THE IMPACT OF DUAL LANGUAGE PROGRAMS ON LATINO HIGH SCHOOL STUDENTS

A Dissertation

Presented in Partial Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

with a

Major in Educational Leadership in the

Department of Graduate Education

Northwest Nazarene University

by

Chelle Robins

May 2017

Major Professor: Eric Studebaker, PhD

AUTHORIZATION TO SUBMIT

DISSERTATION

This dissertation of Chelle Robins, submitted for the degree of Doctor of Philosophy in Education with a major in Educational Leadership and titled THE IMPACT OF DUAL LANGUAGE PROGRAMS ON LATINO HIGH SCHOOL STUDENTS has been reviewed in final form. Permission, as indicated by the signatures and dates given below, is now granted to submit final copies.

Major Professor _____ Date 4/10/17
Dr. Eric Studebaker

Committee Members _____ Date 4/10/17
Dr. Dennis Cartwright

Kathryn Lindholm-Leary Date 4/13/17
Dr. Kathryn Lindholm-Leary

Program Administrator Heidi Curtis Date 4/10/17
Dr. Heidi Curtis

Discipline's College Dean Paula D Kellerer Date 4/19/17
Dr. Paula Kellerer

ACKNOWLEDGEMENT

Through my degree-seeking journeys and growing a school, I have many to thank for coaching, patience, inspiration, and support. I am eternally grateful to have the opportunity to study at a Christian university where God is central and student development is not just measured with a grade point average, but students are given the opportunity to grow spiritually. This ever-constant growth in Christianity and prayer guides my leadership decisions, continues my passion for underserved populations, and encourages this research.

Along with my faith, I am forever grateful to my in-laws, Bob and Patty Robins for always providing the extra familial support that is essential to raising a strong, well-guided family. You are an amazing blessing to us.

In the education field, I have many people that have inspired my continued love for the field of dual language and research. There are many pioneers that have led the way through advocacy, research and publication. Personally, I have had the privilege to continue to grow in the field through the coaching of Dr. Kathryn Lindholm-Leary, Rosa Molina, and David Bautista. Their courage, encouragement, and expertise in bilingual education has been an inspiration. I have had many amazing professors over the years and for this degree, I want to thank Dr. Cartwright for his genuine care for students and love for statistics, and Dr. Studebaker for keeping me on track and focused.

Finally, I want to thank the Four Rivers Community School family. Together as staff, parents, board members, and students you have inspired me to continue advocating for the type of education that all students deserve. We have accomplished so much together
and through this degree I hope to advocate for dual language and Latino students through research and publication, as well as a practitioner in our school. Thank you.

DEDICATION

This dissertation is dedicated to my parents, Allen and Debbie Gebert for their never-ending support and encouragement. My parents always held high academic expectations of me as a young student and have encouraged me through every milestone. They are my role models for perseverance and work ethic. Second, my husband, Jeff, has unconditionally supported me through all my projects and degrees. He is a constant calm through the storms and has always encouraged my studies. My sweet children, Marcus and Claire, who have patiently watched me study all of their lives. They are my daily inspiration and I am excited to participate and support their life long journey of learning.

Finally, I would like to dedicate this dissertation to Dr. Rob Turrisi who gave me the opportunity to conduct research and publish with him at Boise State University as an undergraduate. It is through this experience and his leadership that paved the way to this degree. His leadership guides my everyday practice as a superintendent and sparks my never-ending research questions and examination of data.

ABSTRACT

The purpose of this quantitative research was to measure Latino dual language program participants' attitudes and beliefs about their two-way program, language proficiency, intentions to enroll in post-secondary education, secondary coursework, and work/career orientations. The significance of the study is that it provided additional research as educational policy makers are continually seeking methodologies and programs that increase educational outcomes for Latino students, specifically for second language learners. This study meets a critical need in the dual language education field by providing updated data analysis on the impacts of dual language programs on participants as well as a comparative analysis for non-dual language participants. Dual language research has primarily focused on K-6 students attending dual language programs. This study specifically targeted students that have participated in a dual language program for 6+ years and analyzes differences between the comparison groups. The study included 78 Latino high school students in a western state. The results of the study indicated that native Spanish speakers that attended a dual language program for six or more years have higher levels of Spanish proficiency and bilingual skills than their native Spanish speaking peers that did not attend a dual language program. There were no significant findings between the two groups on self-reported academic outcomes, post-secondary intentions, or career interests. Implications for practice include: the need for more STEM offering as there was a strong interest in STEM related careers from both groups of Latino respondents, an interest in a career in education from dual language respondents, and the need for more dual language programs to serve ELL students. Recommendations for further research include: continued research in the area of secondary dual language participants in relation to academic outcomes and post-secondary enrollment.

Keywords: dual language, secondary, impact, Threshold Theory, STEM, Latino, Spanish

TABLE OF CONTENTS

List of Tables

List of Figures

Chapter I

Introduction

As a first grade native Spanish speaker, Marcos enrolled at Huerta School (pseudonym), a K-8 dual language immersion school located in a rural agricultural community. Upon the opening of the new dual language program, his parents transferred him from a neighboring elementary school after his kindergarten year. As monolingual Spanish speakers, the opportunity for their son to continue growing in his native language while learning English was important to them. They had seen the long-term effects of English-only schools on their nieces and nephews with poor grades and children using less and less Spanish language to communicate with their families.

At Huerta School, Marcos spent one week growing in his native language as an expert and mentor to his English-only peers. In the alternate weeks, Marcos was mentored by his English only peers while acquiring his second language, English. Marcos continued to learn language and culture throughout his elementary experience.

This rich experience for Marcos and his family came into question with the English-only initiatives and academic achievement mandates of No Child Left Behind (NCLB). His parents began to wonder if they had made the right choice to transfer him to the dual language school, after all the reports indicated that third grade students in the English only school were reading at higher levels of English than the third graders at Huerta School. They visited with school administrators about their concerns.

Understanding their concerns and fear, the administration shared long-term data and research from other dual language schools and asked Marcos' family to be patient while the language acquisition process continued. The administration continued to lead the school beyond

the anti-bilingual education sentiment of NCLB. Overcoming their own fears of being a school in school improvement, as determined by NCLB's Adequate Yearly Progress, Huerta School's academic achievement began to increase as the students moved into the upper elementary and middle grades.

Marcos' family watched him develop into a balanced bilingual and made sacrifices to keep him at Huerta School through eighth grade. The economic downturn forced his father to find work out of the county during Marcos' seventh grade year. His mother and siblings continued to live in town and travel over the weekends and holidays to visit. They made a difficult decision to live apart, knowing that completing the dual language program would be a long-term benefit. Their hope for all their children was to have a strong education so that they could have an easier way of life.

Although the sacrifice was great, Marcos continued at Huerta and completed eighth grade with 24 college credits in Spanish. The first college credits that had been earned in his family. After eighth grade graduation, Marcos' family joined his father and moved out of the area.

During his senior year in high school, the graduate advisor at Huerta School reached out to Marcos to facilitate the college enrollment process. Marcos became an active distance learner with the Huerta college prep workshops. Through these workshops he completed college essays, applied for scholarships, and studied for his college entrance exams. His high school transcript reflected that he participated in upper level college prep coursework including pre-calculus. This was exciting news and upheld key research findings of advanced educational outcomes for dual language program graduates (Collier & Thomas, 2004; Lindholm-Leary & Borsato, 2005; Lindholm-Leary & Genesee, 2014).

Following high school graduation, Marcos moved back to the small community where Huerta School is located. Today, Marcos is a college student working toward a degree in secondary education with a focus in bilingual education and mathematics. In addition, Marcos is employed by Huerta School as a paraprofessional providing additional assistance to students during their math lessons in Spanish for grades four through eight. His background as a dual language immersion student and native Spanish speaker make him an amazing asset to the field of education and a great example of dual language immersion programs at work. Through the dual language philosophy, Marcos never had to sacrifice the advancement of his native language to experience academic success in English.

It is hard for Marcos' family to imagine how different Marcos' experience might have been if he would have continued in his English only setting. Would he have struggled as an English Language Learner (ELL)? Would he have lost his native language and been resistant to communicate in Spanish with his family? What about high school graduation, coursework and post-secondary aspirations?

Data for Spanish-speaking Latinos indicate that Marcos' academic experience and outcomes may have been different had he attended an English-only school. The national data trends for Spanish-speaking Latinos indicate that Marcos may not have continued to grow in his native language, may have experienced a higher risk of dropping out of school, may have been less proficient in English and could be less likely to attend college (Behr, Marston, & Nelson, 2014; Hurtado & Vega, 2004; Lindholm-Leary & Block, 2010; Pew Hispanic, 2014). Marcos' story and the thousands of dual language graduate stories are the reason that research must continue to examine dual language programs as successful educational pathways for Latinos.

This study investigates dual language programs and their impact on Latino high school students like Marcos. Although his background and experiences of being a second language learner were very similar to Latinos and Latino ELL's in his community, state, and the country, his educational experience of building two academic languages through a dual language education was an opportunity that only 4% of the nation's ELLs are receiving (Wilson, 2011).

Through this quantitative research the author measured students that were akin to Marcos in that they were Latino and/or Latino ELLs and attended dual language programs. These data were then compared with data of Latino and Latino ELL students who did not attend dual language programs. Specifically, the data analysis compared the two groups in the areas of: academic achievement, college prep coursework, intentions to enroll in post-secondary education, attitudes and beliefs about their dual language experience, language proficiencies, and work/career orientations.

The findings of this study provide additional research as educational policy makers are continually examining methodologies and programs that increase educational outcomes for at-risk Latino students, specifically for Latino English Language Learners (Gándara & Contreras, 2009; Short & Fitzsimmons, 2007). This study meets a critical need in the dual language education field by providing comparative data analysis on the impact of dual language programs for Latino and Latino ELLs. Dual language research has primarily focused on the academic and language achievement of students in grades K-6 (Dworin, 2011; García & Bartlett, 2007; Lindholm-Leary, 2013). This study targeted secondary Latino and Latino ELL students that participated in a dual language program for at least 6 years and compared the data to non-program participants of similar demographics.

This research on the impact of dual language programs at the secondary level is timely, with traditional English-only models lacking acceptable academic outcomes for many Latino and Latino English Language Learners (González & Soltero, 2011). There is a strong misunderstanding in the traditional school model regarding language acquisition. Multiple researchers support the view that traditional educators and policy makers have a misconception that more on-task time in English will deliver an expedited route to English proficiency (Cummins, 2000; Lindholm-Leary, 2014; Lindholm-Leary & Genesee, 2010; Lindholm-Leary & Howard, 2008). For decades the educational leaders have been searching for an appropriate and effective instructional methodology for Latinos and English Language Learners to address their continued achievement gap with mainstream students. In 2002, the US Department of Education commissioned a national study conducted by Collier and Thomas. The five-year study was designed to provide federal and state governments with the necessary data to make informed policy and programmatic decisions around language minority students. The report revealed that dual language programs produce superior academic outcomes for elementary-aged English Language Learners.

Statement of the Problem

According to national education statistics, the achievement scores for elementary and secondary Latinos and Spanish-speaking Latinos are well below Euro American students (e.g., NAEP, 2012; NCES, 2015). Latino students and Latino ELLs are consistently below their Euro American peers in all areas of academics. As reported by the National Center for Educational Statistics (2012), 12% of Latinos drop out of high school, and only 15% of college students are Latino. Further, Latino students that enroll in post-secondary institutions tend to choose community college and are less likely to complete a degree (NCES, 2010). The report further

notes that the lack of attention to this crisis could affect the economics of the United States in the future, as the U.S. population of Hispanics is projected to be 106 million by the year 2050; two times the population of 2014 and close to a quarter of the overall US population (US Census, 2014). Currently, 60 million Americans speak a native language other than English in their homes. Latinos are the fastest growing minority group in the U.S., with Spanish being the number one language spoken other than English (Pew Hispanic, 2013; Callahan & Gándara, 2014).

The academic outcomes for Latino students identified as English Language Learners are less favorable than Latinos as a whole in the current mainstream education system. Forty-five percent of Latino high school dropouts report a lack of oral proficiency in the English language (Fry, 2011). This is a critical finding considering that the lack of English proficiency has been reported as a barrier for Latino post-secondary aspirations. (Behnke, Piercy, & Diversi, 2004).

To compound the ELL achievement gap, long-term negative economic impacts for individuals and the society as a whole occur when native Spanish speaking children lose their native language (Agirdag, 2014). Balanced bilinguals, who have high levels of proficiency in two languages, are more likely to be employed full-time than their English monolingual counterparts. When determining differences in earnings based on the National Education Longitudinal data set, balanced bilinguals earned approximately $3,000 more annually in their entry-level careers than English monolingual peers (Agirdag, 2014).

Along with higher employment levels and incomes, dual language program participants may experience higher academic achievement outcomes than their peers in traditional programs. As a generalization, higher academic outcomes, as measured by GPA, can lead to post-secondary success, better career opportunities, and higher wages (Agirdag, 2014; Callahan &

Gándara, 2014; French, Homer, Popovici, & Robins, 2015). For example, Fortune 500 companies are seeking biliterate employees for global markets (Cere, 2012). In a report published by the New American Economy (2017), the demand for bilingual employees is rising significantly. Between 2010 and 2015, the number of online jobs requiring bilingualism doubled to approximately 630,000. As stated by The Presidential Advisory Commission on Educational Excellence for Hispanic Americans (2003), the K-12 success of Latino students is critical to their postsecondary aspirations as well as the US economy. Dual language programs meet these needs by preparing students to be bilingual and biliterate (Agirdag, 2014; Callahan & Gándara, 2014; Fredericksen, 2002).

Background

Policy and Law

Throughout America's history of immigration, language and education have been a divisive political platform (Fernández, Valenciano, & Garcia, 2013). The Civil Rights Movement of the 1960's and immigration from Puerto Rico and Mexíco, along with other Spanish speaking countries, prompted innovative educational programs using students' native language (Garcia & Bartlett, 2007; Lindholm-Leary, 2015). The Bilingual Education Act of 1968, also known as Title VII, helped pave the way for the innovative dual language programs of today. Title VII was a part of the Elementary Education and Secondary Education Act (ESEA) and provided some initial funding for bilingual research, bilingual teacher education, program implementation, and dissemination (Fernández et al., 2013; Garcia & Bartlett, 2007; Lindholm-Leary, 2015).

Although The Bilingual Education Act of 1968 afforded school districts the opportunity to provide dual language education, in 1970 there were only three school districts offering the

program (Lindholm-Leary, 2000). The ruling in the *Lau v Nichols* case (1974) was critical for the progression of bilingual education (Fernández et al., 2013). In this case, *Lau* on behalf of 1,800 native Chinese students in the San Francisco Unified School District, claimed their right to equal opportunity in education was denied based on their limited ability to access instruction in English (Sugarman & Wideness, 1974). The plaintiffs believed that they should be given the opportunity to learn English and to receive instruction in Chinese while they continued to acquire English. In addition, Sugarman and Wideness (1974) argued that if education was compulsory, then it needed to be accessible.

Following the original ruling, the *Lau* Remedies of 1975 provided districts with specific guidelines in the areas of language minority identification, evidence-based bilingual programs, and goals for balanced bilinguals (Crawford, 1994; Fernández et al., 2013). The Lau Remedies of 1975 offered "pedagogical directives" (Crawford, 1994, p. 2), even requiring bilingual education in schools where there were enough students that spoke the same native language. Following *Lau* was another important case, *Castañeda v Pickard* (1981), that established standards for schools that served Limited English Proficient students. The standards stated that programs need to be "sound in theory, provided with sufficient resources in practice, and monitored for effectiveness, with improvements made when necessary" (Crawford, 1994, p. 2). During the Reagan administration, a proposal to formalize the *Lau* Remedies was withdrawn and there was an impetus to examine education for ELLs on a case- by-case basis, making enforcement of *Lau* difficult.

Following *Lau* and *Castañeda*, there continued to be anti-native language sentiments and less funding from the US Department of Education. Despite the negative attention, dual language program development grew with the addition of centers designed for technical

assistance, university scholarships to increase bilingual teacher candidates, and research grants to study academic outcomes of ELL students in bilingual programs (Crawford, 1994; Lindholm-Leary, 2015).

In the late 1990's, the political English-only instructional agenda took hold with Proposition 227 in California followed by similar initiatives in Arizona and Massachusetts and by the federal No Child Left Behind Act in 2001 (Cummins, 2000; Garcia & Bartlett, 2007; Lindholm-Leary, 2015; Mora et al., 2001; Wright, 2005). The changes were swift, with ELL achievement gaps directed at bilingual education (Garcia & Bartlett, 2007). Federal offices and resources with bilingual education in the title were changed to titles of English language acquisition. The Title VII Bilingual Education Act, part of the Elementary and Secondary Education Act of 1968, was now Title III Office of English Language Acquisition, Language Enhancement and Academic Achievement for Limited-English-Proficient Students, thus removing "bilingual" from the law. A change in title also led to a change in the funding, instead of nationally competitive grants, states were provided allocations based on the number of ELLs they served. This additional layer of state control provided states' more authority over the methodologies that could be used with the funding. (Crawford, 2002; Garcia & Bartlett, 2007; Lindholm-Leary, 2015; Wright, 2005).

While "bilingual education has never enjoyed widespread support in the USA" (Garcia & Bartlett, 2007, p. 2) and is not a current federal initiative, these effective programs have been implemented across the United States and have consistently shown positive academic outcomes for attendees (Lindholm-Leary, 2012; Lindholm-Leary & Howard, 2008; Mora et al., 2001)

The change to mandatory and consequential-based testing through No Child Left Behind (2001) made it extremely difficult for dual language schools due to the language acquisition process and timeline (Collier & Thomas, 2004; Wright, 2005). Scholarly evidence demonstrates that it takes 5-7 years to achieve balanced biliteracy (Collier & Thomas, 2004, Cummins, 1981). In some cases, there is a documented "lag" for students while they are negotiating between two languages (Lindholm-Leary & Genesee, 2014; Lindholm-Leary & Howard, 2008). For policy makers that have examined annual achievement data in the primary grades, data can be inaccurately interpreted to indicate that dual language immersion schools were not as effective as English-only schools. The academic and language benefits of dual language instruction occur over time (Esposito & Baker-Ward, 2013; Murphy, 2014). In fact, studies conclude that elementary dual language immersion students outperform their English only peers in English reading and math within 5-7 years, suggesting that dual language programs not only offer English access, but high levels of achievement while maintaining a student's native language (Collier & Thomas, 2004; Lindholm-Leary & Howard, 2008; Marian, Shook, & Shroeder, 2013).

Educational Choice

Educators and researchers have collected data on the benefits of dual language programs, but it is equally important to examine motivations of Latino Spanish speaking parents that enroll their children in dual language programs. Parental support, engagement, cultural preservation, and intergenerational communication are cited by parents as benefits and reasons for enrollment in dual language programs. (Block, 2012; López, 2013; López & Tápanes, 2011). Spanish-speaking parents have been cited as having a belief that dual language immersion schools will provide better access to the school, increase their ability to help their child with homework, provide more reading time with their child, and increase volunteer opportunities (López, 2011;

López & Tápanes, 2011). These parental choices align with the data indicating that parent-school involvement has a positive impact on achievement for Latinos (Marschall, 2006).

Additional research suggested that parents also enroll their children in dual language programs with long-term goals and aspirations in mind. Parents believe that dual language programs may provide additional educational and occupational opportunities for their children as bilinguals. This strongly aligns with Latino students' reporting that learning two languages was important for college and career (Bearse & de Jong, 2008).

Latino dual language participants, like their parents, believe that their experience in dual language programs have helped them grow in Spanish language, cultural appreciation, and cultural identity (Bearse & de Jong, 2008; Lee, 2006; Lindholm-Leary, 2016). In addition to language and culture, Latino dual language graduates have positive attitudes toward their dual language program and academics. Latino ELLs that participated in a dual language program feel strongly about staying in school and getting a college degree (Lindholm-Leary, 2003).

While Lindholm-Leary's (2003) research has been important, the study did not include comparisons to students not in dual language programs. Thus, it is not clear whether these students' attitudes were any different from those of their peers in English mainstream classes. There is a clear need for research that compares the attitudes of dual language students with those of a comparison group with similar demographics but instructed in a traditional English mainstream setting. The current study meets this need by including both dual language and non-dual language students in a comparative study.

Theoretical Framework

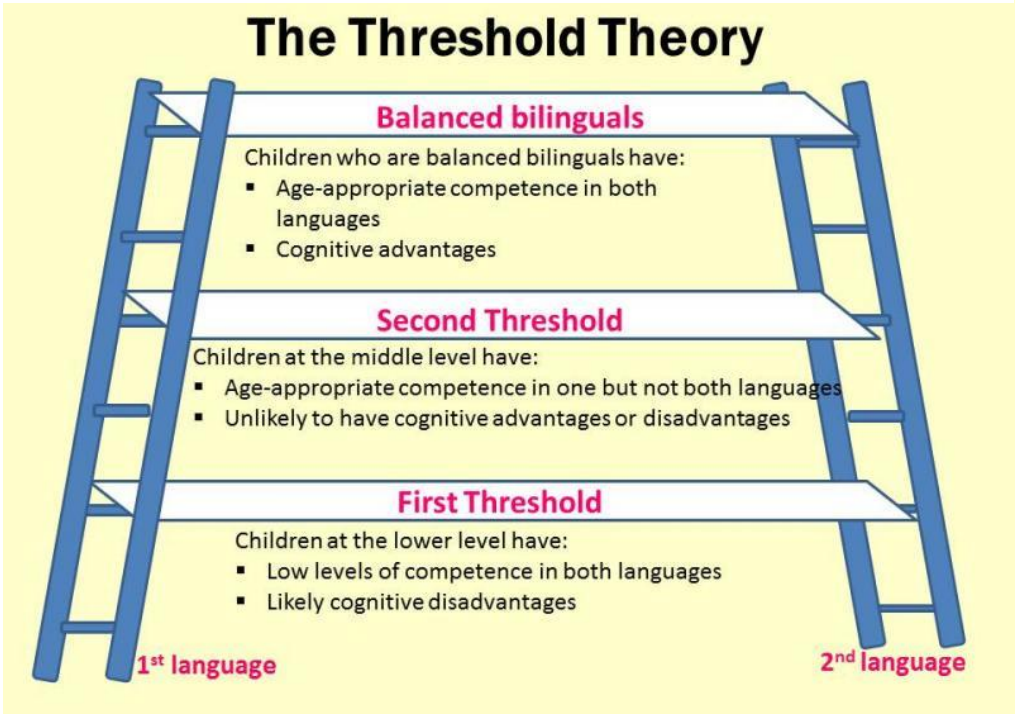
The theoretical framework of Cummins (1976, 2000), defined as the Threshold Theory, is an important conceptual underpinning of this study. This theory articulates the balance between

learning two languages and the requisite of continuing to learn in one's primary language and growing in the second language to experience cognitive growth and balanced bilingualism (Cummins, 1976; Cummins, 2000; Lasagabaster, 1998; Ricciardelli, 1992). Cummins' (1976, 2000) Threshold Theory represents a principle, grounded in empirical research, in which children need to have an age appropriate level of first language competency to efficiently gain a second language. The framework has two thresholds with a final level of balanced bilingualism.

The initial threshold demonstrates that children have a lower level of proficiency in both languages and likely lower cognitive abilities. In the second threshold, children are continuing to grow in both languages at age appropriate levels and are not experiencing any cognitive advantage or disadvantage. Finally, at the balanced bilingual stage, children demonstrate high levels of competency in both languages and cognitive advantages (Cummins, 1976; Cummins, 2000; Ricciardelli, 1992). Figure 1 illustrates the stages of Cummins' (1976, 2000) Threshold Theory as defined above.

Figure 1

The Threshold Theory



(Permission for use obtained from the British Council, Appendix A)

To complement the original Threshold Theory, Cummins (2000) cites three critical principles for bilingual education that are founded in empirical research. The first principle is the need to continue supporting a child's primary language while learning the second language (Cummins, 2008; Durán, Roseth, Hoffman & Robertshaw, 2013; Lindholm-Leary, 2013; Lindholm-Leary & Block, 2009). The second principle is that literacy skills are transferable, and the third principle is that it takes around five to seven years to attain academic levels of bilingualism/biliteracy (Collier & Thomas, 2004; Cummins, 2000; Cummins, 2008; Lindholm-Leary & Genesee, 2014; Lindholm-Leary & Hernández, 2011; Lindholm-Leary & Howard, 2008).

Follow-up studies with Italian/English, Greek/English bilinguals and Spanish/Basque/English multi-linguals corroborate Cummins' (1976, 2000) balanced bilingual

stage and revealed significant results for cognitive achievement for students with high levels of bilingual and multilingual proficiency (Andreou & Karapetsas, 2004; Lasagabaster, 1998; Ricciardelli, 1992). The results were again replicated for the first and second threshold. These results indicated that bilinguals with low language proficiencies, threshold 1, do not perform as well on cognitive tests as bilinguals that had at least one strong language, threshold 2 (Ricciardelli, 1992). In addition, students that benefit most from dual language programs are native speakers of other languages that gain English proficiency; thus advancing through Cummins' (1976, 2000) thresholds into balanced bilinguals demonstrating high levels of academic success in two languages (Lindholm-Leary & Hernández, 2011).

Although the setting for this research is in dual language, Cummins' (1976, 2000) theoretical framework has been replicated and analyzed in different language acquisition settings that include environmental, foreign language, English as a Second Language (ESL), dual language, and schools where three languages are taught (Andreou & Karapetsas, 2004; Ardasheva, Tretter & Kinny, 2012; Lasagabaster, 1998; Ricciardelli, 1992). This wide array of analysis demonstrates the theory's overlay in various language acquisition settings and relevance to this research as the author examines the impact of dual language programs for Latinos and Latinos ELLs.

Research Questions

To determine the impact of dual language programs for Latino high school students, the author developed research questions that examine differences between Latino dual language program participants and Latino non-dual language participants. Additionally, the questions examine language proficiency of native Spanish speakers as well as attitudes and beliefs of program participants. The questions below frame the direction of this dissertation.

Research questions for this study include:

1. What, if any differences exist between Latino dual language immersion students and Latino non-dual language students in the areas of academic achievement and college prep coursework as measured by self-reported grades, GPA, and completed coursework?
2. What, if any differences exist between Latino dual language and Latino non-dual language students in their reports of likelihood in enrolling in post-secondary education and career path interests?
3. What, if any differences exist between the self-reported levels of Spanish and English proficiency between dual language program participants and the comparison group when examining native Spanish speaking students?
4. What are the attitudes and beliefs that high school Latino dual language students have about their dual language program experience?

Description of Terms

Throughout the literature on language education, a myriad of educational terms are used when communicating about two-way and dual language immersion programs. These terms have been specifically selected to advise the reader in the areas of program model descriptions and student language designations that are used throughout the dissertation. The terms have been defined according to publications referenced in this study.

Balanced Bilingual. A term used to describe a person that is equally competent in two languages (Cummins & Swain, 2014).

Developmental Bilingual Education. Instruction is delivered in native language and English, ELL students continue to receive instruction in both languages. The program is only for ELLs (Ovando, 2003).

Dual language. A program used to deliver academic instruction in the classroom in two languages using language as the medium for acquisition also known as Two-Way Immersion. Populations in two-way immersion include native English speakers and English learners (Lindholm-Leary, 2012).

English as a second language (ESL). A program in schools used to support students that have a primary language other than English. ESL programs typically use a push-in (services provided in the classroom) or pull-out (services provided in a small group outside of the classroom) or structured English Immersion program (Wong Fillmore, 1991).

English language learner (ELL). A designation given to students at school entry who have a primary language other than English and, on the basis of assessments of their English proficiency, are determined to require services to help them learn English (USDOE, 2015).

Developmental Bilingual Program. A program in schools designed for ELLs that delivers instruction in English and native language (Ovando, 2003).

Executive Function. Cognitive processes that are related to a performance; measurements may include: inhibition, working memory and shifting (Best & Miller, 2010).

Non-Participants. Latino high school students that have 0-5 years of dual language experience.

Participants. Latino high school students that participated in a dual language program for at least six years.

Partner Language. The language used in addition to English (e.g., Spanish, Mandarin) in dual language immersion programs (Lindholm-Leary, 2014).

Reclassified English Proficient (REP). Students that entered school categorized as ELL's, and have been assessed and considered English proficient (Lindholm-Leary & Hernández, 2011).

Respondents. Latino high school students that participated in this study.

Transitional Bilingual Education. Native language is used initially for instruction and then phased into English, with English proficiency the ultimate goal. The program is only for ELLs (Mora, Wink & Wink, 2001).

Significance of the Study

This study adds to the dual language education field by addressing an area with limited research. A majority of the dual language literature has an emphasis on the elementary grades (Bearse & de Jong, 2008; Dworin, 2011; Howard, Lindholm-Leary, Sugarman, Christian, & Rogers, 2007). The K-5 literature focus correlates with the number of dual language programs that serve elementary students (CAL, 2015; Garcia & Bartlett, 2007). To augment the primary school data, this study utilizes the data from Latino and Latino ELL high school students that participated in a dual language program for at least six years and compares them to their non-dual language Latino and Latino ELL peers.

Many dual language scholars have collected and published data on outcomes of dual language education. The scholars have identified models of immersion, usage of partner languages, and academic performance for students in the programs (Collier & Thomas, 2004; Lindholm-Leary & Genesee, 2010; Lindholm-Leary & Howard, 2008). The research has primarily been conducted with elementary students, with some research stretching either side with preschool and middle school.

The research from this dissertation addressed a need in the field that analyzes data from long-term dual language program participation of Latino and Latino ELL students. Specifically, this study measured the impact of dual language programs for junior and senior high school students. There are very few studies that have measured Latino and Latino ELL high school students that have participated in dual language immersion programs and none that the author found compared this data with Latino students and Latino ELL students in general education settings with regards to the author's research questions (Dworin, 2011; Lindholm-Leary, 2014).

This research added to the field by examining comparison data for dual language program participants and non-program participants. The data analysis from this research provided support and further substantiated the need for more K-12 dual language immersion programs to serve Latino and Latino ELL students; thus, providing a more effective methodology for closing the achievement gap.

Overview of Research Methods

This study was conducted using student survey data from two school districts in western Oregon. Each district has a dual language program within the high school and the schools have a combined average Latino population of 68% and a combined average ELL population of 57%. A total of 102 students responded to the quantitative survey that measured students' perceptions of their academic achievement, college prep coursework, language usage, post-secondary intentions and career interests, language proficiency, and attitudes toward their dual language participation. A total of 78 respondents met the pre-determined qualifications and were included in this study. Pre-determined qualifications for the dual language sample included: dual language experience of six or more years of dual language program participation, Latino, and/or Latino English

Language Learner. Pre-determined qualifications for the non-dual language sample included: Latino and/or Latino current or previous English Language Learner. Forty respondents were Latino/Latino ELL dual language immersion high school students and 38 were Latino/Latino ELL high school students that did not participate for six or more years in a dual language education model. Of the surveys collected for Latino students, 37.8% identified with characteristics that align with English Language Learners. Thus, they have indicated on their survey that they "mostly spoke Spanish" when entering elementary school. Sixty-five percent of the Latino respondents indicated that Spanish was their "home language or the language first spoken to you by your parents."

The author obtained written permissions from each district superintendent and worked with building administrators to identify participating teachers and classrooms. The classroom teachers sent study information and consent forms home with students. Upon returning parental consent forms, students signed assent forms. Paper and pencil surveys were distributed to students and the surveys were completed in one class period. Dual language Latino high school students and non-dual language Latino high school students completed the surveys. The surveys were written in English. Although many of the participants may have been identified as having ELL characteristics at some point in their education, the age and academic coursework of the students surveyed suggest that an English survey would be comprehensible for participants.

Upon receipt of the completed surveys, the author prepared the surveys for data entry by assigning individual survey codes. The surveys and item responses were entered by the author into a prepared data collection spreadsheet with assigned variables and values. The data was analyzed using IBM SPSS Statistical Software Version 24 (IBM SPSS, 2016) for data analysis by the author.

For statistical analysis of the collected data, the author chose a combination of descriptive statistics as well as the non-parametric version of the Independent samples t-test, the Mann Whitney *U*. The author chose descriptive statistics to report nominal data and the non-parametric test, Mann-Whitney *U* to report differences between the two independent groups using ordinal data (Tanner, 2012).

Chapter II

Literature Review

Introduction

Dual language programs, commonly referred to as two-way immersion programs, use two languages to deliver classroom academic instruction (Lindholm-Leary, 2012; Lindholm-Leary & Howard, 2008; Mora et al., 2001). The goals for dual language immersion programs are to "promote bilingualism and biliteracy, academic achievement at or above grade level, and cross-cultural competence for all students" (Lindholm-Leary, 2016, p. 61). This is an additive approach, where students gain a second language while strengthening their native language, and is currently being implemented in schools in more than half of the United States (Baker, 2011; Cummins, 2000; Dworin, 2011). Dual language programs have successfully been implemented using many partner languages including: Spanish, Russian, Chinese, Japanese, Korean, and French (Lindholm-Leary, 2016; Lindholm-Leary & Howard, 2008).

Despite the lack of attention in the areas of initiatives and funding from the US Department of Education and state departments of education, dual language programs have continued to grow and are in high demand (CAL, 2015; Wilson, 2011). New York State hosts more than 300 dual language programs, and there are estimated to be more than 2,000 schools with dual language immersion programs across the United States. In 2011, Wilson (2011) reported that 15 years ago, there were only 260 dual language programs nationwide. Although the growth was rapid, dual language programs are only serving a small percentage of the overall ELL population. The majority of ELL students are continuing to be served in Structured English Immersion programs and ESL push-in/pull-out programs. In contrast to the additive nature of dual language, these push-in and pull-out programs are subtractive by design to immerse

language learners into English, denying native language foundations and continued acquisition (Wong Fillmore, 1991).

This chapter provides insight into the dual language program literature and educational outcomes for Latinos. This review of literature is divided into five categories: 1) Latino achievement, 2) Dual language models, 3) Dual language outcomes in early and middle grades, 4) Latino dual language secondary students and graduates, and 5) Attitudes and beliefs of dual language program graduates.

Latino Achievement

The Latino population is growing rapidly in the U.S., assessed at 23 million in 2011 (US Department of Labor, 2012). It is estimated by the year 2050, 24% of the population will be Latino (NCES, 2010). While the Latino population is increasing, the academic performance of Latino students still lags behind Anglo and African American peers. Outcome indicators such as: dropout rate, math and reading achievement scores, SAT/ACT scores, AP coursework, GPA, and postsecondary enrollment show a significant gap (Jaschik, 2015; NAEP, 2013, NCES, 2010).

Although the drop out percentages have decreased by almost half from 2000 to 2012, the dropout rate for Latinos is still double that of Anglo peers, 6.7% vs. 3.4% respectively (Pew Hispanic, 2012). In 2008, NCES (2010) reported that only 64% of Latino students were graduating within the four years of high school as compared to 81% of White students. Latino 8th grade students in a diverse county in the southern United States were surveyed and indicated that 42% of Latino students were not sure that they would graduate from high school (Lys, 2009).

Despite the less than favorable dropout statistics, there is a noteworthy connection between balanced bilinguals and reducing the probability of dropping out. A recent study found a reduced probability of dropping out as a balanced bilingual (Rumbaut, 2014). In fact, the data analysis revealed that English monolinguals are 66% more likely to drop out than balanced bilinguals even when the model controlled for gender, ethnicity, socioeconomic status and other factors. Home language has been found to be a significant variable in predicting students' perceptions about completing high school. There are data to support that students with a home language of Spanish feel "more optimistic about their ability to graduate from high school" (Lys, 2009, p.7). In this study 8th grade students were surveyed to identify perceived high school transition factors, perceptions of likelihood to graduate from high school, and future aspirations. In addition to the home language results, the data also indicated that 38% of eighth grade students worried about their ability to finish high school (Lys, 2009). This is significant when one reflects the long-term effects of dropping out on one's employability and earning potential (Agirdag, 2014).

Beyond high school graduation, the achievement gap for Latinos impedes equitable access to post-secondary options. Latino high school students score between 70 and 80 points less on the SAT than White students in areas of reading, math and writing, which seriously limits post-secondary options (Jaschik, 2015). Along with SAT scores, grade point averages in high school have a direct correlation with the probability of student success in post-secondary education and in wage earnings. A study that examined the relationship between college success and income found that a 1-point difference in the respondents' high school GPA, doubles the chances of finishing college. In addition, an approximate 1-point difference in GPA increased the respondents' annual earnings (French, et al., 2015).

When considering statistics for Latinos after high school, the enrollment of high school graduates enrolled in postsecondary educational options is only 64% for Latinos compared to 72% for Anglo peers (NCES, 2010). Latinos were also more likely to enroll in two-year colleges and less likely to complete a four-year degree (Pew Hispanic, 2014a; Pew Hispanic, 2014). The long-term effects of underachievement for Latinos are far reaching. Lower education rates are also linked to lower incomes and worse physical and mental health (Turcios-Cotto & Milan, 2013).

Addressing the achievement gap that exists between Latinos and their counterparts is critical to the purpose of this research. While many dual language studies have published positive academic outcomes for dual language participants in the primary grades, it is imperative to measure the impact of dual language programs on secondary students. The data referenced above for Latino achievement is a direct measurement of the success of secondary students. However, we have very little published data that provides insight as to whether dual language programs narrow the achievement gap for Latinos at the secondary level.

While addressing the achievement gap, it is essential to understand barriers and their relation to the achievement gap. Educational barriers for this research can be defined as difficulties or concerns at school with teachers, administrators, or individuals regarding Latino students and their families (Becerra, 2012). Educational barriers for Latino students can begin early, with Latino children having less access to preschool than their non-Latino peers (Gándara, 2010). Upon entering the public K-12 educational system, there are additional barriers. Hyper-segregated schools, lack of educational resources, and less than adequate schools are just a few of the barriers waiting for incoming kindergarten classes of Latinos (Alliance for Excellent Education, 2009; Gándara, 2010). In addition to dismal facilities, a high proportion of less

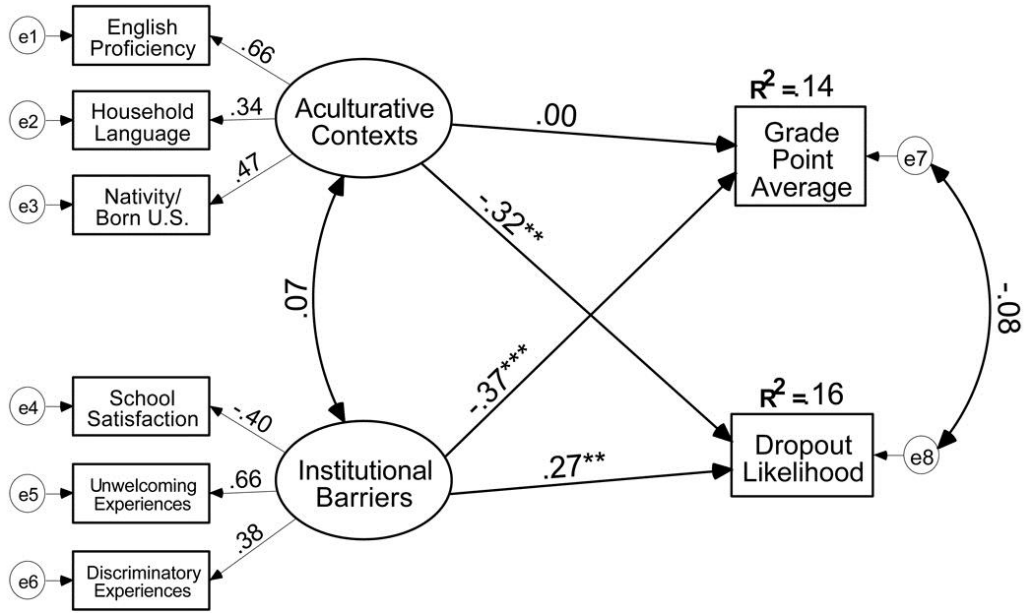
experienced and less qualified teachers serve students with the highest educational needs (Gándara, 2010).

The barriers often continue into the public school setting as institution-imposed barriers, which may include: discrimination, unwelcoming environments, and poor overall school contentment (Martinez, DeGarmo & Eddy, 2004). In examining the literature around Latino parent engagement, school involvement and school experience, it seems likely that the decreasing achievement levels for the later-generation students could be impacted by negative experiences that their parents had as students in the American schooling system (Hill & Torres, 2010). Due to the institution-imposed barriers, Latino students are also less likely to be encouraged academically in school settings, with less placement into college tracks, and more placement into vocational tracks (Hill & Torres, 2010).

In a study using high school Latino and non-Latino survey data to examine predictors of Latino academic success, the study found institutional barriers at the secondary level to be predictive of GPA and likelihood to dropout as modeled in Figure 2, Institutional Barriers and Acculturative Contexts Predicting Latino Students' School Success (Martinez, et al., 2004). This figure demonstrated a good fit to the data using a Comparative Fit Index of .99. The factors used in this model were derived from parent and student surveys. Institutional barriers included: discrimination, unwelcoming environments, and poor overall school contentment. Students reported that having positive academic relationships with staff members who encouraged their success resulted in high GPAs and parent encouragement was also essential in predicting school success (Martinez et al., 2004).

Figure 2

Institutional Barriers and Acculturative Contexts Predicting Latino Students' School Success



Institutional barriers and acculturative contexts predicting Latino students' school success. $\chi^2(16) = 23.36$, $\rho = .10$, $n = 278$, CFI = .99, *$\rho < .05$, **$\rho < .01$, ***$\rho < .001$.

(permission received from Dr. Charles Martinez, see Appendix B)

Through the goals of dual language immersion, many of these institutional and system barriers can be minimized. Dual language programs encourage culturally relevant instruction, family connections, and cultural appreciation (Howard, et al., 2007).

The academic achievement gap impacts the goals and aspirations of Latinos and Latino ELLs. Studies addressing goals and aspirations are rich with themes of identity woven throughout (Calero, et al., 2014; Case & Hernandez, 2013; Lys, 2009). When examining the components of identity, native language preservation is essential and without a strategic, intentional effort, native language skills can be lost in early childhood in English preschool programs (Lindholm-Leary, 2013) and by middle childhood (Winsler, Díaz, Espinosa &

Rodríguez, 1999). Generational data has been collected on this phenomenon, and by the second and third generation, families experience substantial language shifts from Spanish to English (Hurtado & Vega, 2004), thus, further impacting Latino achievement.

Students that have a strong ethnic identity, experience more favorable academic outcomes (Case & Hernandez, 2013). Dual language programs offer the benefit of language preservation that enhances identity and can potentially transform academic outcomes for Latino students (Lys, 2009). In addition, dual language programs can increase the probability of achieving goals and aspirations through native language instruction that enhances ethnic identity.

Dual Language Models

Dual language schools implement many different models, program styles and serve different grade levels. The majority of dual language schools serve students in grades K-5, with a few serving K-8, and even fewer serving K-12 (CAL, 2015; Garcia & Bartlett, 2007). The two most common dual language immersion models are the 90:10 model and the 50:50 model (Lindholm-Leary, 2012) with Spanish as the partner language.

As displayed in Table 1, the 90:10 model begins in kindergarten with 90% of the instruction in the partner language and the 10% in English (Lindholm-Leary, 2014; Lindholm-Leary, 2012; Lindholm-Leary & Howard, 2008; Lucido & Montague, 2008). The 90:10 model decreases the amount of partner language as the grade level increases and increases the amount of English as the grade level increases. This progression continues until the model reaches 50:50 (Lindholm-Leary, 2014; Lindholm-Leary, 2012; Lindholm-Leary & Howard, 2008; Lucido & Montague, 2008). In most 90:10 models students begin reading instruction in the partner language (Lindholm-Leary, 2012).

Table 1

Sample 90:10 Model

	Partner Language	**English**
Kindergarten	90%	10%
First	80%	20%
Second	70%	30%
Third	60%	40%
Fourth	50%	50%
Fifth	50%	50%

The second model for dual language immersion schools is the 50:50 model. In this model students begin kindergarten with 50% of the instruction in the partner language and 50% of the instruction in English (Lindholm-Leary, 2014; Lindholm-Leary, 2012; Lindholm-Leary & Howard, 2008; Lucido & Montague, 2008). In the 50:50 model, schools differ in the way they begin literacy instruction. Some schools teach reading in the native language first, and some schools begin teaching reading in both languages (Lindholm-Leary, 2012).

Although the delivery of the languages may be different between the 90:10 and the 50:50, dual language models share four common qualities. They are similar in the philosophy that two languages are used to deliver instruction and the partner language is used a significant amount of the day (Lindholm-Leary & Howard, 2008; Lucido & Montague, 2008). During the time of instruction, languages are not mixed or translated and schools strive to enroll equal number of partner language students and English students in the program.

The most successful dual language programs address accountability, bilingual language

development, and curriculum and instruction (de Jong & Bearse, 2014). Accountability for dual language immersion programs can be difficult particularly in the era of an immediate results-driven education agenda (Lindholm-Leary, 2012; Lindholm-Leary, 2015). Scholars have determined that the language acquisition process typically is 5-7 years; thus causing dual language programs to struggle when required to demonstrate academic results at grade three (Collier & Thomas, 2004). Identified best practices regarding accountability for dual language programs indicate that multiple assessment measures need to be used in both languages to track growth and should be in alignment with the program's vision and mission (Lindholm-Leary, 2012).

Dual Language Outcomes in Early and Middle Grades

Dual language research is rich with studies of data from students in primary and intermediate grades (Collier & Thomas, 2004; Lindholm-Leary & Genesee, 2010; Lindholm-Leary & Howard, 2008). There are more limited studies for secondary and postsecondary program graduates (Dworin, 2011; Lindholm-Leary, 2013). There have been many published studies to determine the effectiveness of dual language programs (Collier & Thomas, 2004; Cummins, 1996; Krashen, 1999; Lindholm-Leary, 2012; Lindholm-Leary & Howard, 2008; Mora et al., 2001). Scholars have examined achievement data, language acquisition, English proficiency, language ideologies, and other outcomes for students that attend dual language programs, primarily at the elementary school level. These outcomes have been analyzed according to a number of student background variables such as: native speakers' status, English Language Learner status, ethnicity, socio-economic status, and gender. In the research reviewed for this study, dual language programs have a long-term positive impact on overall achievement, language acquisition, and English proficiency for program attendees (Lindholm-Leary &

Borsato, 2005, 2006; Lindholm-Leary & Ferrante, 2005 & Lindholm-Leary & Hernández, 2011). Furthermore, the studies have shown positive achievement data in numerous languages using the dual language model (Lindholm-Leary, 2014).

Beginning at the preschool level, many Latino and Latino ELL preschool students attend programs that implement English curricula to move students into English and prepare them for English-only schooling. Many scholars (Cummins & Swain, 2014; Krashen, 1999; Lindholm-Leary & Genesee, 2010; Lindholm-Leary & Hernández 2011; Lindholm-Leary & Howard, 2008) in the area of first and second language acquisition advocate that students should build literacy in their primary language first. The skills learned through the primary language will transfer to the second language, further promoting English acquisition while maintaining the native language.

Data from a study of native Spanish-speaking kindergarten students were analyzed to measure the impact of instructional language and the proficiency of the students' primary language (Lindholm-Leary, 2013). The results indicated that at least three years of bilingual or Spanish instruction in preschool is favored for long-term academic growth and language development of native Spanish speaking students. (Lindholm-Leary, 2013). This is a significant finding as there is an increased level of K-12 school accountability for English Language Learners through Title III Annual Measurable Achievement Objectives (AMAO) (Crawford, 2002).

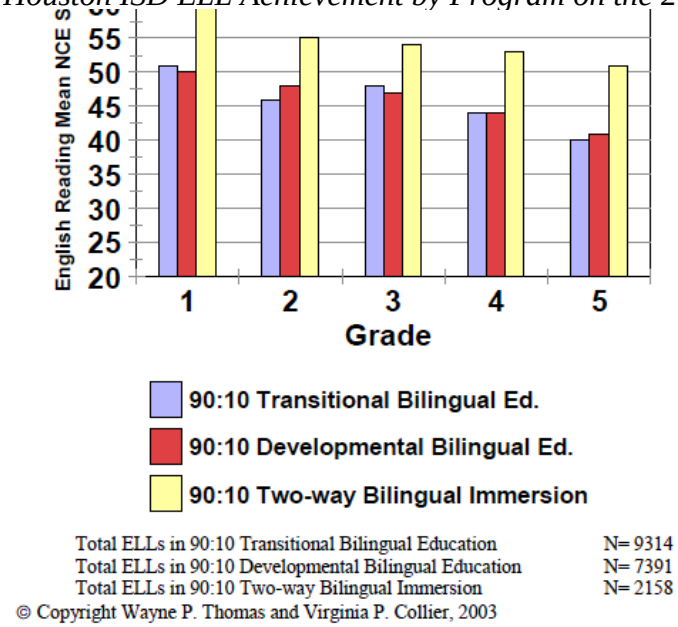
Longitudinal studies have shown that dual language immersion programs result in higher achievement outcomes for English Language Learner students (Collier & Thomas, 2004). In fact, elementary and middle level English Language Learners in high quality dual language programs outscore their native English peers on tests of English and math (Collier & Thomas, 2004; Lindholm-Leary & Block, 2010).

ELL students in three different bilingual education programs are compared in Figure 3 (Collier & Thomas, 2004). The programs are all 90:10 models and compare data for transitional bilingual education, developmental bilingual education and bilingual immersion.

Dual language program data from Houston's 210,000-student district were collected in a longitudinal study (Collier & Thomas, 2004). The figure below shows the differences between ELLs in the same school district, but in different bilingual education models. Figure 3 demonstrates that ELL students in the two-way/dual language programs achieved higher scores on English reading in all grades represented, first through fifth. The two-way program students' scores are consistently above the 50th percentile threshold indicating achievement levels at grade-level or above. Students in the transitional and developmental bilingual programs had lower scores than their two-way counterparts in grades second through fifth. Developmental and transitional programs continued to show decreases in English reading, falling at the 40th percentile or below while dual language peers were scoring around the 52nd percentile (Collier & Thomas, 2004).

Figure 3

Houston ISD ELL Achievement by Program on the 2000



(Permission for use obtained from Drs. Collier and Thomas—see Appendix C)

Research examining Latino achievement and language proficiency for English language learners, native English speakers, and former English language learners has also cited positive outcomes for dual language enrollees (Lindholm-Leary & Borsato, 2005, 2006; Lindholm-Leary & Ferrante, 2005 & Lindholm-Leary & Hernández, 2011). In another study the differences between the language groups of Latino students were examined. Latino-former ELLs now classified as English proficient (REP), Latino-Spanish speakers, and Latino-English proficient students were compared (Lindholm-Leary & Hernández, 2011). On the data points studied: language proficiency and reading achievement, dual language REPs outperformed their Latino dual language counterparts. This finding suggests that English Language Learners that maintain their native language and become English proficient gain the most from dual language programs (Lindholm-Leary, 2016; Lindholm-Leary & Hernández, 2011). That said, the Latino-ELLs and Latino English proficient students also scored well. The Latino English proficient students

scored as well or better than native English speakers in English only programs (Lindholm-Leary & Hernández, 2011). In addition to scoring well on tests of English, Latino English speakers that attend dual language programs score near grade level on tests of Spanish reading (Lindholm-Leary & Hernández, 2011).

When examining the effectiveness of dual language programs for Latinos compared to Latinos in mainstream programs, one California study found that Latino-English speakers enrolled in dual language programs outperformed their mainstream peers on tests of English in 4th and 5th grade (Lindholm-Leary & Block, 2010). Beginner ELLs enrolled in the dual language program also performed better than their mainstream peers in English classes. The dual language ELL students in the study surpassed the ELL scores of California and were also close to the California Latino group (ELLs and English Proficient) as a whole. On the California math test, dual language students (Latino-English speakers) scored near or above the required proficiency level (Lindholm-Leary & Block, 2010). When looking at the differences between grades second and fifth the scores of the ELLs in dual language increased by 40.6 points and mainstream ELLs decreased by 12.4 points (Lindholm-Leary & Block, 2010).

Marian, Shook, and Schroder (2013) analyzed data for language minority Spanish students and language majority English students in dual language programs, transitional bilingual program and English only programs. As many scholars have shown, dual language students in both majority and minority languages tend to perform better on tests of math and reading. This research led to the same conclusion, with majority language students significantly outperforming their peers in English only programs on tests of math in grades third, fourth, and fifth. Marian et al. (2013) also examined executive function and the relationship to math concepts and performance on standardized math tests. Higher executive function skills have been linked to

higher academic performance (Best, Miller, Naglieri, 2011) and cognitive functioning (Adesope, Lavin, Thompson & Ungerleider, 2010). Research has consistently found that bilingual children perform better on tests of executive function than monolingual children (Adesope, Lavin, Thompson & Ungerleider, 2010; Carlson & Meltzoff, 2008).

Cobb, Vega, and Kronauge (2006) studied the differences in academic achievement between elementary dual language graduates and traditional elementary students. The analysis compared math, reading and writing. The Spanish-speaking dual language program students in sixth and seventh grade demonstrated the greatest benefit academically over Spanish speaking students in traditional programs. The largest gains were demonstrated on writing scores. Seventh grade math was the only area where Spanish speakers in the traditional program performed better than dual language graduates. For native English speakers, the results were similar. English speakers that graduated from a dual language program outperformed their mainstream peers in sixth and seventh grade with the exception of sixth grade math.

Latino Dual Language Secondary Students and Graduates

Few studies have explored outcomes for long-term dual language program participants (Dworin, 2011; Lindholm-Leary, 2013). In a qualitative study of K-12 dual language program graduates, graduates were asked questions regarding Spanish language usage, level of biliteracy, social network associations, and connections with Spanish language and culture. Although the scope of the study was small, a sample of five, the study provides some essential information related to next steps for dual language data collection (Dworin, 2011).

The all-female participants included two Mexican-American students, two Anglo students and one African American student (Dworin, 2011). Analysis of the data found three major themes: 1) Participants identified themselves as biliterate, 2) Students attitudes and beliefs

toward the use of the Spanish language largely depended on their social positions and cultural identity, and 3) Need for continued study of who is benefiting most from dual language education. All participant's reported using Spanish on a daily basis, but their purpose for doing so was very different based on their ethnicity and native language. An Anglo, native English speaker said that she spoke English most of the time, but spoke Spanish and helped her peers in college Spanish class. A Latino Spanish speaker reported using Spanish often socially and with family. Three of the five participants used Spanish often in many different contexts and attended cultural activities.

Another study of secondary students included a survey of high school students in grades 9-12 and asked questions regarding their language proficiency, attitudes toward the dual language program, usage of Spanish and attitudes about bilingualism (Lindholm-Leary, 2003). The respondents were categorized as: Hispanic Spanish speakers, Hispanic English speakers and Anglo English speakers using a Self-Rated Proficiency in Spanish instrument. Data collected from this Likert scale survey provided information on students' perceptions of Spanish proficiency. To measure proficiency, the survey included items in the areas of Spanish listening, comprehension, fluency, vocabulary, and grammar. A second survey was used in the study to measure students' attitudes toward their two-way program. This survey included items related to students' attitudes about the two-way program and its influence on student confidence, challenging programs, and better education options.

The survey results indicated that all participants viewed themselves as bilingual with moderate levels of proficiency. The females in the study demonstrated high levels of proficiency, highest levels of praise for being bilingual, were more likely to enroll in Spanish Advanced Placement courses, and experienced the least amount of teasing (Lindholm-Leary, 2003). The

students that demonstrated the greatest benefit from attending a dual language program were Hispanic students despite their very low socioeconomic status. All participants reported positive attitudes toward their experience in the dual language program and students reported that they saw many benefits to bilingualism and were glad they had participated in the program.

Even fewer studies have examined dual language graduates after they leave the K-12 educational system. A recent qualitative study of 52 former dual language participants reported communication through English 78% of the time and Spanish 22% of the time in their communities of practice (Granados, 2015). Although participants use more English, the study found that they sought out opportunities to use Spanish in their families, workplaces and educational spaces. Most participants reported being equal or more biliterate than they were while attending the program. This study suggests long-term language retention and balanced bilingual benefits from preschool to adult-hood (Granados, 2015).

Dual Language and STEM

The Presidential Advisory Commission on Educational Excellence for Hispanic Americans (2003) has called attention to the fact that the US economy will suffer without increased academic achievement for Latinos, and projects that the United States will need one million STEM professionals within the next ten years. This is a concern given that Latino students are less represented in fields of science, math, engineering, and technology (US Commission on Civil Rights, 2010). Academic achievement in high school is a major factor for students selecting STEM related careers and pathways (Riegle-Crumb et al., 2010). Furthermore, students specifically completing courses in upper levels of math and science are also more likely to attend college and obtain a degree (Bohon, Johnson, & Gormon, 2006; Haro, 2004).

With the need for Latinos in STEM professions, dual language research highlights the promise of these programs in the area of math (Crisp & Nora, 2012; Lindholm-Leary & Borsato, 2005). Researchers examined math achievement data for students that have been enrolled in dual language programs. Their research studied students (Hispanic-Spanish speakers, Hispanic-English speakers, and Euro-English speakers) that had been enrolled in a dual language program during their elementary years (Lindholm-Leary & Borsato, 2005). The study analyzed students' math performance data from second grade, sixth grade, and ninth grade within the above mentioned student language groups. Results from the study suggested that students from the dual language program had positive attitudes toward math and continued to have average scores in math courses (Lindholm-Leary & Borsato, 2005). Most of the participants were taking higher-level college preparatory math classes. Results from this data may suggest that Hispanic students that have participated in dual language programs may be better prepared for higher level math courses than Hispanic students that do not participate in dual language programs. This is an important finding when considering the importance of high school math achievement in relation to college STEM coursework and preparation (Riegle-Crumb et al., 2010).

Latino students that pursue STEM degrees are less likely than their Anglo peers to complete the degree program and Latino students typically receive less quality math and science instruction in high school that makes them less prepared for college STEM coursework (Crisp & Nora, 2012). The United States Department of Education's Report on Hispanics and STEM Education (2012) cited that only 2% of Latinos are STEM professionals, and 20% of the nation's youth is Latino.

Dual language program graduates, demonstrating balanced biliteracy may have an advantage in core content that may lead to STEM opportunities (Crisp & Nora, 2012; Lindholm-

Leary & Borsato, 2005). A study that observed a classroom of bilingual math learners at the middle level was conducted by Moschkovich (2002). Given the opportunity and encouragement, bilingual math learners are able to construct meaning, communicate processes, and participate fully in grade level math coursework (Crisp & Nora, 2012; Moschkovich, 2002). Traditional educators often assert bilingual students' inability to master math vocabulary and communicate math processes at high English levels. This often leaves bilingual math students left out of upper level math coursework (Crisp & Nora, 2012; Moschkovich, 2002). Students learn vocabulary best when it is in context, through participation and are encouraged to work between the languages and not in isolation (Mein & Esquinca, 2014; Moschkovich, 2002; Uribe-Flóres, Araujo, Franzak & Writer, 2014).

In dual language classroom settings, elementary level through college level, bilingual students can be observed working through vocabulary and making mistakes while searching for the right word. Skilled immersion teachers do not stop the conversations of the students to correct the incorrect vocabulary; the most important factor is math abilities and development. Through this opportunity to work within languages, students can articulate the right process and demonstrate an understanding of concepts (Mein & Esquinca, 2014; Moschkovich, 2002). The use of translanguaging, or the use of two languages working together, to accomplish high levels of understanding and task completion can be highly effective (Uribe-Flóres et al., 2014).

At the elementary level, students have been observed dialoging between student groups that included both native English and native Spanish speakers (Gort, 2008). Elementary students are facilitating, interpreting, and demonstrating the aptitude to accomplish tasks in the target language while working between both languages (Gort, 2008). Students are learning from each

other, having classroom environments that foster both languages and produce academic achievement (Gort, 2008; Mein & Esquinca, 2014; Uribe-Flóres et al., 2014).

The research on balanced bilingual college engineering students provides data for our K-12 STEM teachers on successful practices. Through the creation of translingual spaces for learning, teachers allow for students to move between languages during shared learning, problem solving, and presentations (Mein & Esquinca, 2014). While students are able to complete all the in-class tasks in two languages, the students are also highly effective at presenting the material in English (Mein & Esquinca, 2014). The results of the research demonstrate the importance of continuing to provide language spaces for students in order to achieve higher levels of math and science academic outcomes; leading to more STEM career possibilities (Mein & Esquinca, 2014).

Attitudes and Beliefs of Dual Language Graduates

Lee (2006) surveyed middle school students that had participated in dual language or transitional bilingual education programs for a period of their educational experience. The results of the study indicate that 79% of students believed that bilingual education did not impede their ability to learn academic English (Lee, 2006). When asked if bilingual education enhanced their educational experience, 90% reported that it did and 71% reported that learning two languages increased their cognitive skills and self-worth. In a recent study that measured dual language middle level students and their perceptions of bilingualism, students felt favorably about their bilingualism in both qualitative and quantitative measures (Lindholm-Leary, 2016). Overall, students showed an 86% approval rate for their bilingual education (Lee, 2006).

Bearse and de Jong (2008) conducted a study to measure secondary students' perceptions of their dual language program. The program had a 50:50 alternate week model, then Spanish

coursework diminished significantly in middle school and the high school had one course of Spanish Language and Literature. Overall, students reported very positive responses to their experience in the program, particularly at the elementary school where the languages were given equal time. The study noted that students felt the language opportunities were diminished over time to the point that in high school it didn't seem like a two-way program. Both Anglo and Latino students believed learning two languages was important for college and career. Furthermore, Latinos identified family roots as an additional reason to be bilingual. Although one of the goals of dual language immersion schools is to promote biculturalism, most Anglo respondents did not identify as "bicultural".

In a study of student perceptions of bilingualism, Lindholm-Leary (2016) examined data from 788 students of dual language programs in Spanish and Mandarin. The students represented 11 different schools and were in grades five through eight. In addition to a student perceptions questionnaire, students were also given an opportunity to design a bilingual program themed advertisement or essay, and take tests in Spanish and English on the Stanford Foreign Language Oral Skills Evaluation Matrix (FLOSEM).

The students' advertisements and essays were overwhelmingly positive and addressed career opportunities, post-secondary themes, economic advantages, and academic challenge. Along with external citations, students expressed internal motivations including sentiments of pride, enjoyment, and desire to learn in their essays and advertisements (Lindholm-Leary, 2016). In examining student perceptions of their bilingual abilities, students responded favorably to survey items on bilingual language proficiencies and abilities. Corroborating earlier studies, the study also found reclassified ELLs to have the highest levels of bilingualism as indicated by the

FLOSEM and self-reporting. In the area of perceived cognitive advantages, the data suggests that the higher the students' level of bilingualism, students reported more cognitive advantages.

Finally, the study inquired about students' bilingualism, relationships, and social interactions. The study found that bilingual students in dual language programs believed their ability to communicate in two languages helped the students: better communicate with others from the target language, help others in social situations, and help in communication with family members. When considering their non-dual language peers, about one-third of students in this study reported that they have Hispanic or Chinese peers that are unable to communicate in the native language of their family (Lindholm-Leary, 2016).

Conclusion

The purpose of a literature review is to "demonstrate an author's knowledge about a particular field of study, including vocabulary, theories, key variables and phenomena, and its methods and history" (Randolph, 2009). This literature review is specific to K-12 Latino achievement, examination of outcomes for Latinos and Latino ELLs in dual language programs, outcomes for Latino graduates of dual language programs, and attitudes and beliefs of dual language learners.

Dual language education data should be considered when we look at the historical underachievement of Latino students in traditional models of American education systems. With a rapidly growing Latino population it is critical that the educational needs of Latino are addressed (NCES, 2010; US Department of Labor, 2012), especially since the outcome indicators for Latino students are far below Anglo and African American peers (ACT, 2011; NAEP, 2013; Pew Hispanic, 2012). Latino students are less likely to enroll in four-year colleges and much less likely to complete a degree in STEM-related professions (Pew Hispanic, 2014;

NCES, 2010). The Presidential Advisory Commission on Educational Excellence for Hispanic Americans (2003) considers the mis-education of Latinos a major constraint to the US economy.

The literature on successful dual language models is substantial. Schools have shown success for all groups of students in various models of dual language immersion schools alike and in multiple languages (Collier & Thomas, 2004; Cummins, 1996; Krashen, 1999; Lindholm-Leary, 2012; Lindholm-Leary & Howard, 2008; Mora et al., 2001). The success of these models is across a broad spectrum of students including: Latinos, English Language Learners, African-Americans, Anglo, ESL Special Education students, gender, low SES, and other diverse groups (Lindholm-Leary, 2012; Lindholm-Leary & Howard, 2008; Mora, et al., 2001).

Dual language programs provide culturally responsive education for Latino students (Collier & Thomas, 2004; Cummins, 1996; Krashen, 1999; Lindholm-Leary, 2012; Lindholm-Leary & Howard, 2008; Mora et al., 2001). Dual language programs not only provide the essential components of native language instruction; they produce high academic outcomes for students. Students that attended dual language programs were English language proficient and proficient in an additional language (Lindholm-Leary, 2001; Lindholm-Leary & Borsato, 2005, 2006; Lindholm-Leary & Ferrante, 2005 & Lindholm-Leary & Hernández, 2011).

For native Spanish speaking Latino students, dual language programs may reduce barriers and provide the necessary Spanish language component to preserve communication within families; therefore, increasing parents' access and ability to be engaged in the education of their children (Becerra, 2012; Gandara, 2010). The literature indicates that elementary students, as a whole and within subgroups, perform at least as well or better in dual language programs compared to traditional English-only settings (Collier & Thomas, 2004; Lindholm-Leary & Block, 2010; Lindholm-Leary & Borsato, 2005; Lindholm-Leary & Hernandez, 2011).

Chapter III

Design and Methodology

Introduction

This study examines the differences between Latino/Latino ELL high school dual language students and Latino/Latino ELL high school students that did not attend a dual language program. Guiding the design of the research was the Threshold Theory proposed by Cummins (1976). Cummins offers a theory citing that children need to have an age-appropriate level of competency to efficiently gain a second language and through this scaffolding will achieve balanced bilingualism. Data for this study comprised Latino students at the secondary level that had participated in a dual language program for at least six years, as well as Latino students that did not have a dual language program experience or attended less than six years.

A total of 78 respondents are included in this study. Forty respondents are Latino/Latino ELL high school dual language participants and 38 respondents are Latino/Latino ELL high school students that had little or no dual language program experience. The difference between the groups is their participation in a dual language immersion program.

A quantitative methods design was utilized to answer the research questions that measure the academic outcomes, language proficiency, post-secondary aspirations and the attitudes and beliefs of program participants of 78 Latino students using a paper and pencil survey. The research questions for this study included:

1. What, if any differences exist between Latino dual language immersion students and Latino non-dual language students in the areas of academic achievement and college prep coursework as measured by self-reported grades, GPA, and completed coursework?

2. What, if any differences exist between Latino dual language and Latino non-dual language students in their reports of likelihood in enrolling in post-secondary education and career path interests?

3. What, if any differences exist between the self-reported levels of Spanish and English proficiency between dual language program participants and the comparison group when examining native Spanish speaking students?

4. What are the attitudes and beliefs that high school Latino dual language students have about their dual language program experience?

The survey used for this research was originally designed and used in research by Lindholm-Leary (2003, 2016). The survey has been edited and formatted by the author of this study. The survey items and overall survey was validated prior to use using methods described by Lynn (1986) and Polit and Beck (2006). This included the collection of data from dual language experts and their rating of the survey items further described in the Instrument Validation section below. The validated surveys were distributed to participating districts in a western state that have dual language programs and have a Latino student representation of 30%-85% (Oregon Department of Education, 2015).

The data was analyzed using a Mann-Whitney *U* statistical analysis to compare ordinal data between the two independent groups. The Mann-Whitney *U* statistic is comparable to the t-test, but provides an analysis for data that is non-parametric, or data that does not assume equal distributions and doesn't use scale or ratio data (Charles & Mertler, 2002; Tanner, 2016). Most of the data analyzed in this study was ordinal data, data that uses a scaled ranking. In this case, questions were answered with Likert scale responses of 1-4 that indicated levels of agreement. In addition, descriptive statistics were utilized to analyze nominal data collected from the self-reporting respondents. The nominal data collected from respondents included general

demographic information such as: gender, grade level, number of years in dual language, ethnicity, mother's education, and native language. The descriptive statistics provided analysis for means, standard deviations, percentages and frequency for the aforementioned nominal data. Like an independent t-test, the Mann-Whitney U also necessitates the use of independent groups, meaning that the respondents can only belong in group one or group two, but their data cannot belong in both groups. The Mann-Whitney *U*, using independent groups, provides a statistical analysis to determine differences between the two groups (Tanner, 2016).

Research Design

This causal research study analyzed differences between dual language Latino students and non-dual language Latino students. Due to the time and resource constraints of this research, the participating districts and respondents were not randomly selected and may not represent a cross-section of Latino high school students. Although this design type may add additional risk to validity and generalizability, it was determined to be the best design choice since the groups were pre-determined based on enrollment in selected district dual language programs. In addition, the only students in the chosen districts that were potential respondents, were students that were in the classes selected by their school's administrator that returned their parental consent form. The treatment group was defined as Latino high school dual language participants and the control group consisted of Latino high school students who had not participated in a dual language program, but returned a parental consent form.

To analyze the data, the researcher selected a quantitative methods design. This methodology was chosen as the best way to analyze 78 surveys composed of non-parametric data, in this research, data that used Likert scale survey items. The teacher tracked the returned

consent forms on the class roster and then on a date selected by the teacher, provided each approved student a paper and pencil survey to be completed in a single class period.

The results of the surveys were analyzed using dual language program participation and bilingual proficiency as the independent variables and academic, language proficiency and attitudinal outcomes as the dependent variables.

Participants

A total of 102 students from two different high schools in a western state completed surveys that were given in class. Of the total respondents, 90 met the inclusion criteria as outlined in Table 2, Criteria for Inclusion, for the total Latino high school sample. Forty met the requirements for the Latino dual language high school sample and 38 met the requirements for the control group. Twelve respondents of the 90 respondents skipped the question that determined dual language participation. The question of dual language participation was directly related to the independent variable that determined the treatment and control groups. Without this key response data, respondents that did not answer the dual language participation question could not be included in the study, therefore, a total of 78 respondents were included in this study.

Table 2

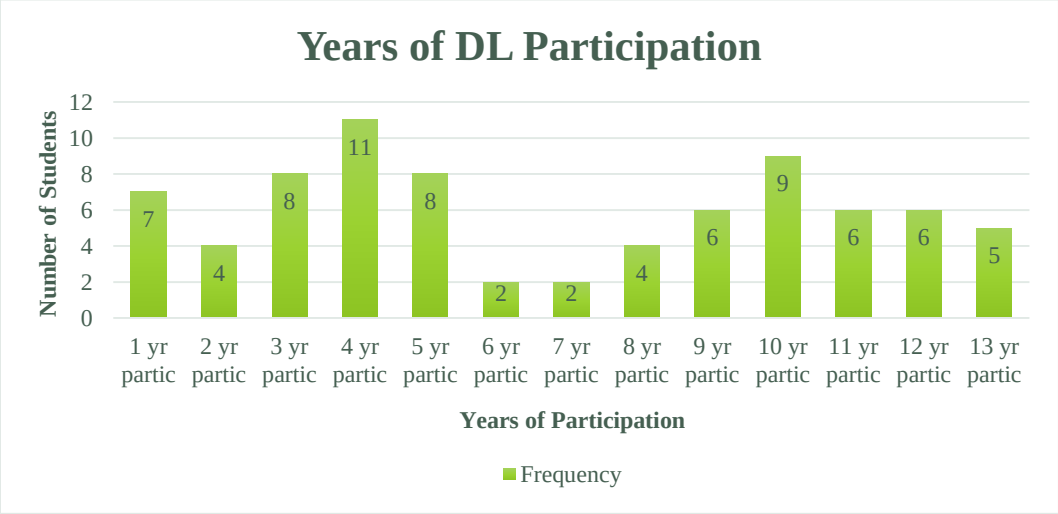
Criteria for Inclusion

Treatment Group	Control Group
Dual language program participant ≥ 6 years	Dual language program participant ≤ 5 years
Ethnicity indicated as Latino	Ethnicity indicated as Latino
Currently enrolled as a high school student in grades 9-12.	Currently enrolled as a high school student in grades 9-12
Returned parent consent to participate	Returned parent consent to participate

Respondents that met the inclusion criteria were asked about their participation in a dual language program. Respondents selected yes or no on the survey and then were asked to circle the grade levels that they attended. The number of years for each respondent were calculated and are represented in Figure 4, Years of Dual Language Participation.

Figure 4

Years of Dual Language Participation

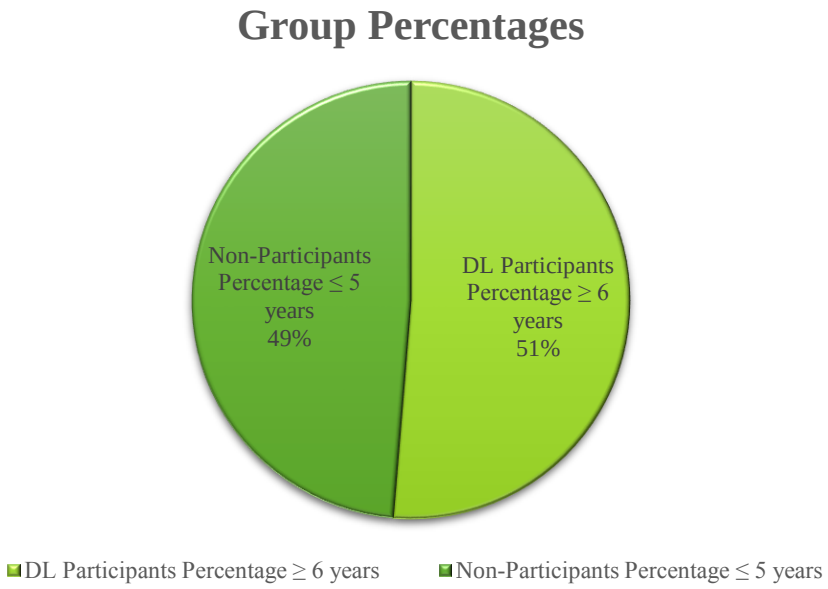


With the current study defining participation as six or more years enrolled as a dual language student, the total respondent group of 78 was divided into two groups. As illustrated in Figure 5, Group Percentages, the group of non-participants, those indicating five or less years of participation, equaled 49%, (n=38). The group of participants, those indicating six or more years of participation equaled 51%, (n=40). Thus, providing a balance between the groups for data analysis as well as a research-based point on the language acquisition continuum in dual language programs (Collier & Thomas, 2004; Lindholm-Leary & Howard, 2008).

Demographic data for this research included 78 Latino respondents from two high schools in a western state that have K-12 dual language opportunities. Dual language respondents' data indicated that 55% identified as female, 45% identified as male, 45% were junior and seniors, and 65% reported that Spanish was the first language spoken to them. Non-dual language respondents' data indicated that 55% identified as female, 42% identified as male, 50% were juniors and seniors, and 68% reported that Spanish was the first language spoken to them.

Figure 5

Group Percentages



The cooperating high schools reside in districts with K-12 dual language programs with dual language immersion programs in their respective districts. This study measured the respondents self-reported language proficiency in English and Spanish and provided comparative data.

Application and approval for this study was granted through Northwest Nazarene University's Human Research Review Committee (HRRC) to ensure that human participants were protected. In addition, the author completed "Protecting Human Research Participants" training through the National Institute of Health, see Appendix D. To protect the anonymity of the cooperating districts, pseudonyms have been used. No personally identifying student information was attached to individual student surveys.

Data Collection

Written approvals to conduct research in these school districts was provided by district superintendents as noted in Appendix E and F. The districts that represent the sample schools

have district populations of 5,682 for Valley School District and 20,719 for Mountain School District (Oregon Department of Education, 2015). Of the two cooperating school districts, one had a traditional high school and the other had smaller interest/career-based high schools.

The schools' mean Latino population was 68%, and the schools included in the study were rated a level 3 or 4 on a 1-5 point scale for the state of Oregon during the 2013-2014 school year. The rating scale defines a level one being the lowest rating possible and a level five being the highest rating possible. This level further identifies the schools as being average to above average in academic areas and student growth (Oregon Department of Education, 2015).

Table 3

Sample Schools' Demographics

School	Latino	English Language Learners	Economically Disadvantaged	Latino Graduation Rate
Mountain	41%	26%	55%	75%
Valley	94%	91%	>95%	88%

(Oregon Department of Education, 2015)

The Latino dual language participants in this study were asked to respond to a paper survey with 46 response items during one of their dual language classes. The non-dual language Latino participants were asked to take the survey as part of a general education course. The instructor from each of the classes read the assent form aloud that was prepared by the author of this study. The assent stated that participation was voluntary and that data collected from this survey was anonymous. Students were provided with sample questions information from the survey, informed of their right to withdraw at any time, and that there were no known risks. In addition, students were informed that the purpose of the survey was to advise education practices for Latino students (See Appendix G). Students who chose not to participate or did not receive

parental permission were provided an alternative, non-graded assignment from their classroom teacher.

Upon district superintendent approval, district and school administrators of the sample schools were contacted by the author to obtain permissions to gather data in the aforementioned districts. The author received site-based signatures from district superintendents and made personal contact with building administrators as noted in Appendix H and I. The building administrators were asked to identify teachers that taught dual language courses and teachers in general education that would be willing to proctor the survey and act as research assistants for the purposes of this research. Upon identification of cooperating teachers, the author made initial contact via phone call and email to discuss the nature of the research and identify the best method to collect parent permissions for students. Following the phone conversation, an email was sent to the teacher and building administrator of each school to document the conversation and outline the next steps that included parent permissions, survey distribution, survey collection, and return of surveys (See Appendix J). The author met in person with each district assigned administrator.

Multiple classes from each district agreed to participate and were administered a paper and pencil survey. A causal comparative research design was used to divide Latino students between dual language participants and non-dual language participants. Causal comparative research does not use an intervention during the course of the study, instead the respondents are grouped based on an identifying characteristic or variable. In this study, respondents were grouped by their answer to the dual language participation survey questions. Causal comparative research is not as robust as an experimental design and can only provide association between variables versus the influences that can be determined in an experimental design (Creswell, 2015)

Instrument

The instrument was a compilation of survey items created by Dr. Kathryn Lindholm-Leary (2003, 2016) and was revised and reformatted by the author in accordance to the Research Activity Timeline reference in Figure 6. Although this instrument has been used in previous studies to collect data on dual language immersion students, it was the first time the survey has been used to compare high school dual language Latinos with high school non-dual language Latinos.

The instrument included items related to students' attitudes about the dual language program and its influence on: student confidence, challenging programs, post-secondary intentions, and Spanish language usage. Approximately half of the survey consisted of 4-point Likert scale items and the other half included close-ended questions. The Likert portion of the survey measured respondents' answers with SD indicating Strongly Disagree, D indicating Disagree, A indicating Agree, and SA indicating Strongly Agree. The author chose the four point Likert scale to eliminate an undecided or neutral choice. The 5-point Likert scale includes a neutral option (Polit & Beck, 2006). The inclusion or exclusion of the neutral option is widely discussed; however, Leung (2011) found "no differences between Likert scales using four, five, six and eleven points in the areas of mean, standard deviation, item correlations, reliability, exploratory factor analysis, or factor loading" (p. 419). The results included the analysis of the neutral option that is found in the five and eleven point scales.

The close-ended questions provided response options that were quantified during analysis (Creswell, 2015). For each of the close-ended questions the authored assigned a number corresponding the response levels. For example, on the language proficiency questions, a

number one was assigned to the lowest level and a six to the highest level of self-rated proficiency.

Figure 6

Research Activity Timeline

The survey instrument created by Lindholm-Leary (2003) consisted of several distinct sections as illustrated in Table 4, Survey Components and Design. Section 1 solicits respondent demographic information. Section 2 of the survey asks respondent about high school achievement and post-secondary intentions. Section 3 elicits responses on attitudes and beliefs toward dual language program participation from dual language participants, and Section 4 addresses respondents' Spanish and English language proficiency. The data collected from respondents was inclusive of the entire survey; however, the analysis for Section 3 and Section 4 only included respondents based on the original research questions. For example: The third research question inquires about the differences in English and Spanish language proficiency for native Spanish speakers. Although data was collected in all areas for all respondents, data analyzed for this question only used respondents that indicated they were native Spanish speakers. Thus, not all respondents' data was analyzed for each question.

Table 4

Survey Components and Design

Section	Theme	Sample Question	Data Type
1	Demographic information	What do you consider your home language or the language first spoken to you by your parents? (close)	Nominal Scale
2	High School Achievement	List AP, IB or Community College courses you have taken	Nominal Scale
3	Program Attitudes & Beliefs	I'm glad that I participate(ed) in the dual language program. (Likert 4-pt, Strongly Disagree to Strongly Agree)	Ordinal
4	Language Proficiency in Spanish/English	How would you rate your ability to read in Spanish? (4-pt Likert, Not at all Fluent to Very Fluent)	Ordinal

Instrument Validation

Polit and Beck (2006, p. 489) offer a 3-point definition of content validity that is a compilation of their work and others.

1. ''...the degree to which an instrument has an appropriate sample of items for the construct being measured'' (Polit & Beck, 2004, p. 423).

2. ''...whether or not the items sampled for inclusion on the tool adequately represent the domain of content addressed by the instrument'' (Waltz, Strickland, & Lenz, 2005, p. 155)

3. ''...the extent to which an instrument adequately samples the research domain of interest when attempting to measure phenomena'' (Wynd, Schmidt & Schaefer, 2003, p.509).

To validate the survey, the author administered the survey to six evaluators familiar with dual language immersion research as outlined by Lynn (1986). The evaluators scored each

survey response item on a 4-point Likert scale. The evaluators were provided with the purpose of the survey and asked to determine the relevance of each question with 1 indicating "Not Relevant", 2 indicating "Somewhat Relevant", 3 indicating "Quite Relevant" and 4 indicating "Very Relevant". The questions were formatted on a spreadsheet and evaluators indicated their choice by highlighting the cell that corresponded with their selection. The analysis of the responses met the author's pre-determined inter-rater reliability for each question of 83%. This pre-determined percentage required that a minimum of five out of six raters agreed on the survey question. With six to ten evaluators the minimum acceptable percentage of inter-rater reliability is 78% (Lynn, 1986). Thus a content validity score of 83% met the pre-determined rate. In addition to item analysis and evaluation, Polit and Beck (2006) suggest that content validity should include an analysis and evaluation for the survey as a whole. Polit and Beck (2006) recommend a 90% average agreement from the raters. The survey used for this research had an overall content validity score of 95% average agreement from the raters. This was determined by averaging the "quite relevant" and "relevant" scores for all of the survey questions to calculate an overall score. The validation form can be referenced in Appendix K.

Instrument Reliability

In the Dual Language Impact Survey, respondents were asked a series of 46 questions in four different sections that included: demographic information, high school achievement, language proficiency and attitudes/beliefs toward their dual language program. The High School Achievement section consisted of ten questions that included: self-reported GPA, grades, coursework taken and post-secondary interests. A Cronbach's alpha was calculated to test the reliability of the survey items. Cronbach's alpha is widely used to determine reliability and determines the internal consistency for survey items (Tanner, 2012). A measure of reliability is

crucial to determining if the scale sections are measuring the same "underlying attributes" and minimizing errors (Pallant, 2016, p. 6). This section of the survey, High School Achievement as illustrated in Table 5, demonstrated a low level of internal item consistency with a Cronbach's alpha of .541. Although DeVellis (2012) as cited in Pallant (2016) notes that an alpha coefficient of .7 or greater is preferred; the number of items on the scale can skew the Cronbach value. This scale only had ten items and would be considered a short scale; therefore, the Cronbach value of .5 is common and an examination of the mean inter-item correlation is necessary (Pallant, 2016). This scale had an inter-item correlation of .13, less than the recommended .2 to .4 (Briggs & Cheek, 1986). A review of the Item Total Statistics indicates that deleting Item 10, would raise the alpha coefficient to .612. Item 10 is the only item on this scale that had a negative corrected item-total correlation (-.320). Item 10 was not deleted from the data analysis and as indicated in the results section, the items in this section of the survey did not indicate any significant differences between groups.

Table 5

Item-Analysis from SPSS Output, High School Achievement

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Math Courses	27.6765	23.928	0.505	0.430	0.470
Science Courses	27.4458	26.214	0.136	0.387	0.537
AP IB CC	26.7535	18.805	0.388	0.683	0.456
Post Sec Plan	26.0227	27.512	0.197	0.333	0.536
Expect Major	26.715	17.465	0.436	0.695	0.432
Expect Career	26.6765	19.639	0.332	0.710	0.482
GPA	26.6154	25.526	0.425	0.842	0.499
Math Grade	27.3304	24.383	0.323	0.730	0.496
Science Grade	26.9458	26.916	0.068	0.836	0.550
ELA Grade	26.9842	30.470	-0.320	0.679	0.612

	Mean	Minimum	Maximum	Range	Max/Min	Variance
Inter-Item Correlations	0.13	-0.542	0.812	1.354	-1.499	0.106

	N	Mean	Variances	SD
Scale Statistics	10	29.9073	28.292	5.31904

Note. GPA = grade point average; ELA = English language arts; AP = advanced placement; IB = international baccalaureate; CC = community college

In a second section of the survey, respondents were asked a series of 22 questions regarding their self-reported language proficiency in Spanish and English. This section used a 4-point Likert scale with SD signifying “strongly disagree”, D signifying “disagree”, A signifying “agree”, and SA signifying “strongly agree”. A Cronbach’s alpha was calculated to test the reliability of the survey items. This section of the survey demonstrated a high level of internal item consistency with a Cronbach’s alpha of .88. Using guidance from DeVellis (2012) as cited in Pallant (2016), an alpha coefficient of .7 provides a strong indicator of internal item

consistency using Gliem and Gliem (2003) interpretation and reporting for Likert scales. In this section the Item-Total Statistics indicated that questions associated with English proficiency items had the lowest Corrected-Item Total Correlations with a Mean of .17 compared to Spanish proficiency items with a Corrected-Item Total Mean of .56 as noted in Table 6 below.

Table 6

Item-Analysis from SPSS Output, Language Proficiency

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Spanish Grammar	67.9205	69.936	0.426	.	0.878
Spanish Fluency	67.7273	66.178	0.534	.	0.875
Spanish Vocab	67.7614	69.448	0.430	.	0.878
Reading Spanish	69.3750	72.973	0.372	.	0.878
Reading English	68.9205	76.741	0.039	.	0.889
Between Languages	68.6477	75.058	0.322	.	0.879
Read/Write English	68.6364	75.636	0.185	.	0.882
Read/Write Spanish	68.8523	70.702	0.659	.	0.871
English Written Skills	68.6023	74.932	0.266	.	0.880
Translate btn Languages	68.8182	71.461	0.578	.	0.873
Span Peer Conversation	68.6250	70.605	0.596	.	0.872
Span Obtain Information	68.6364	71.338	0.737	.	0.871
Span Feel/Emotions	68.6705	70.959	0.637	.	0.871
Span Express Opinion	68.6591	71.836	0.662	.	0.872
Span Interpret Topic	68.7614	70.736	0.672	.	0.871
Span Present Information	68.8750	70.088	0.657	.	0.870
Bilingual	68.5568	71.537	0.510	.	0.874
Comfort Spanish Speak	68.7045	70.923	0.432	.	0.877
Span w/ Fam/Friends	68.7159	69.585	0.627	.	0.871
Spanish in Class	68.9659	68.700	0.668	.	0.869
Spanish to Read	68.9545	68.113	0.610	.	0.871
English to Read	68.4659	74.987	0.193	.	0.883

	Mean	Minimum	Maximum	Range	Max/Min	Variance
Inter-Item Correlations	0.274	-0.182	0.723	0.905	-3.979	0.039

	N	Mean	Variances	SD
Scale Statistics	22	71.8977	78.001	8.83181

The final section of the survey, Attitudes and Beliefs toward the dual language program, demonstrated an acceptable level of internal item consistency with a Cronbach's alpha of .796 as illustrated in Table 7. DeVellis (2012) as cited in Pallant (2016) notes that an alpha coefficient

of .7 or greater is preferred; however, the number of items on the scale can skew the Cronbach value. This scale only had four items and would be considered a short scale; therefore, the reliability results should be interpreted with caution (Pallant, 2016).

Table 7

Item-Analysis from SPSS Output, Attitudes & Beliefs Toward Dual Language Program

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Glad Participated	9.4505	2.828	0.675	0.480	0.714
Bilingual More Creative	9.4945	2.853	0.555	0.341	0.771
2 Lang Confidence	9.6593	2.716	0.634	0.418	0.731
Enjoy Span/English	9.7692	2.846	0.570	0.390	0.763

	Mean	Minimum	Maximum	Range	Max/Min	Variance
Inter-Item Correlations	0.496	0.369	0.608	0.239	1.647	0.007

	N	Mean	Variances	SD
Scale Statistics	4	12.7912	4.678	2.1629

Analytical Methods

Using the quantitative data analysis process as defined by Creswell (2015), the methods began with collecting data, coding the survey data, selecting analysis software, data entry and cleaning the data.

Data collection binders were prepared by the author to ensure that the processes used in each school by each teacher were analogous. The data collection binders were hand delivered by the author to each district administrator. The author trained the administrators on the five main sections of the binder including: confidentiality agreements, parental consent forms, consent

tracking, surveys/assent forms, and scripts. The administrators chose and trained teachers in each of their respective schools. The color coded sections and step by step, check-off instructions in each binder provided the teachers with clear expectations following their initial training. The data collection binders from Valley High were picked up by the author and the data collection binders from Mountain High were delivered to the author via FedEx. All data collection materials were back in the possession of the author approximately 4 weeks following the initial training.

Upon receiving the data collection binders, the author confirmed that parental consents and confidentiality agreements were signed and retained in each binder. The surveys were then given an identification number that identified the school, binder number, and survey number. In total, 102 surveys were collected. Following the numbering of surveys, each variable on the survey template was given a code and each possible response was given respective numbering.

Item responses were entered into the spreadsheet in SPSS (IBM SPSS, 2016). Each variable was coded with a question number being assigned to a variable number and text that included the section lettering, question number and short description (Creswell, 2015). The variable names, labels, values, and data type were entered into IBM SPSS Statistical Software Version 24 (IBM SPSS, 2016) titled, “DL Impact”.

When determining values for each of the variables, the Likert scale ordinal items were coded using a 1-4 scale referenced in the Instrument section of this chapter with one indicating the lowest agreement and 4 indicating the highest agreement. The close-ended, ordinal items were scored with a similar system assigning a 1-4,1-5, 1-6 code depending on the number of responses provided. As suggested in Creswell (2015), the data was then sorted by cases in SPSS

(IBM SPSS, 2016) to determine if any data sets are out of range or have missing entries. Missing entries were set to zero.

Using a crosswalk developed by the author, the survey questions were aligned to the research questions. This provided a systematic tool to associate the dependent variables of each section to the independent variable of program participation for data analysis. In final form, the crosswalk consisted of each survey question and its corresponding survey number on the left and on the right was an indicator of which research question the survey question was aligned to. The result of this crosswalk tool was two-fold. First, it provided the author with a tool to determine if any survey questions had been included that did not directly align the to the research questions. Secondly, the crosswalk provided a reference for the author when analyzing dependent variables for each research question. Through this process, the author did identify survey questions that did not directly align with the research questions. The questions were cut from the final survey form.

Several different statistics were utilized while analyzing the data. The first measure used descriptive statistics of central tendency to obtain basic demographic responses and nominal data. Examples of this data include: student ethnicity, gender, and enrollment in dual language program. As the purpose of this study is specifically to answer research questions that measure variables for Latino students, the twelve surveys were deleted from the data set and then the data set was renamed DL Impact Latino. The twelve surveys that were deleted indicated a response to ethnicity other than Latino.

The independent variable of dual language program participant needed to be controlled in a way that could determine two groups. The original question had respondents circle the number of years that they participated in a dual language program. To divide this scale data item into

two groups, the author collapsed the variable using Visual Binning in SPSS (IBM SPSS, 2016). Visual Binning allows a variable to be grouped into two groups based on the author's cut point and therefore creates a new variable that in this case, becomes the independent variable. The cut point in the Visual Binning option was set at six. Group 1, non-dual language participant, signified the respondent was in a dual language program 0-5 years and group 2, dual language participant, signified the respondent participated in a dual language program for 6-13 years. Thus, creating a new 2 level variable "D6 Binned at 6". The cut point of six years was a research-based decision based on the language acquisition process in dual language programs (Collier & Thomas, 2004; Lindholm-Leary & Howard, 2008).

As indicated in the introduction of this chapter, The Mann-Whitney *U* test was selected as the statistical test to analyze non-parametric data with ordinal dependent variables. The Mann-Whitney *U* is an alternative to the independent t-test when the sample is not large and normally distributed (Nachar, 2008). Although the sample size in this research was large enough to use an independent samples t-test, normal distributions could not be assumed with the use of ordinal data.

Limitations and Delimitations

Creswell (2015) defines limitations as "potential weaknesses or problems with the study identified by the researcher" (p.197). Cresswell (2015) states that limitations provide the reader with information regarding generalizability and replication considerations. When considering the limitations of this study, the author identified four major areas that could affect generalizability and replication.

1. Causal research design
2. Parental consent

3. Typographical error on survey

4. Self-reported grades, GPA, post-secondary intentions

First, the groups were not randomly chosen and randomly assigned for this research. This design poses an additional validity risk based on the fact that the groups might already have initial factors that determined their placement (Creswell, 2015). It is reasonable to believe Latino students who were enrolled in the sample dual language programs have parents that may have values, beliefs and educational levels that differ from other Latino parents. This difference has been identified in other studies about parents that choose dual language programs (Block, 2012). The author included questions in the survey that can be analyzed to minimize the validity risk between the two groups. These questions were included:

1. What is the highest level of education your mother has? (Hernandez & Napierala, 2014)
2. What do you consider you home language or the first language spoken to you by your parents?

For this survey, the question regarding mother's highest level of education was used as it has been found to have strong ties to academic success and socioeconomic status. In a study published by the Foundation for Child Development, Hernandez and Napierala (2014) cite the following:

> "Among children with a parent in the home, the vast majority lives in mother-only or two-parent families; only four percent live in father-only families with no mother present. This approach provides a consistent measure of parental education for most children who live with at least one parent, that is, for the 96 percent of these children who have a mother in the home. Because mothers and fathers tend to have similar

> educational attainments, whenever possible this report uses mother's education as a proxy for parental education (p. 3).

The second identified limitation was the requirement to obtain parental consent from high school students. The author did not have any personal contact with parents and trusted classroom teachers to convey the importance of the survey, as well as student reminders and collection of consent forms. This is a limitation in the way that parents do not know the author, have not developed any trust with the author, and may not have been comfortable allowing their child to volunteer for the study. The returning of consent forms and the students that may be most likely to return them is also a limitation.

The third limitation is reported as an error that was noticed on the survey following the delivery of the data collection binders. The error is on the last page and has the letters "SD" in the column of "Strongly Agree". Although this could have been confusing for the respondents, it is probable that the respondents read the title at the top of the column that read, "Strongly Agree". Some respondents corrected the error by editing the letters to "SA". Although the error is an important limitation to note, this section had the highest rating of reliability, as referenced in Table 6.

The fourth limitation is the self-reporting of grades and GPA. The number of respondents that disclosed their GPA low for this section, possibly indicating that students did not know their GPA or did not feel comfortable sharing it for this study. High school students may also have an unrealistic or exaggerated estimate of their post-secondary intentions and career choices. Interests, post-secondary enrollment and college majors can change upon high school graduation.

Delimitations as defined by Price and Murnan (2004) are characteristics of a study that the author intentionally added and limits the generalizability to a certain group. Delimitations for this study were the selection of high school students. The students were not randomly selected; they were selected based on their enrollment in a class that was selected by the school's administrator. Second, the narrow geographic region of the study was also a delimitation. The data collected in this study was limited to two suburban school districts in a western state. This could make the results difficult to generalize in other locations. A third delimitation could be the cut point of 6 or more years to be considered a dual language participant. Although the number of years was based on language acquisition research, it doesn't take into account whether the student attended a dual language program consecutively, year after year; or enrolled, left and re-enrolled. An analysis of the raw survey data indicated that there was some inconsistency. Finally, limiting the study to high school students could also limit the generalizability since dual language programs are primarily concentrated in grades K-8.

With this study there was care taken to be culturally sensitive with item selection, wording of the permissions form, translations, and careful selection by school administrators of teachers with culturally responsive reputations with parents.

Role of the Researcher

It is important to acknowledge the author's personal training and experiences that may bias her interpretation of the data. She has completed undergraduate educational coursework in critical pedagogy and social justice and continues to serve in educational capacities with this lens. Through her years of education, Masters of Education (M.Ed) and Education Specialist (Ed.S) degrees, she has taught on the English side of dual language programs and served as a

founder and administrator of a K-9 Spanish/English immersion school. Through this experience, she has first-hand knowledge of positive dual language outcomes at the elementary and middle levels. This research specifically addresses the data for students at the upper secondary level through quantitative analysis of anonymous survey data outside of her institution and region, limiting subjectivity and bias.

Chapter IV

Results

The purpose of this quantitative research was to measure Latino dual language program participants' attitudes and beliefs about their two-way program, language proficiency, intentions to enroll in post-secondary education, secondary coursework, and work/career orientations. This causal comparative research design paired with quantitative methods compared Latino students who participated in a dual language program for six or more years to Latino students that were non-program participants. The definition of non-program participants for this study is zero to five years of dual language program enrollment. The study is driven by four research questions that address the areas of academic achievement, high school achievement, language proficiency, and attitudes and beliefs toward dual language program participation. The data analysis for this study used two independent groups with the exception of the last question, which only used dual language participants to collect program attitude and belief data.

The independent groups data were analyzed using the Mann-Whitney *U*, and were also analyzed to determine if the recommended assumptions were met. Laerd (2015b) recommends the following four assumptions before running the Mann-Whitney *U* test:

1. The data set contains one dependent variable that is measured on a continuous or ordinal scale.
2. The data set contains one independent variable that has two levels.
3. The independent variable has independence of observations.
4. That the distribution of scores between the two levels has a similar shape.

The fourth assumption is critical in defining whether the Mann-Whitney *U* will determine differences in group distribution or differences in group median and mean ranks. If the distribution is different for the groups, then the Mann-Whitney *U* is used to determine whether differences exist in the distribution. If the distribution shape is similar for both groups, then the Mann-Whitney *U* is used to determine differences in the median and mean ranks (Laerd, 2015b, Pallant, 2016). For the purposes of this research, results that indicated $p < .05$ were stated as statistically significant.

The first research question to be examined through this data analysis was:

1. What, if any differences exist between Latino dual language immersion students and Latino non-dual language students in the areas of academic achievement and college prep coursework as measured by self-reported grades, GPA, and completed coursework?

To determine if there were any statistical differences in GPA, grades, and upper level coursework enrollment between Latino dual language participants and non-participants, a Mann-Whitney *U* test was run using SPSS (IBM, SPSS, 2016). The four recommended assumptions for running a Mann-Whitney *U* test were met (Laerd Statistics, 2015b). Data analysis examining the differences between the two groups with the respective variables did not indicate statistically significant differences between the Latino dual language participants and the non-dual language participants, see Table 8 for Medians and Table 9 for Mann-Whitney *U* results.

It is important to note that the respondents' self-reported their core content grades and GPA. When examining the GPA variable, the author referenced data from the Nation's Report Card (2009), that indicated the national average GPA for Latino students was 2.84. The data collected from respondents included in the study resulted in a mean GPA of 3.34 and a range of

2.31-4.08 for dual language participants, n=24 and mean GPA of 3.06 and a range of 1.17-4.00 for non-dual language participants, n=25.

Table 8

GPA and Grade Medians

	Latino			
Variables	DL Participants		non-DL Participants	
	n	*Median*	*n*	*Median*
GPA	24	3.50	25	3.20
Math Grade	40	3.00	37	3.00
ELA Grade	40	3.00	38	3.00
Science Grade	40	2.50	37	3.00
Math Coursework	40	1.00	38	1.00
Science Coursework	39	2.00	37	2.00
AP-IB-CC	17	3.00	16	2.00

Note. GPA = grade point average; ELA = English language arts;
AP = advanced placement; IB = international baccalaureate;
CC = community college; DL Participants = six or more year in a dual language program;
Non-DL Participants = five or less years in a dual language program.

The largest difference in comparing the medians for this group of variables was found with the Advanced Placement, International Baccalaureate, and Community College courses. Although it was not significant at $p < .05$, it should be noted that in the area of academic achievement, this variable had the most notable difference in medians and *U* score as represented in Table 9. Dual language participants had a higher median, 3.0, on the AP-IB-CC, whereas, the non-participants had a median of 2.0 on the same variable (U=88.0, z = -1.777, p = .076).

Understanding that there may be differences based on students' grade level and exposure to high school coursework and opportunities, the author also ran analyses on the variables associated with this research question. The data was run using juniors and seniors as a combined

group to determine if any differences exist for dual language and non-dual language participants. No significant differences were found.

Table 9

Mann-Whitney U Results-GPA, Grades, & Coursework

	U	*z*	*p*
GPA	221.50	-1.574	0.115
Math Grade	711.00	-0.307	0.759
ELA Grade	668.50	-0.991	0.322
Science Grade	735.00	-0.053	0.957
Math Coursework	740.50	-0.204	0.838
Science Coursework	676.00	-0.508	0.612
AP-IB-CC	88.00	-1.777	0.076

Note. GPA = grade point average; ELA = English language arts; AP = advanced placement; IB = international baccalaureate; CC = community college; DL Participants = six or more year in a dual language program; Non-DL Participants = five or less years in a dual language program. $p < .05$.

The second research question examined was:

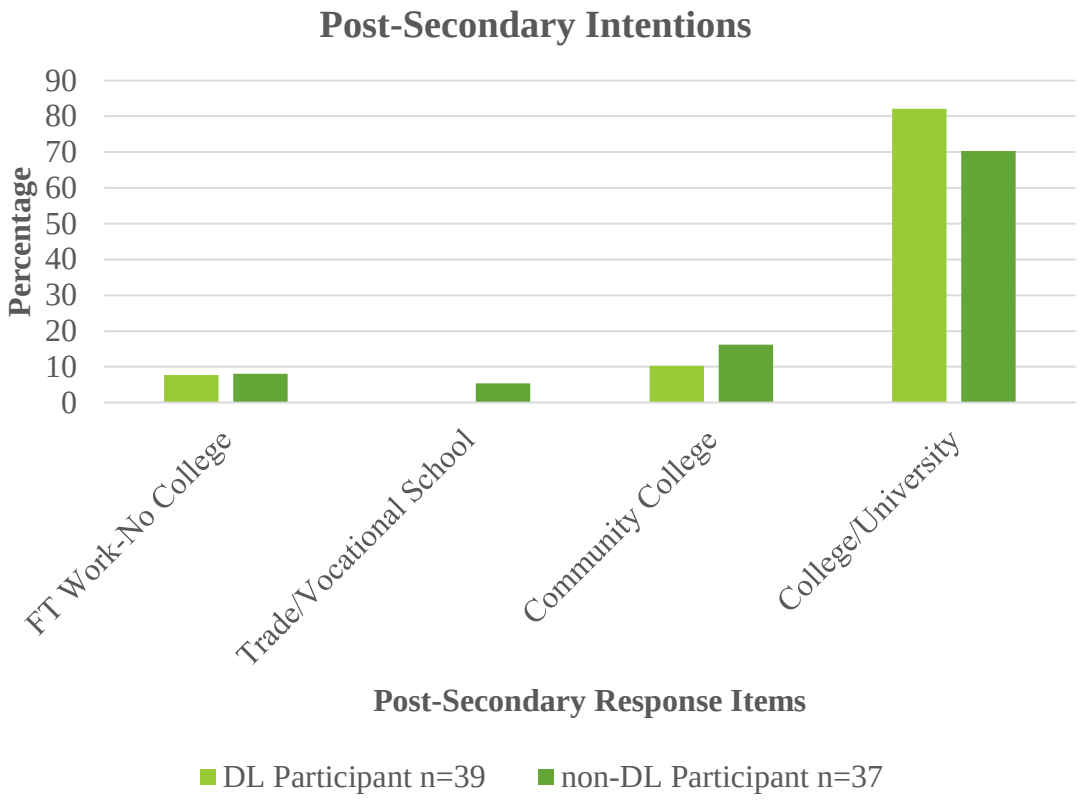
2. What, if any differences exist between Latino dual language and Latino non-dual language students in their reports of likelihood in enrolling in post-secondary education and career path interests?

To determine Latino students' post-secondary intentions, students responded to the survey item "After high school I plan to attend:" The possible responses included: Full-time work-no college, Trade School/Vocational, Community College, or College/University. Using the frequency analysis, there were not any notable differences between the two groups, see Figure 7, Post-Secondary Intentions. To follow up, a chi square test of independence was used to examine the relationship between the two participant groups and the post-secondary intent variable. No significant association was found. Of interest, the majority of students in both

groups, dual language participants and non-dual language participants, intend to enroll in college or university following high school, 82% and 70% respectively.

Figure 7

Post-Secondary Intentions



To determine career path interests, students responded to an open-ended survey question, "What career would you like to have?" Upon review of the item responses, the author developed seven categories. The categories included: Science/Technology/ Engineering, Education, Medicine, Business, Athletics, Criminal Justice, Other/Undecided. Using the frequency analysis, there were some notable differences between the two groups, see Figure 8, Career Interest Frequency. Both Latino groups highly favored the Science/Technology/Engineering category,

this is of interest considering the documented need for more Latinos in STEM careers (Crisp & Nora, 2012).

For dual language participants, 18% (6/33) chose the STEM category and for non-dual language participants, 26% (8/31) chose the STEM category. STEM career paths were tied for the top choice pick for non-dual language participants and third place for dual language participants, Medicine and Undecided ranked first and second, respectively. It could be suggested that the category Medicine could be collapsed into the STEM category. Taking this into consideration, the STEM/Medicine category would receive the highest rank for both groups, see Figure 9, Career Interest Frequency, STEM & Medicine Combined. Dual language participants had a combined category percentage of 88, (*n*=33) and non-dual language participants had a combined category percentage of 52, (*n*=31). In both cases where STEM and STEM/Medicine received the highest responses, it is important to interpret the data with caution as STEM professions encompass a large number of majors and career paths, whereas, an education major for example has fewer career options related to the major.

Two additional points of interest include the education and criminal justice fields. For education, although the percentage is relatively small, 7.5%, it is an important note that only dual language participants chose education as an expected career path. As there is a documented need and shortage for bilingual teachers, this could be an area where additional research is needed (Maria, Cuellar & Battle, 2013).

Figure 8

Career Interest Frequency

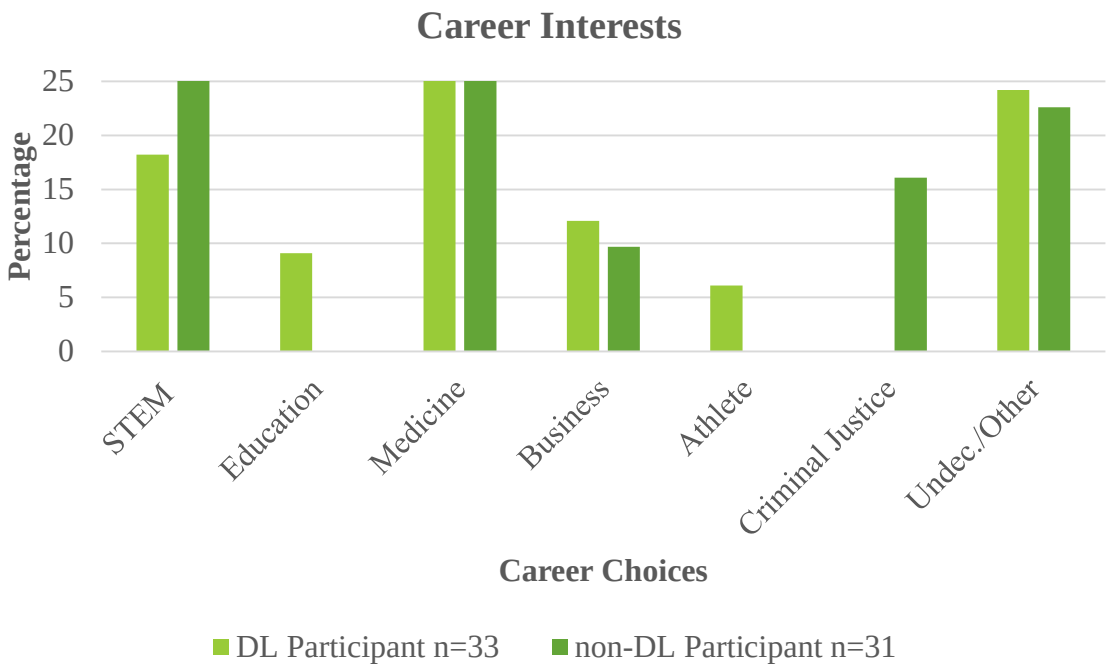
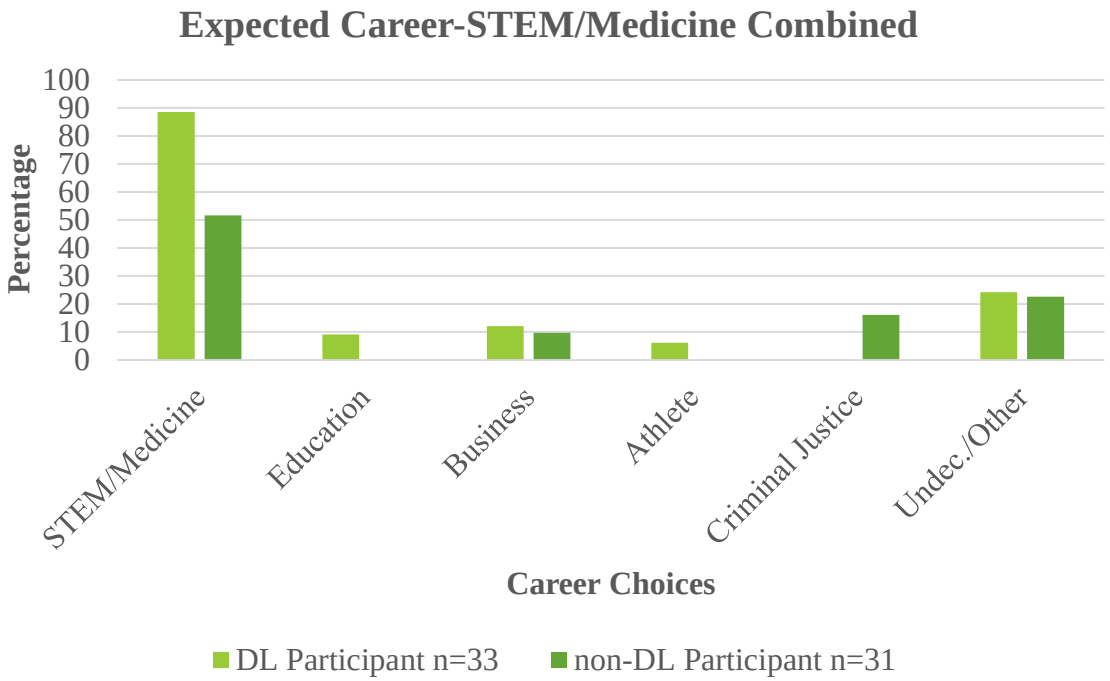


Figure 9

Career Interest Frequency, STEM and Medicine Combined



The third research question examined was:

3. What, if any differences exist between the self-reported levels of Spanish and English proficiency between dual language program participants and the comparison group when examining native Spanish speaking students?

To determine English and Spanish language proficiency for native Spanish speaking students, data analysis was run using the following demographic question: "What do you consider your home language or the language first spoken to you by your parents?" Response items included: Spanish, English, Spanish and English, or Other. Only respondents that selected "Spanish" were included in this analysis. To determine if there were any statistical differences between dual language attendees and non-attendees in the area of English and Spanish language proficiency, a Mann-Whitney *U* was run on the 22 language proficiency questions. Fifteen questions specifically addressed Spanish language proficiency, four questions addressed English proficiency, and three questions addressed both languages. The first five variables, as noted on Table 10, elicited a closed response from six choices and the remaining variables were on a Likert scale of 1-4, with one representing the lowest agreement and four representing the highest agreement. The survey can be referenced in Appendix M.

The four aforementioned assumptions were met for the Mann-Whitney *U* (Laerd, 2015b). Eight of the 15 Spanish language variables indicated significant results as well as two of the three bilingual variables had significant results. None of the English variables had significant values at $p < .05$. In Table 10, the Mean ranks for each variable is reported below. The variables that produced significant results for native Spanish speakers were: Spanish Grammar ($p = .014$), Spanish Vocabulary ($p = .014$), Translate between Languages ($p = .014$), Spanish Peer Conversations ($p = .045$), Spanish to Obtain Information ($p = .015$), Spanish to Express

Feelings/Emotions (p = .014), Spanish Interpreting Topic (p = .021), Spanish Present Information (p = .018), Bilingual (p = .03), Spanish to Read (p = .026).

The results indicate that native Spanish speaking dual language participants have higher levels of Spanish and bilingual proficiencies than native Spanish speakers that did not participate in dual language programs as defined in this study, see Table 11, Mann-Whitney U Results-Language Proficiency in English and Spanish. Questions that indicated statistical differences between dual language participants of six or more years and dual language non-participants, less than six years, can be found in Table 12, Questions with Significant Values. Only survey items with significant findings are listed, but the complete survey with all items can be found in Appendix M.

For this particular analysis, the author chose to report the mean ranks for each variable between the two groups. Although it is common to report the medians of each variable when illustrating the results of a Mann-Whitney *U*, this particular analysis resulted in two variables that indicated significance, though the medians of the two groups were identical. The variables that produced identical medians, but indicated significance were "Spanish Grammar" and "Spanish Present Info". The mean rank provided in Table 10, indicates a significant difference between dual language participants and non-dual language participants on these variables. Therefore, to provide an explanation of the significance the mean rank for each variable is listed. A table with the the medians for each variable can be found in Appendix L. For every variable that indicated significance, the subset of respondents that indicated "Spanish" as their home language and were dual language participants scored higher than non-dual language participants on language proficiency items.

Table 10

Language Proficiency-English and Spanish

	Latino			
	DL		non-DL	
Variables	Participants		Participants	
	n	*Mean Rank*	*n*	*Mean Rank*
Spanish Grammar	26	31.21	26	21.79
Spanish Fluency	26	29.58	26	23.42
Spanish Vocabulary	26	31.08	26	21.92
Reading Spanish	26	27.33	26	25.67
Reading English	26	26.70	26	25.33
Between Languages	26	28.54	26	23.36
Read/Write English	25	28.28	26	23.81
Read/Write Spanish	26	29.48	26	23.52
English Written Skills	26	28.63	26	24.37
Translate btn Languages	26	31.10	26	21.90
Spanish Peer Conversations	26	30.15	26	22.85
Spanish Obtain Info	26	31.02	26	21.98
Spanish Feel/Emotions	26	30.33	25	21.50
Spanish Express Opinion	26	28.25	25	23.66
Spanish Interpret Topic	26	30.15	25	21.68
Spanish Present Info	26	30.31	25	21.52
Bilingual	25	30.02	26	22.13
Comfort Spanish Speak	25	25.58	26	26.40
Spanish w/ Fam/Friends	25	26.96	26	25.08
Spanish in Class	25	26.70	25	24.30
Spanish to Read	25	30.38	26	21.79
English to Read	25	28.90	26	23.21

Note. The variable names are shortened representations of the survey items. The survey may be found in the Appendix M. The first five variables use a 1-6 point ordinal scale and the remaining variables use a 1-4 point ordinal scale. *p < .05

Table 11

Mann-Whitney U Results-Language Proficiency in English and Spanish

	U	*z*	*p*
Spanish Grammar	215.5	-2.462	0.014*
Spanish Fluency	258.0	-1.522	0.128
Spanish Vocabulary	219.0	-2.259	0.024*
Reading in Spanish	316.5	-0.428	0.669
Reading in English	307.5	-0.360	0.718
Between Languages	259.0	-1.462	0.144
Read/Write English	268.0	-1.217	0.224
Read/Write Spanish	260.5	-1.634	0.102
English Written Skills	282.5	-1.147	0.251
Translate between Languages	218.5	-2.488	0.013*
Spanish Peer Conversations	243.0	-2.006	0.045*
Spanish Obtain Information	220.5	-2.422	0.015*
Spanish Feel/Emotions	212.5	-2.426	0.015*
Spanish Express Opinion	266.5	-1.293	0.196
Spanish Interpret Topic	217.0	-2.313	0.021*
Spanish Present Information	213.0	-2.357	0.018*
Bilingual	224.5	-2.173	0.030*
Comfort Spanish Speaking	314.5	-0.228	0.819
Spanish w/ Family/Friends	301.0	-0.511	0.609
Spanish in Class	282.5	-0.629	0.529
Spanish to Read	215.5	-2.220	0.026*
English to Read	252.5	-1.502	0.133

Note. The variable names are shortened representations of the survey items. The survey may be found in the Appendix M. The first five variables use a 1-6 point ordinal scale and the remaining variables use a 1-4 point ordinal scale.

*$p < .05$

Table 12

Variable Names and Questions with Significant Values

Variable Name	Survey Item
SPANISH GRAMMAR	In speaking Spanish, I would rate my grammar as:
SPANISH VOCABULARY:	In speaking Spanish, I would rate my vocabulary as:
TRANSLATE BTN LANGUAGES	I can translate from English to Spanish (or Spanish to English).
	I have the Spanish skills to:
SPANISH PEER CONVERSATIONS	-have conversations with my peers outside of school.
SPANISH OBTAIN INFORMATION	-provide and obtain information.
SPANISH FEEL/EMOTIONS	-express feelings and emotions.
	I have the Spanish skills to:
SPANISH INTERPRET TOPIC	-understand and interpret written and spoken Spanish on a variety of topics.
SPANISH PRESENT INFORMATION	-present information, concepts and ideas to an audience on a variety of topics.
BILINGUAL	I would say that I am: (Not at all bilingual, Somewhat, Mostly, Very Bilingual)
SPANISH TO READ	How would your rate your ability to read in Spanish?

In addition to examining the data for students that selected "Spanish" as their home language, the author analyzed students who selected "Spanish & English" on the demographic question of: "What do you consider your home language or the language first spoken to you by your parents?" The author thought it could be an important independent variable to consider when looking at long-term language proficiencies based on native language, particularly in the areas of Spanish and bilingualism. The outcomes did not indicate significant differences between the two groups, dual language participants and non-dual language participants. Students from both groups that indicated "Spanish & English" as their home language, were not significantly different with respect to the language proficiency variables. Thus, only students that considered

Spanish their home language demonstrated significantly different results between the participants and non-participants in the areas of Spanish language proficiency and bilingual proficiency.

The final question examined for this study was the analysis of the attitudes and beliefs of dual language program participants and their experience as a participant. Analysis for this question only examined the data of dual language participants, participating in a dual language program for six or more years. The fourth research question was:

3. What are the attitudes and beliefs that high school Latino dual language students have about their dual language program experience?

This section of the survey consisted of four items and included questions found in Table 13, Dual Language Attitude and Belief Survey Items and Favorability. To respond to the questions, respondents chose from a 4- point Likert scale: SD indicating "Strongly Disagree", D indicating "Disagree", A indicating "Agree", or SA indicating "Strongly Agree". To analyze the data, the respondents that indicated Agree or Strongly Agree were combined and the respondents that indicated Disagree or Strongly Disagree were combined. All of the respondents that participated in the dual language program for six or more years, defined as program participants in this study, expressed favorable attitudes and beliefs toward the dual language program. With 40 dual language participant respondents, 95% of program participants were glad they participated in the dual language program. This survey item received the highest favorable percentage of the survey items in this section. The dual language respondents also responded favorably on the remaining three survey items. The percentage of dual language participants who believed "learning in two languages has given me more confidence to do well in school" was 85%. The remaining survey items, "being bilingual helps me think in different or more creative ways" and "I enjoy studying in Spanish and English the way I do at school", positive

responses were calculated at 82.5% and 80% respectively as noted in Table 13, Dual Language Attitude and Belief Survey Items and Favorability.

Table 13

Dual Language Attitude and Belief Survey Items and Favorability

Survey Response Item	Favorable Percentage
Learning in two languages has given me more confidence to do well in school.	85%
I enjoy studying in Spanish and English the way I do at school.	80%
I'm glad that I participated(ed) in the dual language program.	95%
Being bilingual helps me think in different or more creative ways.	82.5%

Conclusion

To examine the differences between dual language participants and non-dual language participants in the areas of academics, post-secondary intentions, language proficiency and attitudes toward program participation, the author analyzed data using the Mann-Whitney *U* statistic as well as descriptive statistics. With the four assumptions met for the Mann-Whitney *U,* as defined in the introduction of this chapter, the Mann-Whitney *U* was used to determine statistical differences between the medians and mean ranks of the independent groups. Results that indicated $p < .05$ were noted as statistically significant.

Statistically significant results were found for native Spanish speaking dual language participants and their Spanish language and bilingual proficiency. Thus, native Spanish speaking program participants demonstrated significantly higher levels of Spanish language and bilingual proficiency than native Spanish speakers that did not participate in the dual language program for six or more years. The results of this study also indicated that dual language program participants felt favorably with their dual language experience.

In the area of post-secondary intentions, a majority of dual language participants and non-dual language participants indicated that they intend to enroll in a college or university following high school. The results did not indicate any significant difference between the groups in this area. In addition, both Latino groups highly favored STEM/Medicine career interests. Although these groups were collapsed and encompass a wide array of majors and potential career paths, therefore should be cautiously interpreted, the data suggests that students have an interest in a documented shortage area (Crisp & Nora, 2012)

The data analysis for academic differences between dual language participants and non-participants did not indicate any significant differences in core content grades, GPA, or college credit coursework (AP, IB, or CC). The data did indicate that there were differences between the college credit coursework between the student groups of students, with dual language participants receiving a higher median; however, the results were not significant ($p = .076$)

Finally, dual language participants as defined in this study, felt favorably about their dual language program experience on the four response survey items. Respondents believed that learning in two languages gave them more confidence and allowed them to think more creatively. Dual language participants also agreed that they enjoyed studying in two languages and were glad they participated in the dual language program.

Chapter V

Discussion

Introduction

The purpose of this quantitative research was to measure Latino dual language program graduates' attitudes and beliefs about their two-way program, language proficiency, intentions to enroll in post-secondary education, secondary coursework, and work/career orientations. Much of the published outcomes for dual language research has primarily focused on elementary-age students (Collier & Thomas, 2004; Lindholm-Leary & Genesee, 2010; Lindholm-Leary & Howard, 2010). This research examined academic outcomes, post-secondary intentions, career interests, language proficiency, and program experience, for Latino dual language participants and compared the outcomes to Latino non-program participants. Participants for this study were defined as six or more years of dual language instruction and non-participants were defined as five or less years of dual language instruction. The cut point of six or more years of dual language program instruction was chosen based on second language acquisition and dual language research (Collier and Thomas, 2004).

The theoretical framework for this study was Cummins' Threshold Theory (1976). Cummins offered a theory for dual language acquisition with the principle that children need to have age level proficiency in their native language to efficiently gain a second language. The theory has two thresholds with the final level being balanced bilingualism. Balanced bilingual students demonstrate high levels of competency in both languages and cognitive advantages (Cummins, 1976). Cognitive advantages have been reported in the areas of academic outcomes (Collier & Thomas, 2004; Ricciardelli, 1992).

For this study, high school respondents completed a paper and pencil survey consisted of demographic information, high school achievement, post-secondary intentions, language proficiency in English and Spanish, and attitudes and beliefs about respondents' dual language program experience. The survey was created by Lindholm-Leary (2003, 2016) with edits and reformatting by the author of this study.

Summary of Results

Question I

The first question of this research examined differences for high school Latino dual language participants and high school Latino non-participants in the area of academic achievement. What, if any differences exist between Latino dual language immersion students and Latino non-dual language students in the areas of academic achievement and college prep coursework as measured by self-reported grades, GPA, and completed coursework? The Mann-Whitney *U* statistical test was utilized to determine if there were differences between the two groups and the aforementioned variables. The results did not indicate any statistically significant difference between the groups for these variables.

The study's respondents self-reported their core content grades and GPA. According to data from the Nation's Report Card (2009), the national average GPA for Latino students was 2.84. Though the differences were not significantly different, the data collected from respondents included in the study resulted in a mean GPA of 3.34 and a range of 2.31-4.08 for dual language participants, n=24 and mean GPA of 3.06 and a range of 1.17-4.00 for non-dual language participants, n=25. For both groups, the mean GPA was higher than the national average for Latino students.

Follow-up research could provide more reliable data by obtaining school-generated GPAs for each respondent. Of the 78 respondents, only 49 provided a self-reported GPA. When examining the lower response rate for this question, the author offered two conceivable explanations for skipping the question. 1. Students may have felt uncomfortable sharing their GPA. 2. Respondents did not know their GPA at the time of the survey. In addition, with a difference between the national average Latino GPA and average for Latino dual language participants of .5 on a 4.0 scale this could also be examined in follow-up research to determine if the difference is significant using a larger sample size and district-generated GPAs (Nation's Report Card, 2009).

Students were also asked to report their grades in math, science, and language arts. Students could select from a range of responses that ranged from "mostly A's" to "mostly C's and D's". An analysis of the responses between the dual language participants, as defined by this study, and non-participants did not result in any significant differences between the groups. Like the conclusion for GPA, a better measurement would have been to obtain semester grades for the core areas from the school. This would have provided a more objective analysis for each student, due to the time and resource constraints of this study, that was not a reasonable resource.

In the same section of the survey students were asked to list courses that they were taking that could be interpreted as college-prep, advanced coursework, or coursework for college credit. On the survey, respondents were asked to list Advanced Placement (AP) courses, International Baccalaureate (IB) coursework, or dual credit/community college coursework they had taken. Understanding that approximately half of the respondents were freshmen and sophomores, this really limited the data that could be collected. The data analysis for this question did not indicate any statistical differences between the groups.

When examining this section and noting possible weaknesses in the design, it worth stating that the data collection took place during the beginning of the fall semester. This would have made it difficult for juniors and seniors to report since they may not have completed coursework that could be interpreted as college-prep, advanced coursework, or coursework for college credit at this point. This section could have provided more analysis if it were a larger sample and collected from seniors during their final semester of high school.

Question II

The second question examined by this research was: What, if any differences exist between Latino dual language and Latino non-dual language students in their reports of likelihood in enrolling in post-secondary education and career path interests? The author chose the Mann-Whitney *U* statistic to investigate this question between two independent groups.

Although there were no significant differences to report between the two groups in the area of post-secondary intentions and career path interest, there are several important considerations for Latinos and bilingual professionals. Both groups, comprised of Latino high school students, indicated an interest in attending college or university after graduating from high school. The dual language respondents chose attending college or university at 82%, with 70% of the non-dual language participants indicating an interest in college or university. Working full-time, vocational options, and community college were also response choices, but both Latino groups highly favored college or university.

In the area of career path interests, STEM/Medicine career choices were most often cited, with over half of the respondents mentioning a career that aligned with this option. With the documented need for Latinos in STEM-related professions, this is encouraging and may provide valuable information to school counselors, university recruiters and policy makers. Furthermore,

this research offers data at the secondary level for schools that serve Latino students and the need to expand STEM offerings with an opportunity to integrate the coursework with language (Crisp & Nora, 2012).

As there is a need for more STEM professionals and data from this research indicate that Latino high school students have an interest in STEM careers, this could be an untapped opportunity. Out of school STEM opportunities and expansion of STEM in grades K-12 is growing substantially, and the Latino interest from samples in this research could help educators in these programs examine their future student populations. Thus, further expanding STEM opportunities with intentional efforts to reach out and recruit Latino students may provide additional access and interest in STEM (Dabney, et al., 2012). This outreach could be connected to universities that have a designation of a Hispanic Serving Institution (HSI). The research of Crisp, Nora, and Taggart (2009) indicate that HSIs are experiencing success with Latinos in STEM degree enrollment and completion. Research indicates that HSIs may be more successful for Latinos declaring a STEM major, even when considering financial support, high school math achievement, and parental education. The connection and alignment between the academic outcomes and goals of dual language education and Hispanic Serving Institutions seems to be a natural pathway to promote Latino success at the postsecondary level. Partnerships between dual language high schools and HSIs could provide more equitable outcomes for Latino students.

As a cautionary note, the respondent data for interest in STEM/Medicine professions encompass a wide variety of majors and career paths, and for the purposes of this study have been combined into one category. Many of the other career choices that students answered in their open-ended response were single majors with more limited career options.

Another point of interest in the career interest response item in the survey was in the area of education, specifically for the dual language participants. Between the two groups, dual language participants and non-participants, only dual language participants selected education as a career interest. Although the sample size was small and may not be generalizable, this is could provide additional information to the teacher education field. Schools are continually experiencing a bilingual teacher shortage in K-12 schools (Maria, Cuellar, & Battle, 2013). With dual language program graduates demonstrating balanced biliteracy and an interest in the teaching field, this could provide some information to dual language schools that may examine the possibilities of growing their own graduates into bilingual teachers. The interest in education as a potential career is a point to consider and is followed up in the Implications for Professional Practice section.

Question III

The third question examined by this research was: What, if any differences exist between the self-reported levels of Spanish and English proficiency between dual language program participants and the comparison group when examining native Spanish speaking students? For this question only respondents that chose Spanish as the "language first spoken to you by your parents" were included for the data analysis, creating a subset of respondents. This question specifically examined whether native Spanish speaking children continue to build their native language without academic language support in Spanish, the type of language acquisition support that is intentionally provided in dual language programs. In the area of Spanish language proficiency, students rated their language abilities in the areas of conversational, ability to obtain information, written skills, vocabulary, fluency, and expression. The data for native Spanish

speakers was analyzed to determine if statistical differences exist between dual language participants and non-dual language participants.

The results from the data analysis indicated that dual language program participants, students that participated in a dual language program for at least 6 years, and reported to be native Spanish speaking students, have higher ratings on response items of Spanish and bilingual language proficiencies. Eight of the 15 Spanish language proficiency survey items related to variables resulted in significant differences and two of the three bilingual variables resulted in significant differences between the dual language and non-dual language native Spanish speakers. Only the dual language participants experienced significant differences on the language proficiency response items, indicating that native Spanish speaking dual language participants have higher levels of Spanish and biliteracy skills than their native Spanish speaking peers that did not participate in a dual language program.

When putting the results into the context of a student being designated as an English Learner (EL), and how the language outcomes for the students differ from the program type, dual language program access is critical. It all begins when families enroll their child in a public elementary school, most often as part of the registration process, the family will be given a home language survey. This survey is used by the school to determine the child's native language, if the school determines that a child's native language is a language other than English, the school will administer an English language assessment to the child. The score on this test will determine if the child qualifies for English Language supports, and if the child qualifies the school is required to flag the student in the student information system. The flag labels have changed over the years from Limited English Proficient (LEP), English Language Learner (ELL) and English Learner (EL). The English instruction programs required under Title III of the

Every Student Succeeds Act (ESSA) can range in supports from some native language instruction during the early grades, to English only with many schools utilizing a model where students are taken out of their classroom and put in a small group setting with students of similar English abilities. The latter is most common, with native Spanish speaking students only receiving native language in their homes, and as this data supports, their native language will not continue to advance like their dual language counterparts.

The time on task theory, a theory that promotes the advancement of English language proficiency through English only instruction, is also questioned through this research. The data only found significant results between native Spanish speaking students and their dual language program participation of six or more years. However, the finding did not demonstrate any significant differences between the groups and their reported ratings on English proficiency. The fact that there was not a significant difference between the two groups on measurements of English language proficiency is a key finding. The finding was important considering that dual language participants spend a substantial amount of their education in Spanish. Thus, it could be interpreted that native Spanish speaking students that were program dual language participants, as defined by this study, performed as well as their peers who received more English instruction by not participating in a dual language program. This indicates that dual language instruction for native Spanish speakers provides the essential native language building blocks without any negative consequences to their English language acquisition and proficiencies. In fact, the mean rank scores on all the English items, although not significant, were higher for dual language participants in the study. The findings support prior research that indicates language abilities may diminish without additional supports, even when the language is the parents' native language and the child's home language (Hurtado & Vega, 2004).

Beyond the K-12 advantages of dual language programs for students, this data could provide additional evidence that supports the goals of dual language programs in relation to bilingual professionals. This significant difference suggests that home language alone, may not be enough exposure to attain balanced biliteracy and potential loss of native language abilities. The loss of native language and the missed opportunity to become a balanced bilingual is not only a detriment to familial language and culture, it is a loss for personal earnings and the US economy. As presented earlier in this paper, there has been a steady increase in the number of positions requiring bilingual applicants. For all of the aforementioned benefits of being a balanced bilingual, an increase in dual language programs in geographic regions that support a large number of ELs could benefit families, communities, and the national economy.

Question IV

The fourth and final question examined by this research was: What are the attitudes and beliefs that high school Latino dual language students have about their dual language program experience? Survey respondents answered four questions that measured their attitudes and beliefs toward their dual language experience on a 4-point Likert scale. When asked if they were "glad they participated in the dual language program", 95% of the program participants selected "agree" or "strongly agree". Respondents also felt favorably toward the remaining three attitude and belief questions with a range of 80%-85% selecting agree or strongly agree. All four attitudinal and belief response items on the survey received highly favorable responses from the dual language participants. The results of this section corroborate the findings of Lindholm-Leary (2003, 2016).

Positive experiences in school have been reported to have a positive effect on academic outcomes. Just as positive experiences in school can lead to positive effects, negative school

experiences can be predictors of dropping out (US Department of Education, 1990). Understanding that a lack of language proficiency has been reported as a significant variable for predicting dropout, a more positive approach to language acquisition through dual language education should be widely expanded to offer innovative opportunities for English Language Learners. The attitudinal and belief data from this research indicate that students have a high regard for their dual language experience. These factors of a positive student-reported experience along with academic and language proficiency outcomes imply that changes to our educational system in the way of promoting dual language education could significantly narrow the gap in the areas of dropout, English language proficiency, attitudes toward school experiences, and academic outcomes; thus leading to a more hopeful future.

While examining the dual language participants' favorable attitudes toward their program, it may be possible associate the findings of question two, a career in education. Although the number of respondents that choice education as a career path was much smaller than other choices, it is worth noting that dual language participants were the only respondents that chose education. The association between having a positive educational experience in dual language and the interest in education as a career is an area that should be explored further.

In addition to the positive experiences that students have about their dual language program, parents of dual language participants also feel favorable about dual language for their children (López, 2013). How parents feel about their child's educational experience matters. Studies report that Latino parents were found to have the highest influence over their children's decisions around education and postsecondary matters (Clayton, Garcia, Underwood, McEndree, & Shepherd, 1993; Suizzo et al., 2012). Although parents may have the highest influence, many parents are unable to report their children's academic or occupational goals due to a language

barrier, common with acculturation. Despite this lack of awareness, Latino parents had high confidence in their children's capability to achieve and be successful (Behnke et al., 2004). Again, reducing barriers and engaging families through culturally responsive practices, like dual language programs, can promote student success.

Latino parents have high aspirations for their children (López, 2013). In fact, immigrant minority families to have higher consistent aspirations for their children to earn a college degree than white parents and minority parents that were native to the United States. Moreover, Hispanic immigrant parents have high aspirations for their kindergarten students, four times that of white parents and three times more likely to have consistent high aspirations over time (Raleigh & Kao, 2010). Research also indicates that families that spoke to their children in languages other than English were twice as likely to uphold their high aspirations and that families that sustained their native language had higher aspirations for their children (Bohon et al., 2006; Raleigh and Kao, 2010). In conclusion, "accommodation without assimilation" (Gibson, 1989, p. 24) may be a critical variable in families' high educational aspirations for their children (Raleigh & Kao, 2010).

Understanding that parent engagement is instrumental to a child's success in school, dual language programs provide opportunity for school engagement by breaking down institutional barriers such as language and unwelcoming environments by providing culturally responsive educational practices. Through the goals of dual language programs, parents and students alike can be afforded an education that celebrates language and culture while achieving academic proficiency (Lindholm-Leary, 2016).

Connections to Cummins' Threshold Theory

Cummins' Threshold Theory (1976) was used as the theoretical framework for this study. Cummins asserts that in order to grow into a balanced bilingual, certain thresholds must be met. The theory illustrates the process of language acquisition and the importance of continuous development of the native language, thus the belief that children need to continue growing in their native language to efficiently learn a second language.

Overall, the data in this research display alignment with Cummins' Threshold Theory (1976) through the differences between the subset of native Spanish speaking dual language program participants and native Spanish speaking non-program participants. Most notable is the statistically significant difference in the area of Spanish language proficiency and bilingual language proficiency. Results of the data analysis indicated that native Spanish speaking dual language respondents had significantly higher Spanish and bilingual proficiencies than the subset control group.

The same subset rated their English language proficiencies as well in the same manner that they rated their Spanish and bilingual proficiencies. The data for English proficiencies did not produce any significant differences between the groups. This could be interpreted, with caution, that both groups have achieved an academic level of English as the medians for the English questions ranged between three and four using a 4-point Likert scale.

When determining if both groups met the thresholds to achieve balanced bilingualism, the language proficiency data suggests that only the native Spanish speaking students that participated in a dual language program for at least six years met the thresholds. This group demonstrated significant differences in Spanish language proficiency and bilingual proficiencies

as well as indicating English language proficiency, although the English measures were not statistically significant different than the non-dual language participants.

In the area of academics, a significant difference was not found between the groups' GPA; although not significant, the dual language participants did report a higher mean GPA than non-participants. However, students that continued growing in their native language through a dual language immersion program demonstrated a significantly higher Spanish language proficiency.

A second area of research alignment to the Threshold Theory is the area of language proficiency. Through the Threshold Theory, Cummins asserts that native language instruction is critical in meeting the different levels of the threshold; with the ultimate goal of achieving biliteracy (Cummins, 1976). This research corroborated this theory through the language proficiency analysis. The data for native Spanish speaking students that attended a dual language program for six or more years, indicated that program participants had a higher level of Spanish proficiency and bilingualism than their native Spanish speaking peers that did not attend a dual language program.

In summary, Cummins (1976, 2000) Threshold Theory asserts that children that continue learning in their native language while learning a second language will not experience language or cognitive setbacks, but will ultimately move through thresholds and into balanced bilinguals with cognitive advantages. The research from this data was able to corroborate the balanced bilingual component of the theory, but unable to determine cognitive advantages at a statistically significant level. Cognitive advantages could encompass many different measures, but for the scope of this research self-reported grades and GPAs were used.

Achieving balanced biliteracy for native Spanish speaking students, using dual language as an additive approach, is a methodology that could narrow achievement gaps for English Language Learners. The Threshold Theory asserts that developing one's native language assists the learner in their English language acquisition. It is unnecessary to give up one's native language to achieve high academic levels of English. While the case has been made throughout this paper for an increased need of highly skilled bilinguals in various fields, traditional education models could be impeding the native language skills of young English Language Learners. Likewise, eliminating advanced bilingual opportunities that may impact personal well-being and the national economy.

Recommendations for Further Research

This study contributes to the research of dual language students at the secondary level by providing a comparison of Latino high school students who participated in a dual language program for at least six years and those that didn't. Although this was a small scale study, the findings suggest that there is a need to expand the research of dual language outcomes at the secondary level. The study could be strengthened in many ways by expanding data collection where significant or nearly significant results were found.

As this study added to the literature by providing more data at the secondary level for dual language participants and compared them to non-dual language participant peers, there are several recommendations that author has for further research. To begin, the sample size for this data collection was relatively small and limited to one geographical area. The questions that specifically addressed a subset of the two groups also minimized the sample size. This was the case for research question three where data analysis was only conducted for native Spanish speakers and research question four only conducted analysis on dual language participants;

therefore, decreasing the sample size. An increased sample size and increased geographic sample could have resulted in more generalizable results. Furthermore, a larger sample size may have demonstrated significance in academic outcomes between the two groups.

Although this study yielded some significant results, further research is needed to provide more definitive data for Latino students. Latino students are still lagging behind their peers on many indicators and the quest to find educational solutions through research-based models is critical to the academic advancement of Latinos.

Another area for potential follow up research would include a more collaborative approach with the districts. Independent data collection among high school students is more difficult than district-initiated data collections. Students under the age of 18 were required to take home a parental consent, obtain a parent's signature, and return it to their teacher. This three step task may not have been a priority for busy and active high school students. A suggestion for this would be for the researcher to directly partner with districts and schools. This would allow the school, under the district's direction, to deliver the survey to their students and then share the anonymous data with the researcher for analysis.

In future research, the survey should be revised to more accurately collect information to determine if respondents were dual language or non-dual language participants. Of the 90 respondents that met the inclusion criteria for this research, 12 skipped the question on dual language program participation. This question was critical in the determination between the two groups and their respective data. This could have been mitigated by an online survey that did not progress to the next question without each question being answered. For ease of teacher cooperation, the author of this study chose the paper/pencil method to eliminate the onerous task of scheduling a computer lab, connecting students to the link and unforeseeable technical

difficulties; but if it was a district-initiated survey as mention above, this would be less of a concern. In addition, the collaborative effort with the district could eliminate self-reporting in the areas of academic achievement. Although there are some studies that indicate students self-reporting GPA is correlated with actual data (Mattern, 2009), the differences in GPA for the Latino control group and the average GPA for Latinos in this study indicate that students may have reported higher GPAs than their actual GPA. In a future study, school-generated GPAs would provide more reliable data.

Although the academic outcomes in this study did not align with studies cited in the literature review, many of the studies used school-generated data from nationally normed tests at the elementary and middle level. This could be replicated by using state-administered, reading and math tests (e.g. Smarter Balanced Assessment Consortium (SBAC), Measures of Academic Progress (MAP), or Partnership for Assessment of Readiness for College and Careers (PARCC)). This would be a more in-depth examination of data at the secondary level and could be used to compare Latino students that were dual language participants with non-dual language participants, as well as provide norm-referenced data that have met measures of reliability and validity.

Of further interest would be answering the question, "At what point of the dual language experience does the program positively influence academic outcomes at the secondary level?" A regression analysis could be used to further determine the cut point. For this study, students that indicated they attended a dual language program, then circled the number of years they participated that corresponded to the survey item. The participation cut point of 6 years was defined in this study as a participant; however, this could be further explored with a larger sample size and larger geographic region as well as program design. The cut point could then be

adjusted based on the results of the regression analysis. This cut point determination could guide the implementation of dual language programs and at what grade levels they serve.

In addition to a more defined cut-point, a control group that had zero years of experience in a dual language program could strengthen the methodology of a future study. Collecting data from both the control and treatment group in the same schools would be important to control as many variables as possible. However, if a large sample was collected and the treatment group could be defined by a regression analysis, and the control group could be limited to respondents with zero years of dual language experience, the data could provide more definitive results to answer the research questions.

Dual language program design was not taken into account for this study and could be of interest. This could include examining differences between dual language 90:10 and 50:50 partner language and English language percentage of instruction, as well as language delivery models of: half-day, alternate week, and subject area. Although a majority of programs use a 50:50 half-day model, further analysis could be conducted to explore academic outcomes by model type. In many research studies 90:10 models have been more effective than 50:50 models when examining academic outcomes at elementary and middle grade levels (Lindholm-Leary, 2012; Lindholm-Leary, 2016). Taking model type into account when analyzing data for secondary students could provide additional information on whether the 90:10 still produces superior outcomes at the secondary grade level. Dual language model type could be collected on the survey itself or attained from the district. There are still many questions still to be answered on the impact of dual language programs, including model differences, for secondary level students.

As this research was a quantitative approach, the study could be strengthened by adding qualitative measures to follow-up with respondents. This could be implemented by adding focus groups or open-ended questions on the survey or an additional survey for parents. While quantitative data was not collected on perceived institutional barriers, this could enhance our understanding of dual language program environments and what makes them different or more accessible to Latino families. As suggested in this paper, the nature of dual language programs would seem to limit institutional barriers, but gathering qualitative data could lead to a deeper understanding of the perceived differences between the two groups.

Another area for a qualitative component would be to examine the differences between dual language participants and non-dual language participants in relation to their racial and ethnic identity (REI). How are dual language programs affecting the REI of Latino students and native Spanish-speaking Latino students? There is a connection between REI and academic success, and student perspectives through focus groups could provide the field with additional information for program improvement (Case & Hernandez, 2013).

To further this study, an examination of executive function for dual language high school students would further add to the areas of dual language and its impact on executive function. Executive function is often defined as the cognitive processes that are related to a performance; measurements may include: inhibition, working memory and shifting (Best & Miller, 2010). Examination of executive function as it related to bilingualism has primarily been conducted with younger children. With documented studies linking bilingualism to an increased executive function and academic achievement, further research could provide specific information on how dual language programs could serve more students that are continually marginalized in the current education system (Best, Miller, & Naglieri, 2011; Bialystock, 2015).

Finally, connecting dual language research with Hispanic Serving Institutions could help researchers identify college and university enrolled Latinos that may have participated in K-12 dual language programs. A survey similar to the one administered in this research and analyzed with a Latino control group could provide an opportunity to expand the literature in the areas of dual language impact at the postsecondary level. The results of the study could help identify declared majors as opposed to this study's career interests and provide data to the field of higher education and education policy makers. The information on academic outcomes for college attendees could also inform practices at the K-12 dual language program level in the way of identifying gaps, challenges and successes.

Implications for Professional Practice

The data collected from this research indicated that dual language students may be more interested in an education career than non-dual language participants. This could initiate important conversations at different levels as schools, dual language and traditional, have a hard time finding enough bilingual teachers to fill positions (Maria, Cuellar, & Battle, 2013). A teacher career pathways program could be implemented in dual language high schools to initiate the journey into teaching as a profession; thus providing balanced bilinguals the opportunity to explore a career interest and share their language proficiencies in the classroom. This high school opportunity paired with a full K-12 program would also provide the resources for internships in dual language settings. The pathway could include a connection with a local community college or university that has a teacher preparation program and provide coursework that is aligned to meet graduation requirements while earning college credits and pre-service teacher experience. Although career pathways are not a new idea, it could be greatly enhanced by partnering with dual language high schools and seeking interested students to fill the need for

bilingual teachers across the nation. As the bilingual teacher shortage is a national concern, a nationally funded initiative would greatly impact the ability for schools and teacher preparation programs to connect and fill this gap.

With data indicating that Latinos are still underperforming compared to their peers and there are still have many identified barriers for Latino students from preschool to post-secondary; it is justifiable that a greater educational investment is needed in our Latino students for their personal and economic success. As mentioned in the Statement of the Problem section of this paper, the success of Latinos is critical to the economic success of the United States. Schools must be held accountable when they consistently do not mitigate institutional barriers. As noted in Martinez, deGarmo, and Eddy (2004), barriers have a high predictability to students' probability of dropping out and students' Grade Point Averages (GPA). Institutional barriers should continue to be explored with national recommendations and requirements for equitable practices.

While a greater educational investment in the academic success of Latinos is supported by the literature in this paper, the current outlook for the research-based supports that have helped Latinos continue their education have sharply been cut at the federal level of the current administration's proposed budget. The proposed budget cuts 13% of the federal allocation for education, reducing the education budget by nine billion dollars. Included in the cuts are programs like TRIO and GEAR UP. The TRIO program that encompass Educational Talent Search, Upward Bound and Support Services would be cut completely and the proposed budget would greatly reduce funding to programs like GEAR UP that provide supports for low income and first generation college students. Cuts equal to 193 million dollars are on the table and could drastically impact these programs (EdWeek, 2017). TRIO, a program developed under the War

on Poverty and the Economic Opportunity Act of 1964, was an initiative by former President Lyndon Johnson to open up doors to educational advancement for all. Recently, an article noted that TRIO serves approximately 866,000 low-income, first generation students ages 12-27 (Cowan & Pitre, 2009). A proposed cut in this program that serves many Latino students could negatively impact Latino aspirations and the economy as a whole. Understanding that equity is not equality is essential when determining funding priorities. At a time when some gaps are narrowing for Latinos in the area of drop-out and college enrollment for Latinos has increased, this funding cut is sure to decrease opportunity and impact progress (NAEP, 2012; Pew Research Center, 2016; US Department of Education, 2015).

The initial budget has been delivered as one of lowest education budget in ten years, and there is a shift in some funding initiatives (National Public Radio, 2017). The current administration is making a large investment in the area of school choice. Although school choice through charter schools and vouchers to private schools may lead to more disparity between education programs, it is possible to use this as an opportunity to design more dual language schools. Through the various executive orders and rhetoric toward minority populations, it is unlikely that US Education Department would make a shift from the English Language acquisition goals and models of the No Child Left Behind era to include more inclusive language. However, an increase in funding for charter schools could provide program implementation dollars through federal grants (US Department of Education, 2017). This could be an excellent opportunity to turn the goal of providing more privilege, to one of serving the highest need. However, it would be important to implement this strategy with caution as dual language programs can also provide more opportunity and access to advantaged populations. For example, while the goals of dual language students are specifically for language minorities,

the programs also provide an additional privilege to Anglo English speakers though the achievement of bilingualism (Valdez, Freire, & Delavan, 2016). Thus, it would be devastating to create more disparity by designing charter dual language programs without positively impacting English Language Learners as the core motivation.

In addition to implementation dollars, the charter school movement has also provided grant funding for expansion of successful schools and dissemination. With this funding successful dual language charter schools could use this an opportunity to create more opportunities for the student populations they serve by expanding their current offerings or replicating their school. The dissemination funding, as part of the charter school initiatives, could also help successful dual language charter schools by providing financial resources to share best practices and program-specific materials with other schools (US Department of Education, 2017).

The data from the literature review in the paper indicates that dual language programs produce superior academic outcomes for attendees, as well as balanced bilinguals. Although dual language programs are growing across the nation, a national effort to revitalize the Department of Bilingual Education in a comprehensive and intentional manner could create more high quality dual language programs to serve the underserved ELLs in our country. In fact, the increase in dual language programs, despite the removal of the Department of Education, should send notice to the US Department of Education that communities believe in the benefits of dual language programs and scholars concur that they are making a difference for students that attend. A national effort could greatly increase the opportunity for more students, especially in geographic areas that may not have access to these innovative programs due to funding and lack of program knowledge.

A revitalized national effort should include: dedicated research, pathways for bilingual teachers, professional development for dual language schools, and grants for start up programs and dissemination methods of model programs. The funding for dedicated research is essential for the programs to continue to grow in research-based methods. As mentioned earlier, much of the dual language research is at the elementary levels with some research at the pre-K and secondary levels, but dual language programs need more longitudinal studies at the secondary and post-secondary level. Funded research efforts lead to greater professional development for practitioners in the field. Although there are a few national conferences focused dual language immersion programs, a revitalized focus could provide more access to affordable regional conferences. Following regional access is the need for schools to have site-specific professional development and evaluation that addresses their individual growth targets.

An intentional effort could recruit bilingual teachers from dual language programs that would significantly impact the bilingual teacher shortage by providing university pathways and career opportunities. While many schools are seeking bilingual teachers, there would be great advantages to dual language programs if they could hire pre-service teachers that were graduates of dual language programs. Not only would the dual language graduates be balanced bilinguals, the experience of learning language through content would carry over into their practice. This is the program model that they experienced and would provide great advantages to the students they serve and eliminate the extensive professional development that is needed to understand language acquisition in dual language settings.

In summary, this paper examined the differences between Latino high school students that attended dual language programs for six or more years and compared them to their peers that participated in a dual language program for 5 or less years. The data indicated significant

findings in the area of language proficiency, as well as informative data for Latinos as a whole in the areas of career interests and post-secondary intentions.

When examining the language proficiency results, the dual language program attitudes and beliefs, as well as the bilingual career interests, dual language programs provide amazing opportunities. Unfortunately, with the limited number of dual language schools, the opportunity is only provided to a small percentage of K-12 ELL students (Wilson, 2011). This is even more concerning when considering the achievement gap for ELLs and the missed opportunity of becoming a balanced bilingual.

As the literature suggests, the Latino population is one of the fastest growing populations in the United States and companies are seeking bilingual employees (Cere, 2012; Pew Hispanic, 2013; US Census, 2014). The data from this study imply that dual language programs may provide an avenue for native Spanish speakers to continue building their native language while acquiring a second language, English. When considering the research that proposes native Spanish speakers are at risk of losing the language over a couple of generations, dual language programs provide a positive alternative (Hurtado & Vega, 2004).

Research of dual language programs at the secondary and post-secondary level is limited and through the Recommendations for Further Research section of this chapter, some additional concepts have been expanded on that could contribute to the field. Although more research at the secondary level is needed, the data from this research indicates that dual language participants experience balanced biliteracy when attending the program for at least six years. This research, along with previous research in the area of dual language, validates the long-term benefits of balanced biliteracy for dual language participants. Thus, calling for a sustainable plan at the federal level to increase funding for dual language program expansion. Dual language

program sustainability and expansion across the United States could significantly narrow the persistent achievement gap between Latino and English Language Learners in public education, while preserving native language and culture for future generations.

References

Adesope, O. O., Lavin, T., Thompson, T., & Ungerleider, C. (2010). A systematic review and meta-analysis of the cognitive correlates of bilingualism. *Review of Educational Research*, *80*(2), 207-245. Retrieved from: https://www.researchgate.net/profile/Charles_Ungerleider/publication/249798058_A_Systematic_Review_and_Meta-Analysis_of_the_Cognitive_Correlates_of_Bilingualism/links/55c022d008ae9289a09b6818.pdf

Agirdag, O. (2014). The literal cost of language assimilation for the children of immigration: The effects of bilingualism on labor market outcomes. In Callahan, R. M., & Gándara, P. (Eds.), *The bilingual advantage: Language, literacy, and the U.S. labor market* (160-181). Bristol, England: Multilingual Matters.

Alliance for Excellent Education. (2009). *Latino student and U.S. high school.* Retrieved from http://www.all4ed.org/files/Latino_FactSheet.pdf.

Andreou, G., & Karapetsas, A. (2004). Verbal abilities in low and highly proficient bilinguals. *Journal of psycholinguistic research*, *33*(5), 357-364.

Ardasheva, Y., Tretter, T. R., & Kinny, M. (2012). English language learners and academic achievement: Revisiting the threshold hypothesis. *Language Learning*, *62*(3), 769-812. Retrieved from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.644.3966&rep=rep1&type=pdf

Baker, C. (2011). *Foundations of bilingual education and bilingualism*. Tonawanda, NY: Multilingual matters.

Bearse, C. & de Jong, E.J. (2008). Cultural and linguistic investment: Adolescents in a secondary

two-way immersion program, *Equity and Excellence in Education, 41(3),* 325-340.

Becerra, D. (2012). Perceptions of educational barriers affecting the academic achievement of Latino K-12 students. *Children and Schools, 34*(3), 167-177. doi: 10.1093/cs/cds001

Behnke, A.O., Piercy, K.W., & Diversi, M. (2004). Educational and occupational aspirations of Latino youth and their parents. *Hispanic Journal of Behavioral Sciences, 26,* 16-35. doi: 10.2177/0739986303262329

Behr, M., Marston, C., & Nelson, K.A. (2014). A bridge to graduation for at-risk Latino males: A case study. *Journal of Education for Students Placed at Risk, 19,* 215-228. doi: 10.1080/10824669.2014.977104

Best, J. R., & Miller, P. H. (2010). A Developmental Perspective on Executive Function. *Child Development, 81*(6), 1641–1660. http://doi.org/10.1111/j.1467-8624.2010.01499.x

Best, J. R., Miller, P. H., & Naglieri, J. A. (2011). Relations between executive function and academic achievement from ages 5 to 17 in a large, representative national sample. *Learning and individual differences, 21*(4), 327-336. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3155246/

Bialystok, E. (2015). Bilingualism and the Development of Executive Function: The Role of Attention. *Child Development Perspectives, 9*(2), 117–121. http://doi.org/10.1111/cdep.12116 Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4442091/

Block, N.C. (2012). Perceived impact of two-way dual immersion programs on Latino

students' relationships in their families and communities. *International Journal of Bilingual Education and Bilingualism, 15*(2), 235-257. doi:10.1080/13670050.2011.620079 1

Bohon, S.A., Johnson, M.K., & Gorman, B.K. (2006). College aspirations and expectations among Latino adolescents in the United States. *Social Problems, 52*(2), 207-225.

Briggs, S. R., & Cheek, J. M. (1986). The role of factor analysis in the development and evaluation of personality scales. *Journal of personality*, *54*(1), 106-148.

Calero, F.R., Fernandez, N., Davenport-Dalley, T.M., Morote, E., & Tatum, S.L. (2014). A model of academic self-concept for high school Hispanic students in New York. *Journal of Latinos and Education, 13*, 33-43. doi: 10.1080/15348431.2013.800820

Callahan, R.M., & Gándara, P.C. (2014). Contextualizing bilingualism in the labor market: New destinations, established enclaves and the information age. *The bilingual advantage: Language, literacy, and the U.S. labor market* (3-15). Bristol, England: Multilingual Matters.

Carlson, S. M., & Meltzoff, A. N. (2008). Bilingual experience and executive functioning in young children. *Developmental science*, *11*(2), 282-298. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3647884/

Case, K.F. & Hernandez, R. (2013). "But still, I'm Latino and I'm proud": Ethnic identity exploration in the context of a collegiate cohort program. *Christian Higher Education, 12,* 74-92.

Castaneda v Pickard, 648 F.2d 989 (5th Cir. 1981).

Center for Applied Linguistics. (2015). *Directory of two-way bilingual immersion programs in the U.S*. Retrieved from http://www.cal.org/twi/directory/

Cere, R.C. (2012). Foreign language careers for international business and the professions. *Global Advances in Business Communication, 1*(1), 6.

Cobb, B., Vega, D., & Kronauge, C. (2006). Effects of an elementary dual language immersion school program on junior high achievement. *Middle Grades Research Journal*, *1,* 27-47. Retrieved from: http://eric.ed.gov/?id=EJ800212

Collier, V.P. & Thomas, W.P. (2004). The astounding effectiveness of dual language education for all. *NABE Journal of Research and Practice, 2*, 1-20.

Cowan Pitre, C., & Pitre, P. (2009). Increasing underrepresented high school students' college transitions and achievements: TRIO educational opportunity programs. *NASSP Bulletin*, *93*(2), 96-110.

Crawford, J. (1994). Revisiting the Lau Decision – 20 Years After: Proceedings of a National Commemorative Symposium Held on November 3-4, 1994, in San Francisco, California. Retrieved from: http://www.languagepolicy.net/articles/summing.htm

Crawford, J. (2002, Summer). Obituary: The Bilingual Education Act, 1968-2002. *Education Week.*

Retrieved from: http://www.rethinkingschools.org/special_reports/bilingual/Bil164.shtml

Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage publications.

Creswell, J. W. (2015). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research.* Boston, MA: Pearson.

Crisp, G. & Nora, A. (2012). *Overview of Hispanics in science, mathematics, engineering and*

technology (STEM): K-16 representation, preparation and participation [White paper]. Hispanic Association of Colleges and Universities. Retrieved from http://www.hacu.net/images/hacu/OPAI/H3ERC/2012_papers/Crisp%20nora%20-%20hispanics%20in%20stem%20-%20updated%202012.pdf

Crisp, G., Nora, A., & Taggart, A. (2009). Student characteristics, pre-college, college, and environmental factors as predictors of majoring in and earning a STEM degree: An analysis of students attending a Hispanic serving institution. *American Educational Research Journal*, *46*(4), 924-942.

Cummins, J. (1976). The Influence of Bilingualism on Cognitive Growth: A Synthesis of Research Findings and Explanatory Hypotheses. *Working Papers on Bilingualism, No. 9*. Retrieved from: http://files.eric.ed.gov/fulltext/ED125311.pdf

Cummins, J. (1981). Age on arrival and immigrant second language learning in Canada: A reassessment. *Applied linguistics*, *2*(2), 132-149. Retrieved from: https://www.researchgate.net/profile/Jim_Cummins5/publication/249237663_Age_on_Arrival_and_Immigrant_Second_Language_Learning_in_Canada_A_Reassessment/links/554664760cf234bdb21d8dac.pdf

Cummins, J. (1996) *Negotiating identities: Education for empowerment in a diverse society.* Los Angeles, CA: California Association for Bilingual Education.

Cummins, J. (2000). *Language, power, and pedagogy: Bilingual children in the crossfire.* Buffalo: NY: Multilingual Matters.

Cummins, J. (2008). Total immersion or bilingual education? Findings of international research

on promoting immigrant children's achievement in the primary school. In *Chancenungleichheit in der Grundschule* (pp. 45-55). VS Verlag für Sozialwissenschaften.

Cummins, J., & Swain, M. (2014). *Bilingualism in education: Aspects of theory, research and practice*. New York, NY: Routledge.

Dabney, K. P., Tai, R. H., Almarode, J. T., Miller-Friedmann, J. L., Sonnert, G., Sadler, P. M., & Hazari, Z. (2012). Out-of-school time science activities and their association with career interest in STEM. *International Journal of Science Education, Part B*, *2*(1), 63-79.

Devellis, R. F. (2012). *Scale development: Theory and applications* (3rd edn). Thousand Oaks, California: Sage.

Durán, L., Roseth, C., Hoffman, P., & Robertshaw, M. B. (2013). Spanish-Speaking Preschoolers' Early Literacy Development: A Longitudinal Experimental Comparison of Predominantly English and Transitional Bilingual Education. *Bilingual Research Journal*, *36*(1), 6-34.

Dworin, J. (2011). Listening to graduates of a K-12 bilingual program: Language ideologies and literacy practices of former bilingual students. *Gist Education and Learning Research Journal, 5,* 104-126.

Esposito, A.G., & Baker-Ward, L. (2013). Dual-language education for low-income children: Preliminary evidence of benefits for executive function. *Bilingual Research Journal, 36,* 295-310. doi: 10.1080/15235882.2013.837848

Fernández, M., Valenciano, C., & Garcia, M. I. (2013). Is Bilingual Education Moving Forward

or Backward? *Illinois Schools Journal, 93*, 95-111. Retrieved from: https://wcsu.csu.edu/collegeofeducation/centers/urbanresearch/ILschool/documents/Fall2013Issue.pdf#page=95

Fredericksen, E. (2002). Language as power for Hispanic students in higher education. *Journal of Hispanic Higher Education, 1*(3), 211-224. Retrieved from: www.jhh.sagepub.com

French, M. T., Homer, J. F., Popovici, I., & Robins, P. K. (2015). What you do in high school matters: High school GPA, educational attainment, and labor market earnings as a young adult. *Eastern Economic Journal*, *41*(3), 370-386.

Fry, R. (2011) Changing demographics in the U.S. and the impact on Congress. Proceedings of the Hispanic Association of Colleges and Universities, 16th Annual National Capitol Forum on Hispanic Higher Education, Washington, D.C. Retrieved from http://www.hacu.net/images/hacu/conf/2011CapForum/RichardFry.pdf

Gándara, P. (2010, February). The Latino education crisis. *Educational Leadership, 67,* 24-30. Retrieved from http://www.ascd.org/publications/educational-leadership/feb10/vol67/num05/The-Latino-Education-Crisis.aspx

Gandara, P. C., & Contreras, F. (2009). *The Latino education crisis: The consequences of failed social policies*. Harvard University Press.

García, O. & Bartlett, L. (2007). A speech community model of bilingual education: Educating Latino newcomers in the USA. *The International Journal of Bilingual Education and Bilingualism, 10,* 1-25.

Gliem, R. R., & Gliem, J. A. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. *Midwest Research-to-Practice Conference in*

Adult, Continuing, and Community Education. Retrieved from: https://scholarworks.iupui.edu/bitstream/handle/1805/344/gliem+&+gliem.pdf?sequence=1

González, V. & Soltero, S.W. (2011). Alternative multidimensional models explaining and improving academics achievement in Latino students. *Bilingual Research Journal, 34,* 263-278. doi: 10.1080/15235882.2011.625464

Granados, N.R. (2015). Dual language graduates' participation in bilingual and biliterate communities of practice across time and space. *Bilingual Research Journal, 38,* 45-64. doi: 10.1080/15235882.2015.1017031

Haro, R. (2004). Programs and strategies to increase Latino students' educational attainment. *Education and Urban Society, 36*(2), 205-222.

Hernandez, D. J., & Napierala, J. S. (2014). Mother's Education and Children's Outcomes: How Dual-Generation Programs Offer Increased Opportunities for America's Families. Disparities among America's Children. No. 2. *Foundation for Child Development*. Retrieved from: http://files.eric.ed.gov/fulltext/ED558149.pdf

Hill, N.W. & Torres, K. (2010). Negotiating the American dream: The paradox of aspirations and achievement among Latino students and engagement between their families and schools. *Journal of Social Issues, 66*(1), 95-112.

Howard, E. R., Lindholm-Leary, K. J., Sugarman, J., Christian, D., & Rogers, D.

(2007). *Guiding principles for dual language education*. Washington, DC: Center for Applied Linguistics.

Hurtado, A, & Vega, L.A. (2004). Shift happens: Spanish and English transmission between parents and their children. *Journal of Social Issues, 60*(1), 137-155.

IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.

Jaschik, S. (2015, September). SAT scores drop. *Inside Higher Ed.* Retrieved from: https://www.insidehighered.com/news/2015/09/03/sat-scores-drop-and-racial-gaps-remain-large?width=775&height=500&iframe=true

Krashen, S (1999). *Condemned without a trial: Bogus arguments against bilingual education.* Portsmouth, NH: Heinemann.

Laerd Statistics (2015). Cronbach's alpha using SPSS Statistics. *Statistical tutorials and software guides.* Retrieved from: https://statistics.laerd.com/

Laerd Statistics (2015). Mann-Whitney U test using SPSS Statistics. Statistical tutorials and software guides. Retrieved from https://statistics.laerd.com/

Lasagabaster, D. (1998). The threshold hypothesis applied to three languages in contact at school. *International Journal of bilingual education and bilingualism, 1*(2), 119-133.

Lau v. Nichols, 414 U.S. 563 (1974).

Lee, S.K. (2006). The Latino students' attitudes, perceptions, and views on bilingual education. *Bilingual Research Journal, 30,* 107-120.

Leung, S. O. (2011). A comparison of psychometric properties and normality in 4-, 5-, 6-, and 11-point

Likert scales. *Journal of Social Service Research, 37*(4), 412-421.

Lindholm-Leary, K. (2000). *Biliteracy for a Global Society: An Idea Book on Dual Language Education.* Washington: National Clearinghouse for Bilingual Education.

Lindholm-Leary, K. (2003). Dual language achievement, proficiency, and attitudes among current high school graduates of two-way bilingual programs. *NABE News*, *26*(6), 20-25.

Lindholm-Leary, K. (2012). Success and challenges in dual language education. *Theory into Practice, 51*(4), 256-262. doi: 10.1080/00405841.2012.726053

Lindholm-Leary, K. (2013). Bilingual and biliteracy skills in young Spanish-speaking low-SES children: Impact of instructional language and primary language proficiency. *International Journal of Bilingual Education and Bilingualism, 17*(2), 144-159. doi: 10.1080/13670050.2013.866625.

Lindholm-Leary, K. (2014). *Bilingualism and academic achievement in children in dual language programs*. Manuscript submitted for publication.

Lindholm-Leary, K. (2015). Two-way/dual language education: Then and now. *Multilingual Educator,* 13-16. Retrieved from http://www.bilingualeducation.org/ME/ME2015.pdf

Lindholm-Leary, K. (2016). Students' Perceptions of Bilingualism in Spanish and Mandarin Dual Language Programs. *International Multilingual Research Journal*, *10*(1), 59-70.

Lindholm-Leary, K. & Block, N. (2010). Achievement in predominantly low SES/Hispanic dual language schools. *International Journal of Bilingual Education and Bilingualism, 13,* 43-60.

Lindholm-Leary, K.J., & Borsato, G. (2005). Hispanic high schoolers and mathematics: Follow-up of students who had participated in two-way bilingual elementary programs. *Bilingual Research Journal, 29,* 641-652.

Lindholm-Leary, K. J., & Borsato, G. (2006). *Academic achievement*. In F. Genesee, K.

Lindholm-Leary, W. Saunders, and D. Christian (eds), *Educating English Language Learners*, pp. 157-179. NY: Cambridge University Press

Lindholm-Leary, K. J., & Ferrante, A. (2005). *Follow-up study of middle school two-way students: Language proficiency, achievement and attitudes*. In R. Hoosain & F. Salili (eds), Language in multicultural education. Greenwich, CT: Information Age Publishing, pp. 157-179.

Lindholm-Leary, K., & Genesee, F. (2010). Alternative educational programs for English language learners. In California Department of Education (Eds.), *Improving Education for English Learners: Research-Based Approaches*, (pp. 323-382). Sacramento, CA: CDE Press.

Lindholm-Leary, K. & Genesee, F. (2014). Student outcomes in one-way, two-way and indigenous language immersion education. *Journal of Immersion and Content-Based Language Education 2*(2), 165-180. doi: 10.1075/jicb.2.2.01lin

Lindholm-Leary, K., & Hernández, A. (2011). Achievement and language proficiency of Latino student in dual language programmes: Native English speakers, fluent English/previous ELLs, and current ELLs. *Journal of Multilingual and Multicultural Development, 32*, 531-545. doi: 10.1080/01434632.2011.611596

Lindholm-Leary, K. & Howard, E.R. (2008). Language development and academic achievement in two-way immersion programs. In T. W. Fortune & D. J. Tedick (Eds.), *Pathways to multilingualism: Evolving perspective on immersion education*. (177-200). Clevedon, UK: Multilingual Matters

López, M.M. (2013). Mother's choose: Reasons for enrolling their children in a two-way

immersion program. *Bilingual Research Journal, 36,* 208-227. doi: 10.1080/15235882.2013.818595

López, L.M. & Tápanes, V. (2011). Latino children attending a two-way immersion program in the United States: A comparative case analysis. *Bilingual Research Journal, 34*, 142-160. doi: 10.1080/15235882.2011.598087

Lynn, M.R. (1986). Determination and quantification of content validity. *Nursing Research, 35*(6) 382-386. doi: 10.1097/00006199-198611000-00017

Lys, D.B. (2009). Supporting high school graduation aspirations among Latino middle school students. *Research in Middle Level Education Online, 33*(3), 1-12. Retrieved from: https://www.amle.org/portals/0/pdf/rmle/rmle_vol33_no3.pdf

Maria, G., Cuellar, R., & Battle, J. (2013). What do PreService Teachers Think About the Recruitment and Retention of Quality Bilingual Teachers in the Classroom?. *Journal of Border Educational Research*, *7*(1).

Marian, V., Shook, A., & Schroeder, S. R. (2013). Bilingual two-way immersion programs benefit academic achievement. *Bilingual Research Journal, 36*(2), 167-186. Retrieved from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3838203/

Marschall, M. (2006). Parent involvement and educational outcomes for Latino students. *Review of Policy Research, 23*(5), 1053-1076. Retrieved from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.394.7955&rep=rep1&type=pdf

Martinez, C.R., DeGarmo, D.S. & Eddy, J.M. (2004). Promoting academic success

among Latino youths, *Hispanic Journal of Behavioral Sciences, 26*(2), 128-151. doi: 10.1177/0739986304264573

Mattern, K. D. (2009). *Examining the accuracy of self-reported high school grade point average.* (College Board Research Report No. 2009-5). New York, NY: The College Board.

Mora, J.K., Wink, J., & Wink D. (2001). Dueling models of dual language instruction: A critical review of the literature and program implementation guide. *Bilingual Research Journal, 25*(4), 435-460.

Murphy, A.F. (2014). The effect of dual-language and transitional-bilingual education instructional models on Spanish proficiency for English language learners. *Bilingual Research Quarterly, 37,* 182-194. doi: 10.1080/15235882.2014.934971

National Assessment of Educational Progress (2012). *Trends in Academic Progress* (NCES 2013-456). Retrieved from: http://nces.ed.gov/nationsreportcard/subject/publications/main2012/pdf/2013456.pdf

National Center for Education Statistics (2009). The Nation's Report Card, Race/Ethnicity: Grade Point Average. Retrieved from: https://www.nationsreportcard.gov/hsts_2009/race_gpa.aspx?tab_id=tab3&subtab_id=Tab_1#chart

National Center for Education Statistics (2010). *Student effort and educational progress: Transition to college.* Retrieved from: http://nces.ed.gov/pubs2010/2010029.pdf

National Center for Education Statistics (2015). *The condition of education.* Retrieved from: http://nces.ed.gov/programs/coe/indicator_cgf.asp

National Public Radio (2017, March). Trump's budget blueprint pinches pennies for education.

Retrieved from: http://www.npr.org/sections/ed/2017/03/16/520261978/trumps-budget-blueprint-pinches-pennies-for-education

New American Economy (2017, March). Not lost in translation. Retrieved from: http://www.newamericaneconomy.org/wp-content/uploads/2017/03/NAE_Bilingual_V8.pdf

Oregon Department of Education (2015). Oregon school and district report cards. Retrieved from: http://www.ode.state.or.us/data/reportcard/reports.aspx

Ovando, C. J. (2003). Bilingual education in the United States: Historical development and current issues. *Bilingual research journal*, *27*(1), 1-24.

Pallant, J. (2016). *SPSS survival manual: A step-by-step guide to data analysis using IBM SPSS*. Crows Nest: Allen & Unwin.

Pew Hispanic Center (2005). Hispanics: A people in motion. Washington, D.C.: Pew Hispanic Center. Retrieved from: http://www.pewhispanic.org/2005/01/24/hispanic-trends/

Pew Hispanic Center (2013). What is the future of Spanish in the United States? Washington D.C.: Pew Hispanic Center. Retrieved from: http://www.pewresearch.org/fact-tank/2013/09/05/what-is-the-future-of-spanish-in-the-united-states/

Pew Hispanic Center (2014a). 5 Facts about Latinos and education. Washington, D.C.: Pew Hispanic Center. Retrieved from: http://www.pewresearch.org/fact-tank/2015/05/26/5-facts-about-latinos-and-education/

Pew Hispanic Center (2014b). Hispanic nativity shift. Washington D.C.: Pew Hispanic Center. Retrieved from: http://www.pewhispanic.org/2014/04/29/hispanic-nativity-shift/

Pew Hispanic Center (2014). More Hispanics, blacks enrolling in college, but lag in bachelor's

degrees. Washington, D.C.: Pew Hispanic Center. Retrieved from: http://www.pewresearch.org/fact-tank/2014/04/24/more-hispanics-blacks-enrolling-in-college-but-lag-in-bachelors-degrees/

Polit, D.F., & Beck, C.T. (2006). The content validity index: Are you sure you know what's being reported? Critique and recommendations Research in Nursing and Health, 29(5), 489-297. doi: 10.1002/nur.20147

Presidential Advisory Commission on Educational Excellence for Hispanic Americans (2003). From risk to opportunity: Fulfilling the educational needs of Hispanic Americans in the 21st Century (Executive Order 13230). Retrieved from: http://govinfo.library.unt.edu/eeha/paceea/finalreport.pdf

President's Council of Advisors on Science and Technology. (2012, February 7). Engage to excel: Producing one million additional college graduates with degrees in science, technology, engineering, and mathematics. A Report by the President's Council of Advisors on Science and Technology. Retrieved from: http://www.whitehouse.gov/sites/default/files/microsites/ostp/fact_sheet_final.pdf

Price, J.H. & Murnan, J. (2004) Research limitations and the necessity of reporting them. *American Journal of Health Education, 35*(2), 66-67. doi:10.1080/19325037.2004.10603611

Randolph, J. J. (2009). A guide to writing the dissertation literature review. *Practical assessment, Research & Evaluation*, *14*(13), 1-13.

Ricciardelli, L. A. (1992). Bilingualism and cognitive development in relation to threshold theory. *Journal of psycholinguistic research*, *21*(4), 301-316.

Riegle-Crumb, C., Moore, C., & Ramos-Wada, A. (2010). Who wants to have a career in science or math? Exploring adolescents' future aspirations by gender and race/ethnicity. *Science Education, 95*(3), 458-476.

Rumbaut, R.G. (2014). English plus: Exploring the socioeconomic benefits of bilingualism in southern California. In Callahan, R. M., & Gándara, P. (Eds.), *The bilingual advantage: Language, literacy, and the U.S. labor market* (182-208). Bristol, England: Multilingual Matters.

Short, D. & Fitzsimmons, S. (2007). *Double the work: Challenges and solutions to acquiring language and academic literacy for adolescent English language learners: A report to Carnegie Corporation of New York.* Alliance for Excellent Education.

Sugarman, S.D. & Widess, E.G. (1974). *Equal Protection for Non-English-Speaking School Children: Lau v. Nichols*, 62 CAL. L. REV. 157 (1974). Retrieved from: http://scholarship.law.berkeley.edu/californialawreview/vol62/iss1/3

Tanner, D. (2012). *Using statistics to make educational decisions.* Thousand Oaks, AC: SAGE Publications, Inc. doi: http://dx.doi.org/10.4135/9781452240596

Turcios-Cotto, V.Y. & Milan, S. (2013). Racial/ethnic differences in the educational expectations of adolescents: Does pursuing higher education mean something different to Latino students compared to white and black students? *Journal of Youth Adolescents, 42*(9), 1399-1412. doi: 10.1007/s10964-012-9845-9

United States Census (2014). *National Population Projections*. Retrieved from: http://www.census.gov/population/projections/data/national/2014.html?eml=gd&utm_medium=email&utm_source=govdelivery

U.S. Commission on Civil Rights. (2010). *Encouraging minority students to pursue science, technology, engineering and math careers*. A briefing before the United States Commission on Civil Rights held in Washington, D.C. Briefing report. Washington, DC: Retrieved from http://www.eric.ed.gov/PDFS/ED524622.pdf

United States Department of Education (2015). *Office of Civil Rights: Programs for English Language Learners Glossary.* Retrieved from: https://www2.ed.gov/about/offices/list/ocr/ell/edlite-otherresources.html

United States Department of Education (2015). *Achievement Gap Narrows as High School Graduation Rates for Minority Students Improve Faster than Rest of Nation.* Retrieved from: https://www.ed.gov/news/press-releases/achievement-gap-narrows-high-school-graduation-rates-minority-students-improve-faster-rest-nation

United States Department of Labor (2011). *The Latino Labor Force in the Recovery.* Retrieved from: http://www.dol.gov/_sec/media/reports/hispaniclaborforce/

Valdez, V. E., Freire, J. A., & Delavan, M. G. (2016). The gentrification of dual language education. *The Urban Review, 48*(4), 601-627.

Walker, S. A., & Pearsall, L. D. (2012). Barriers to advanced placement for Latino students at the high-school level. *Roeper Review, 34*(1), 12-25.

Waltz, C.F., Strickland, O.L., & Lenz, E.R. (2005). Measurement in nursing and health research. New York: Springer Publishing Co.

Wynd, C.A., Schmidt, B., & Schaefer, M.A. (2003). Two quantitative approaches for estimating content validity. *Western Journal of Nursing Research, 25*, 508 – 518.

Wilson, D. M. (2011, March/April). Dual language programs on the rise. *Harvard Educational Letter*. Retrieved from http://hepg.org/hel-home/issues/27_2/helarticle/dual-language-programs-on-the-rise#home

Winsler, A., Díaz, R.M., Espinosa, L., & Rodríguez, J.L. (1999). When learning a second language does not mean losing the first: Bilingual language development in low-income, Spanish-speaking children attending bilingual preschool. *Child Development*, *70*(2), 349-362.

Wong Fillmore, L. (1991). When learning a second language means losing the first. *Early Childhood Research Quarterly*, *6,* 323-346. Retrieved from: http://psych.stanford.edu/~babylab/pdfs/sdarticle.pdf

Wright, W. (2005). *Evolution of federal policy and implications of No Child Left Behind for language minority students.* (EPSL-0501-101-LPRU). Retrieved from Arizona State University, Language Policy Research Unit: http://nepc.colorado.edu/files/EPSL-0501-101-LPRU.pdf

Appendix A

Kightley, Adam (British Council) <Adam.Kightley@britishcouncil.org> Feb 23

to me

Dear Chelle,

Just a couple of hours after I sent the email below, we managed to track down the researcher who wrote the page in question. She writes:
I drew the Threshold Theory image myself (and the other images on the page). I drew it for some training I delivered before working for the [British Council] and I'm happy to give permission for Chelle Robins to use it.

Good luck with your dissertation!

Regards,
Adam Kightley | LearnEnglish Website Manager | English & Exams
British Council | ul. Koszykowa 54 | 00-675 Warsaw | Poland

T +48 22 695 59 52 | **BCTN** (internal) 130 5952
adam.kightley@britishcouncil.org

www.britishcouncil.org | www.britishcouncil.org/LearnEnglish

Threshold Theory graphic. Permission retrieved from: https://www.britishcouncil.org/terms

Appendix B

Monday, April 17, 2017 at 1:23 PM
Chelle,

Felicidades on your important work. I'll look forward to reading more about your project, and am glad this paper was helpful to you. If you have any intent to publish your work beyond your dissertation document, please let me know.

Best,

Charles

Charles R. Martinez, Jr., PhD Philip H. Knight Professor and Department Head Educational Methodology, Policy, and Leadership Director, Center for Equity Promotion
charlesm@uoregon.edu | 541-346-2161 5267 University of Oregon | Eugene, OR 97403-5267

From: Chelle Robins [mailto:Chelle@4riverscs.org] **Sent:** Monday, April 17, 2017 12:21 PM **To:** Charles Martinez <charlesm@uoregon.edu> **Subject:** FW: permission to use figure in dissertation

Hello Dr. Martinez,
Thank you for your permission to use the figure from Martinez, DeGarmo, and Eddy, 2004 for my dissertation. I will wait for your written approval and include it in the appendix. Thank you!

On Mar 26, 2017, at 11:23 AM, Chelle Robins <Chelle@4riverscs.org> wrote:
Good morning Drs. Martinez, deGarmo, and Eddy,
I am a current doctoral student and I am finishing up my dissertation titled, "The Impact of Dual Language Programs on Latino High School Students". I have a section in my dissertation regarding barriers for Latino students and cite how the goals of dual language programs could minimize some of the institutional barriers. I have different studies referenced for this topic as well as the Martinez, DeGarmo, and Eddy, 2004 study, and I would like to obtain permission to use Figure 1 on page 142, titled "Institutional barriers and acculturative contexts predicting Latino students; school success". The figure helps the reader understand the complexities of the topic and for the purposes of this study, examine how dual language programs may reduce barriers. I am happy to provide additional information or answer any questions you may have regarding the integration of the figure. Thank you.

Chelle Robins | Superintendent
Four Rivers Community School 2449 SW 4th Ave. Ontario, OR 97914 p541.889.3715 Chelle@4riverscs.org

Appendix C

Chelle Robins

From: Virginia Collier <vcollier@gmu.edu>
Sent: Saturday, October 17, 2015 6:56 PM
To: Chelle Robins
Cc: Wayne P Thomas
Subject: Re: request for permission

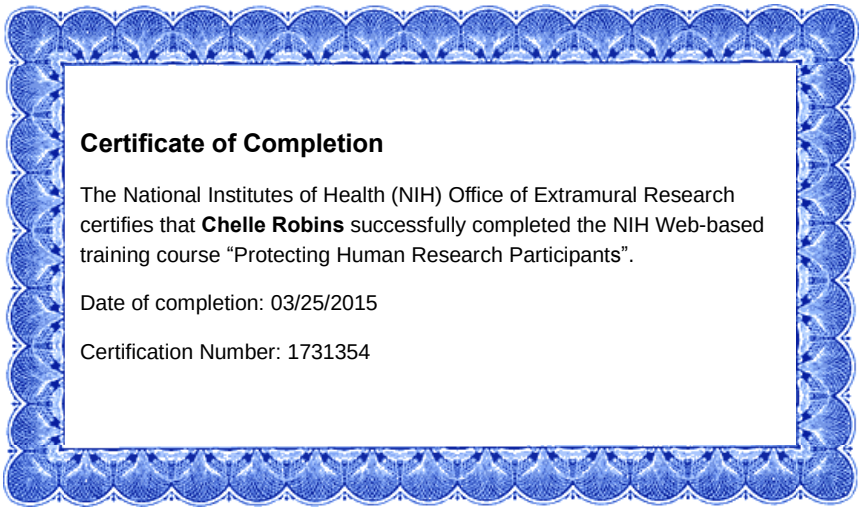
Dear Chelle,

You have our permission to include these figures in your dissertation. Thanks for requesting permission.

Sincerely,

Virginia P. Collier, Ph.D.
Professor Emerita of Bilingual/Multicultural/ESL Education
George Mason University
Professional email: vcollier@gmu.edu
Website: www.thomasandcollier.com

Appendix D



Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Chelle Robins** successfully completed the NIH Web-based training course “Protecting Human Research Participants”.

Date of completion: 03/25/2015

Certification Number: 1731354

Appendix E

From: Chelle Robins <Chelle@4riverscs.org>
Date: Thursday, September 15, 2016 at 9:28 AM
To: [redacted]
Subject: RE: survey updated with IB

Hello Supt. [redacted]
I hope your year is off to a great start! I am touching base regarding the approved research we spoke about last spring. I really appreciate the feedback on the survey and we have cut a significant portion of the survey and cleaned up some items. With your permission I would like to make contact with [redacted] and develop a timeline to hand out parent permissions and the survey. I have a meeting at [redacted] next Thursday so I will be flying in on Wednesday to meet the [redacted] team and if it is convenient for your team I would set up a time to meet with them as well. Thank you!

From: [redacted] [
Sent: Wednesday, February 24, 2016 10:58 AM
To: Chelle Robins <Chelle@4riverscs.org>
Cc: [redacted]
Subject Re: survey updated with IB

Chelle,
I know [redacted] is willing to consider helping and he and [redacted] can perhaps see if the other principals are willing.

With regard to the survey:

Items 8-11 might cause confusion with the use of the abbreviations and acronyms.

Item 15 needs to also include IB courses.

Sections 3 and 4 seem redundant, but we would have no objections to administering as is.

Good luck and stay in touch. Thanks.
[redacted]
Superintendent
[redacted] School District

[redacted]

On Tue, Feb 23, 2016 at 1:32 PM, Chelle Robins <Chelle@4riverscs.org> wrote:

> Dear Supt. [redacted],
> Thanks for the conversation today. I really appreciate your suggestions and thoughts about the data collection. Attached is the updated survey with the IB choice.

Appendix F

From: [redacted]
Sent: Friday, March 11, 2016 8:13 AM
To: Chelle Robins <Chelle@4riverscs.org>
Cc: [redacted]
Subject: RE: research proposal

Good morning Chelle,
I just received notice that [redacted] High School will be able to assist you with your proposal. I have cc'd [redacted] on this email, so she can help you with contacts, etc.
Have a great day!
[redacted]
Assistant to the Superintendent
[redacted]

From: Chelle Robins [mailto:Chelle@4riverscs.org]
Sent: Tuesday, February 09, 2016 8:53 AM
To: Superintendent <
Subject: research proposal

Hi [redacted],
Thanks for reviewing this and forwarding it. Have a great day!

Good Morning Superintendents [redacted] and [redacted],
I hope your week is off to a great start! I am a superintendent at a small dual language school in eastern Oregon and working on my PhD. I am hoping to include some data from [redacted] High students for the research that I am conducting this fall. I am attaching the research proposal documents for your review, but here is a snapshot of the study.
-One time survey in two classes (one with primarily dual language students and one with traditional ed students ages 16-19)
-Anonymous
-Data will be combined with other districts
-Survey will be given in one class period in October 2016
-Parental consent will be obtained
I have tried to make it as easy as possible for schools to participate. Attached is an intro letter, research proposal with *cut and paste permission language*, and the survey.

Thank you,
Chelle Robins

Appendix G

Student Information about the study and survey

We are doing a research study about ***language in education***. A research study is a way to learn more about students and their educational experiences. If you decide that you want to be part of this study, you will be asked to ***answer questions on a survey that takes about 15 minutes.***

There are some things about this study you should know***.***

Not everyone who takes part in this study will benefit personally. A benefit means that something good happens to you. We think these benefits might be ***a time to reflect on your educational experiences and the opportunity to make education better***.

If you do not want to be in this research study, your teacher has an alternative non-graded assignment that you can participate in.

When we are finished with this study we will write a report about what was learned. This report will **not** include your name or that you were in the study.

You do not have to be in this study if you do not want to be. If you decide to stop after we begin, that's okay too. Your parents know about the study too.

If you decide you want to be in this study, please sign your name.

I, _____, want to be in this research study.

_____ _____

(Sign your name here) Date

Appendix H

On 10/2/16, 2:31 PM, "Chelle Robins" <Chelle@4riverscs.org> wrote:

> Perfect. Thanks [redacted]!
>
> > On Oct 2, 2016, at 2:03 PM, [redacted]< wrote:
> > Chelly:
> > I am planning a meeting with my teachers this week. Last week was our Homecoming week and it was too crazy to talk about your study. I will give you the names as soon as they agree to participate and help.
> > thanks
> > -----Original Message-----
> > From: Chelle Robins [mailto:Chelle@4riverscs.org]
> > Sent: Sunday, October 02, 2016 11:35 AM
> > To: [redacted]
> > Subject: checking in
> > Hi [redacted],
> > I just wanted to check in and make sure that we have identified the teachers(s) that are participating. Can I get their contact information so I can touch base with them? The parent permissions should go home early this week (Monday-Tuesday) to make sure we allow enough time to get them back and remind students. Hope you have gotten your approval on your IRB :)
> > Thanks so much!
> > chelle

Appendix I

From: "[redacted]<
Date: Friday, March 11, 2016 at 1:16 PM
To: Chelle Robins <, [redacted]
Subject: RE: research proposal

Hi Chelle,

I am the coordinator of our bilingual programs. I can help you with whatever information you need for you to carry out your dissertation research. I've included [redacted] the assistant principal at [redacted] on this reply since he assists with the dual language program there.

[redacted] is willing to assist with your dissertation in hopes that we can learn from it as well. I'm going to help [redacted] as much as possible to minimize the work for them. Please let us know the specific details, then [redacted] and I can divide the pieces that you need for your research.

Feel free to call me if that is easier for you.

Thank you,

[redacted]

Appendix J

From: Chelle Robins <Chelle@4riverscs.org>
Date: Monday, October 10, 2016 at 1:57 PM
To: Teachers

Subject: research collection

Hello [redacted] team,

I am excited that [redacted] is participating in this dual language research for secondary students and I am very grateful for your willingness to assist with the collection of data. I know how busy everyone is and adding one more thing to our schedules can be a lot, so thank you! I have tried to make the research collection binders as straight forward and simple to follow as possible. I am certainly concerned about getting the permission slips back from students and whether or not they will find it important. One way to help increase permission slip return is to treat it as "homework". The student and their family still have the option participating or not participating, but the teacher has an expectation that the slips would be returned with a parent signature. You know your students best, so we are counting on the relationship you have in your classroom. It is important to note that we cannot tell students that they should participate and their participation or non-participation will not affect their grade in any way. Students that choose not to take the survey should have an alternative non-graded assignment on the day that the survey is given. The survey in its entirety should only take 15 minutes or less.

Would it be helpful to set up a 10 minute call with all of you together? If you feel comfortable with the step by step instructions and do not have any questions, just let me know.

In addition, if anything comes up and you have a questions please feel free to call me anytime. My cell is [redacted] Thank You!

Appendix K

Dual Language High School Student Survey-Validation

Instructions: Please rate each question with a 4, 3, 2, or a 1 rating using the highlighting tool. You are NOT answering the question, but rather helping to determine the strength of the question. The purpose of this survey is to gather A) demographic information (gender, age, home language, etc) B) determine differences in Spanish proficiency, C) determine post-secondary intentions, D) determine attitudes/beliefs about dual language program participation. You may use the comment section if you have a suggestion to alter a question, to make the question clearer, or think different wording would produce a better outcome. Thank you for your time!

Question/Statement

I identify my gender as: (fill in blank)

What year will you graduate?

What is your age?

What is your current grade in high school?

Have you participated in a dual language or bilingual program?

If yes, please circle ALL the grades that you participated in a dual language or bilingual program (Kinder, 1st, 2nd, 3rd, 4th. . .)

If yes, are you still taking classes in Spanish? (Yes, No, Never participated)

What do you consider your home language or the language first spoken to you by your parents?

What is the highest level of education your mother has?

When you entered school did you mostly speak? (Spanish, English, Both Equally)

To what racial or ethnic group do you most identify with?

Please circle ALL the math courses you are taking or have taken in high school. (Basic through Calculus)

Please circle ALL the science courses you are taking or have taken in high school. (Integrated through Adv.)

Have you taken any Advanced Placement (AP) or College Credit courses? If so, please list them here:

After high school I plan to attend: (FT work-no college, Community Coll., College/Univ., Trade/Vocational)

If you plan to go to college, what would you like to study/major?

What career would you like to have?

What is your cumulative GPA?

What kind of grades to you usually get in math? (mostly A's, A's/B's, B's/C's, C's/D's)

What kind of grades to you usually get in science? (mostly A's, A's/B's, B's/C's, C's/D's)

What kind of grades to you usually get in language arts? (mostly A's, A's/B's, B's/C's, C's/D's)

In speaking Spanish, I would rate my grammar as:

In speaking Spanish, I would rate my fluency as:

In speaking Spanish, I would rate my vocabulary as:

In thinking about reading in Spanish: (levels of enjoyment)

In thinking about reading in English: (levels of enjoyment)

If I don't understand something in one language, sometimes I try to think whether I know that information in the other language.

Learning in two languages has given me more confidence to do well in school.

I enjoy studying in Spanish and English the way I do at school.

I read and write well in English (for my grade level).

I read and write well in Spanish (for my grade level).

I have the English skills necessary to understand all written class materials.

I can translate from English to Spanish (or Spanish to English).

I'm glad that I participate(ed) in the dual language program.

Being bilingual helps me think in different or more creative ways.

I have the Spanish skills to:

-have conversations with my peers outside of school.

-provide and obtain information.

-express feelings and emotions.

I have the Spanish skills to:

-express opinions about various topics.

-understand and interpret written and spoken Spanish on a variety of topics.

-present information , concepts and ideas to an audience on a variety of topics.

I would say that I am: (Not at all bilingual, Somewhat, Mostly, Very Bilingual)

How comfortable do you feel speaking Spanish in public?

How would your rate your ability to use Spanish with your friends and family?

How would your rate your ability to use Spanish in the classroom?

How would your rate your ability to read in Spanish?

How would your rate your ability to read in English?

Appendix L

Table X: Language Proficiency-English and Spanish

	Latino			
Variables	DL Participants		non-DL Participants	
	n	*Median*	*n*	*Median*
Spanish Grammar	26	4.00	26	4.00
Spanish Fluency	26	5.00	26	4.00
Spanish Vocabulary	26	5.00	26	4.00
Reading in Spanish	26	3.00	26	2.50
Reading in English	26	3.00	26	3.00
Between Languages	26	3.00	26	3.00
Read/Write English	25	3.00	26	3.00
Read/Write Spanish	26	3.00	26	3.00
English Written Skills	26	3.00	26	3.00
Translate between Languages	26	4.00	26	3.00
Spanish Peer Conversations	26	4.00	26	3.00
Spanish Obtain Information	26	4.00	26	3.00
Spanish Feel/Emotions	26	4.00	25	3.00
Spanish Express Opinion	26	3.50	25	3.00
Spanish Interpret Topic	26	4.00	25	3.00
Spanish Present Information	26	3.00	25	3.00
Bilingual	25	4.00	26	3.00
Comfort Spanish Speaking	25	4.00	26	4.00
Spanish w/ Family/Friends	25	4.00	26	3.50
Spanish in Class	25	3.00	25	3.00
Spanish to Read	25	4.00	26	3.00
English to Read	25	4.00	26	3.00

Note. The variable names are shortened representations of the survey items. The survey may be found in the appendix. The first five variables use a 1-6 point ordinal scale and the remaining variables use a 1-4 point ordinal scale. The survey items with significant values can be found in Table X.

Appendix M

High School Survey 2016

We are doing a research study about ***language in education***. A research study is a way to learn more about students and their educational experiences. If you decide that you want to be part of this study, you will be asked to ***answer questions on a survey that takes about 15 minutes.***

There are some things about this study you should know***.***

Not everyone who takes part in this study will benefit personally. A benefit means that something good happens to you. We think these benefits might be ***a time to reflect on your educational experiences and the opportunity to make education better***.

If you do not want to be in this research study, your teacher has an alternative non-graded assignment that you can participate in.

When we are finished with this study we will write a report about what was learned. This report will **not** include your name or that you were in the study.

You do not have to be in this study if you do not want to be. If you decide to stop after we begin, that's okay too. Your parents know about the study too.

If you decide you want to be in this study, please sign your name.

I, _____, want to be in this research study.

_____ _____

(Sign your name here) Date

Section 1

Instructions: Place an "X" in the space beside the response that best describes you.

1. I identify my gender as: ____Male ____Female Other preference: _____

2. What year will you graduate? ____2017 ____2018 ____2019 ____2020

3. What is your age? ____14 ____15 ____16 ____17 ____18 ____19

4. What is your current grade in high school? ____9th ____10th ____11th ____12th

5. Have you participated in a dual language or bilingual program? _____Yes _____No

*If yes, please circle **ALL** the grades you participated in a dual language or bilingual program.*

Kinder 1st 2nd 3rd 4th 5th 6th 7th 8th 9th 10th 11th 12th

6. If yes, are you still taking classes in Spanish? ____Yes ____No ____Never participated in dual language

7. What do you consider your home language or the language first spoken to you by your parents?

_____Spanish _____English _____Spanish & English _____Other _____
(language)

8. What is the highest level of education your mother has?

__ elementary school
__ junior high or some high school
__ GED
__ high school graduate
__ some college/community college/trade school
__ college degree

9. When you entered school did you mostly speak:

____Spanish
____English
____Both equally

10. To what racial or ethnic group do you *most* identify with:
____Hispanic/Latino
____African American
____Native American/American Indian
____Asian/Pacific Islander

____Caucasian
____Other _____

11. Please *circle* the math courses you are taking or have taken in high school:

Basic · Pre-Algebra · Algebra I · Algebra II · Geometry · Trigonometry · Pre-Calculus · Calculus

12. Please *circle* the science courses you are taking or have taken in high school:

Integrated Science · Chemistry I · Chemistry II · Biology I · Biology II · Physics I · Physics II

13. Have you taken any Advanced Placement (AP), International Baccalaureate (IB), or College Credit courses? If so, please list them here:

_____ _____

_____ _____

_____ _____

14. After high school I plan to attend: (please circle)

Full time work-no college · Community College · College/University · Trade School/Vocational ·

(If you select full time work- no college, skip item 15 and 16. Go to #17)

15. If you plan to go to college, what would you like to study/major? _____

16. What career would you like to have? _____

17. What is your cumulative Grade Point Average, GPA? _____

18. Instructions: Place an "X" in the boxes that best represents your grades in each subject

What kind of grades do you usually get in:	**Mostly A's**	**A's and B's**	**B's and C's**	**C's and D's**
Math				
Science				
Language Arts				

Section 2

Instructions: Place an "X" in the space beside the response that best describes your Spanish language.

21. In speaking *Spanish*, I would rate my <u>grammar</u> as:

__ I can produce very basic sentence patterns but with frequent grammatical errors
__ I can produce a few complex sentence constructions but with noticeable grammatical errors
__ I can speak using a good range of complex patterns and grammatical rules. However, occasional errors are present
__ I have a good command over a large range of complex grammar and errors are infrequent
__ I can speak with a native-like command of complex grammatical patterns

__ I do not speak Spanish

22. In speaking *Spanish*, I would rate my <u>fluency</u> as:

__ I can participate in a simple conversation on familiar everyday topics at slower-than-normal speed
__ I can express myself using simple language, but make mistakes and pause a lot when I try to express complex ideas
__ I can effortlessly express myself at near normal speed. Occasionally I have to slow down when expressing complex ideas and less-common expressions.
__ I am generally fluent, but occasionally have minor pauses when I search for the correct manner of expression
__ I have native-like fluency

__ I do not speak Spanish

23. In speaking *Spanish*, I would rate my <u>vocabulary</u> as:

__ I have enough vocabulary to make simple statements and ask questions in a simplified conversation
__ I have an adequate working vocabulary. I know some synonyms and can express simple ideas in a few ways
__ I have enough vocabulary to participate in everyday conversation & know many alternate ways of expressing simple ideas
__ I have enough vocabulary to participate in more extended discussions on various topics. I also know some nuances of some words and expressions
__ I have an extensive native-like vocabulary

__ I do not speak Spanish

24. In thinking about <u>reading in Spanish:</u>

__ I love to read & read for pleasure in Spanish
__ I like to read and sometimes read for pleasure in Spanish
__ I don't really like to read in Spanish
__ I hate to read in Spanish

25. In thinking about <u>reading in English:</u>

__ I love to read and read for pleasure in English
__ I like to read and sometimes read for pleasure in English
__ I don't really like to read in English
__ I hate to read in English

Instructions: Please rate how strongly you agree or disagree with each statement by circling the letters under the appropriate degree of agreement.

Section 3				
	Strongly Disagree	Disagree	Agree	Strongly Agree
26. If I don't understand something in one language, sometimes I try to think whether I know that information in the other language.	SD	D	A	SD
27. Learning in two languages has given me more confidence to do well in school.	SD	D	A	SD
28. I enjoy studying in Spanish and English the way I do at school.	SD	D	A	SD
29. I read and write well in English (for my grade level).	SD	D	A	SD
30. I read and write well in Spanish (for my grade level).	SD	D	A	SD
31. I have the English skills necessary to understand all written class materials.	SD	D	A	SD
32. I can translate from English to Spanish (or Spanish to English).	SD	D	A	SD
33. I'm glad that I participate(ed) in the dual language program.	SD	D	A	SD
34. Being bilingual helps me think in different or more creative ways.	SD	D	A	SD
35. **I have the Spanish skills to:**				
-have conversations with my peers outside of school.	SD	D	A	SD
-provide and obtain information.	SD	D	A	SD
-express feelings and emotions.	SD	D	A	SD
38. **I have the Spanish skills to:**				
-express opinions about various topics.	SD	D	A	SD
-understand and interpret written and spoken Spanish on a variety of topics.	SD	D	A	SD
-present information, concepts and ideas to an audience on a variety of topics.	SD	D	A	SD

Section 4				
	Not at all Bilingual	Somewhat Bilingual	Mostly Bilingual	Very Bilingual
41. I would say that I am:	NB	SB	MB	VB
	Very uncomfortable	Somewhat uncomfortable	Somewhat comfortable	Very comfortable
42. How comfortable do you feel speaking Spanish in public?	VU	SU	SC	VC
	Not at all Fluent	Somewhat Fluent	Mostly Fluent	Very Fluent
43. How would you rate your ability to use Spanish with your friends and family?	NF	SF	MF	VF
44. How would you rate your ability to use Spanish in the classroom?	NF	SF	MF	VF
45. How would you rate your ability to *read in Spanish*?	NF	SF	MF	VF
46. How would you rate your ability to *read in English*?	NF	SF	MF	VF

You have finished the survey, please turn this into your teacher. Thank you for your participation!