particular their continued breadth of usage of the languages they learned, was a key feature of this research. The strength of the correlation between retention and language usage in a high number of contexts contributes to the full scope that this work provides: that bilingual education alone, and consistent, varied language usage alone, cannot account for the full retention of a language, but that combined, the strength of these variables correlates with the strength of language proficiency and retention. Further research into the correlation between instruction time

and retention would clarify the puzzling, slightly negative correlation between these variables that this study showed.

Future versions of this study would benefit from larger, more statistically representative sample sizes, distribution of surveys offered in languages other than English, and an objective measure of language proficiency. Stronger trends in the correlations between language retention and bilingual education opportunities could be solidified in larger, more representative samples. The self-selecting nature of participation in this survey, and the survey's instructional language of English introduce bias into the survey results. Additionally, an objective measure of language proficiency at the time of the survey, as well as during school, would allow for a more objective assessment of language retention, rather than relying on self-assessment. While self-assessment is useful in its own right, the lack of a strong trend between language retention and instruction time might be explained by a longer period of instruction indicating to participants the amount of information yet to be learned. A greater understanding of the scope of becoming proficient in a language which may create a bias towards a negative trend between length of instruction time and language retention. An objective assessment would counterbalance this bias, and when paired with the qualitative data in this survey, could provide useful data on perceptions of language retention for graduates of bilingual education programs.

Additionally, future studies could explore the specific correlations collected within this research design. For example, correlations between L1 languages and their retention, and L2 languages and their respective retention, have not been closely examined in this research. Examining these correlations would extend the aims of the study even further than they already reach, and would provide a more comprehensive longitudinal framework within which bilingual education and language retention could be understood. In a similar vein, this extended research

could provide further insight into the relationship between in-school instruction in a home language, or in a language introduced in school, and language retention.

6 Conclusion

The long-term language use and retention that bilingually educated participants in this study reported supports the usage and spread of bilingual education in U.S. K-12 public schools, because this ongoing use and retention is correlated with alumni of bilingual education programs' ability to access the benefits of bilingualism over time. Despite the complex political history of bilingual education in the U.S., the benefits of bilingualism demonstrate the usefulness of implementing bilingual education, especially when students become and remain proficient in multiple languages. The indication through this research that students can maintain and use the bilingualism they have gained even after leaving a bilingual education setting reveals the lasting impact that the opportunity of a bilingual education can provide. Continued usage of a language in a variety of contexts is associated with further strengthening of language retention, and together with bilingual education, can be an effective way of accessing the cognitive, psychological, cultural, academic, professional, and communicative benefits of bilingualism.

References

- Abutalebi, J., Canini, M., Della Rosa, P. A., Green, D., & Weekes, B. S. (2015). The neuroprotective effects of bilingualism upon the inferior parietal lobule: A structural neuroimaging study in aging chinese bilinguals. *Journal of neurolinguistics*, 33. 3-13.
Retrieved from
<https://reader.elsevier.com/reader/sd/pii/S0911604414000657?token=6D2D84716B409E7B5906A74819638A6A18C3157ACB42C1101EF2678537398A595E8EEFD9506B417D4B85C2642B44>
- Barac, R. & Bialystok, E. (2012). Bilingual effects on cognitive and linguistic development: Role of language, cultural background, and education. *Child development*, 83(2). 413-422.
Retrieved from
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3305827/pdf/nihms338879.pdf>
- Berroy, P., Ghazi-Saidi, L., Dash, T., Adrover-Roig, D., Benali, H., & Ansaldo, A. I. (2017). Interference control at the response level: Functional networks reveal higher efficiency in the bilingual brain. *Journal of neurolinguistics*, 43. Retrieved from
<https://www.sciencedirect.com/science/article/pii/S0911604416300124#sec1>
- Bialystok, E. (1991). Language processing in bilingual children. *Cambridge University Press*.
Retrieved from
<https://books.google.com/books?hl=en&lr=&id=hHfFoJguRE4oC&oi=fnd&pg=PR9&dq=bilingual+language+acquisition+psychology&ots=Nxov8g9Rly&sig=BpzixGSRzuOFNRox7twF92NUk#v=onepage&q=bilingual%20language%20acquisition%20psychology&f=false>

- Californians Together. (2019). Frequently asked questions, *Seal of Biliteracy*. Retrieved from <https://sealofbiliteracy.org/faq/>
- Center for Applied Linguistics. (2016). Dual-Language Program Directory. Retrieved from <http://webapp.cal.org/duallanguage/>
- de Jong, E. J. (2002). Effective bilingual education: From theory to academic achievement in a two-way bilingual program. *Bilingual Research Journal*, 26(1), 65-84. Retrieved from <https://proxy.brynmawr.edu/login?url=https://search.proquest.com/docview/62295091?accountid=9772>
- Friere, P. (1987). Letter to North-American teachers. In I. Shor (Ed.), *Friere for the classroom: a sourcebook for liberatory teaching*. 211-214. Retrieved from https://moodle.haverford.edu/pluginfile.php/77238/mod_resource/content/1/edu200_friere_letter.pdf
- García, O. & Kleifgen, J. A. (2018). Educating emergent bilinguals: Policies, programs, and practices for English learners. New York, NY: Teachers College Press.
- Gomez, L., Freeman, D., & Freeman, Y. (2005). Dual language education: A promising 50-50 model. *Bilingual Research Journal*, 29(1), 145-164. Retrieved from <https://proxy.brynmawr.edu/login?url=https://search.proquest.com/docview/85685200?accountid=9772>
- Hartman, A. (2003). Language as oppression: The English-only movement in the united states, *Socialism and Democracy*, 17:1, 187-208, DOI: 10.1080/08854300308428349
- Henze, R. & Davis, K. (1999). Authenticity and identity: lessons from indigenous language education. *Anthropology & education quarterly*, 30(1). 3-21. Retrieved from https://www.jstor.org/stable/3195978?seq=1#metadata_info_tab_contents

Hornberger, N. (Ed.) (2016). Honoring Richard Ruiz and his work on language planning and bilingual education. *Multilingual matters*.

Housen, A. & Kuiken, F. (2009). Complexity, accuracy, and fluency in the second language acquisition. *Applied Linguistics* 30(4). 461-473. Retrieved from <https://doi.org/10.1093/applin/amp048>

Jackson, F. J. (2008). *The comparison of reading comprehension using dual language, full immersion, and sheltered english immersion instructional programs for Navajo students* (Order No. 3314639).

Javier-Rivero, R. The simultaneous bilingual child: A language acquisition study. *San Beda University*. 139-151. Retrieved from <http://scientia-sanbeda.org/wp-content/uploads/2018/03/R.-J.-Rivero.pdf>

Kleyn, T. & Stern, N. (2018). Labels as limitations. *MinneTESOL Journal, Spring 2018*. Retrieved from https://moodle.haverford.edu/pluginfile.php/32200/mod_resource/content/1/Kleyn-Stern-2018-Labels-as-limitations.-MinneTESOL-Journal-1.pdf

Kroll, J. F., Bogulski, C. A., & McClain, R. (2012). Psycholinguistic perspectives on second language learning and bilingualism: The course and consequence of cross-language competition. *Linguistic approaches to bilingualism*, 2(1). Retrieved from http://faculty.wcas.northwestern.edu/~rrm568/Kroll_Bogulski_McClain_2012.pdf

Lambert, W. E. (1963). Psychological approaches to the study of language: Part II: On second language learning and bilingualism. *The modern language journal*, 47(3). 114-121. Retrieved from https://www-jstor.org.proxy.brynmawr.edu/stable/320615?seq=2#metadata_info_tab_contents

- Li, P. & Legault, J. & Litcofsky, K. A. (2014). Neuroplasticity as a function of second language learning: Anatomical changes in the human brain. *Elsevier*. Retrieved from https://sites.psu.edu/kaitlynlitcofsky/files/2017/02/Legault_Cortex_2014-pbpadj.pdf
- Linton, A. (2004). Learning in two languages: Spanish-english immersion in U.S. public schools. *The International Journal of Sociology and Social Policy*, 24(7-8), 46-74. Retrieved from <https://proxy.brynmawr.edu/login?url=https://search.proquest.com/docview/60288342?accountid=9772>
- Macedo, D. (1999). The colonialism of the English only movement. *Educational researcher*, 29(3). 15-24. Retrieved from <https://journals.sagepub.com/doi/pdf/10.3102/0013189X029003015>
- Madison Metropolitan School District. (2019). Dual language immersion. *Office of multilingual & global education*. Retrieved from <https://multilingual.madison.k12.wi.us/dual-language-immersion>
- Madison Metropolitan School District. (2016). Dual-language immersion programs. *Office of multilingual & global education*. Retrieved from <http://multilingual.madison.k12.wi.us/files/esl/DLI%20Brochure%20English%201617%20Updated%201.8.16.pdf>
- Marian, V., & Shook, A. (2012). The cognitive benefits of being bilingual. *Cerebrum*, 2012(3). Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3583091/>
- Nacamulli, M. (2015). The benefits of the bilingual brain. *TED-Ed*. Retrieved from https://sites.psu.edu/kaitlynlitcofsky/files/2017/02/Legault_Cortex_2014-pbpadj.pdf

- Nieto, D. (2009). A brief history of bilingual education in the United States. *Perspectives on urban education, Spring 2009*. 61-72. Retrieved from <https://pdfs.semanticscholar.org/7d75/c5f1b445aeb7c40ddef7ca948195e86e7967.pdf>
- Nussbaum, D. B., Scott, S., & Simms, L. E. (2012). The “why” and “how” of an ASL/English bilingual program. *Odyssey*. 14-19. Retrieved from <https://files.eric.ed.gov/fulltext/EJ976476.pdf>
- Pack-Zia, A. Dual language programs explained. *Think Bilingual Austin*. Retrieved from <http://austin.thinkbilingual.org/dual-language-programs-explained/>
- Palmer, D. (2010). Race, power, and equity in a multiethnic urban elementary school with a dual-language “strand” program. *Anthropology & education quarterly*, 41(1). 94-114. Retrieved from <https://anthrosource.onlinelibrary.wiley.com/doi/full/10.1111/j.15481492.2010.01069.x>
- Palmer, D. K., Martínez, R. A., Mateus, S. G., & Henderson, K. (2014). Reframing the debate on language separation: Toward a vision for translanguaging pedagogies in the dual language classroom. *Modern Language Journal*, 98(3), 757-772. doi:<http://dx.doi.org/10.1111/modl.12121>
- Prince George’s County Public Schools. (2018). Immersion Programs. Retrieved from <https://www1.pgcps.org/immersionprograms/>
- Reyhner, J. (2011). Indigenous language immersion schools for strong indigenous identities. Retrieved from <http://jan.ucc.nau.edu/~jar/Heritage.pdf>
- Reyhner, J. (1990). A description of the Rock Point Community School bilingual education program. *Effective language education practices and native language survival*. 95-106. Retrieved from <http://jan.ucc.nau.edu/~jar/NALI7.html>

- Robledo Montecel, M., & Cortez, J. D. (2002). Successful bilingual education programs: Development and the dissemination of criteria to identify promising and exemplary practices in bilingual education at the national level. *Bilingual Research Journal*, 26(1), 1-21. Retrieved from <https://proxy.brynmawr.edu/login?url=https://search.proquest.com/docview/62296291?accountid=9772>
- Sanders, A. N. (2011). *The effectiveness of two-way bilingual immersion programs in closing the achievement gap for minority students* (Order No. AAI3447332). Available from PsycINFO. (915045474; 2011-99210-525). Retrieved from <https://proxy.brynmawr.edu/login?url=https://search.proquest.com/docview/915045474?ccountid=9772>
- Santa Ana, O. (2004). *Tongue-tied: The lives of multilingual children in public education*. Lanham, MD: Rowman & Littlefield Publishers, Inc.
- Sousa, D. (2017). *How the brain processes information, How the brain learns*, 5 ed. Thousand Oaks, CA: A SAGE Company.
- Swanwick, R. (2016). Deaf children's bimodal bilingualism and education. *Language teaching*, 49(1), 1-34. Retrieved from https://www.cambridge.org/core/services/aop-cambridge-core/content/view/6E187F469C3490983410060EC906164B/S0261444815000348a.pdf/eaf_childrens_bimodal_bilingualism_and_education.pdf
- The United States Department of Justice. (1964). Overview of Title VI of the Civil Rights Act of 1964. Retrieved from: <https://www.justice.gov/crt/fcs/TitleVI-Overview>
- Valdes, G. (1997). Dual-language immersion programs: A cautionary note concerning the education of language-minority students. *Harvard Educational Review*, 67(3), 391-429.

Retrieved from

<https://proxy.brynmawr.edu/login?url=https://search.proquest.com/docview/62511604?accountid=9772>

Vorih, L. & Rosier, P. (1978). Rock Point Community School: An example of Navajo-English bilingual elementary school program. *Teachers of English to speakers of other languages*, 12(3). 263-269. Retrieved from <https://www.jstor.org/stable/pdf/3586053.pdf>

Yang, J., Gates, K. M., Molenaar, P., & Li, P. (2015). Neural changes underlying second language word learning: An fMRI study. *Journal of neurolinguistics*, 33. 29-49.

Retrieved from

<https://reader.elsevier.com/reader/sd/pii/S091160441400061X?token=D8BDA88BAEC0D132B8AB43A5B05DE87DF99F0FD3526F1ADC24E7B0D12C5AA25C38A236F6F4FAEB253ABD5DF6D08A>

Yurth, C. & Bureau, T. (2011). They will learn. *Navajo times*. Retrieved from

<https://navajotimes.com/education/2011/1111/112311rockpoint.php>