HIGH SCHOOL SIZE AND DIFFERENCES IN THE ACADEMIC ACHIEVEMENT OF ENGLISH LANGUAGE LEARNERS: A TEXAS STATEWIDE, MULTIYEAR INVESTIGATION

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Doctor of Education

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by

Joseph L. Rodriguez

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DEDICATION

This dissertation is dedicated to my wonderful wife, Zakiya, who supported me and encouraged me over the years to become all I can be. I also thank my extended family, the Le'Grande's, who supported me and encouraged me throughout this process, and mother Barbara Lambria, who is cheering me on from heaven, and would be very proud of me. Finally, I give special thanks to my friend Dr. John Williams, who provided me with his support and words of encouragement. To each of these persons, I extend my warmest appreciation for their support, encouragement, and influence to make the doctoral program possible.

ABSTRACT

Rodriguez, Joseph L., *High school size and differences in the academic achievement of English Language Learners: A Texas statewide, multiyear investigation.* Doctor of Education (Educational Leadership), December 2016, Sam Houston State University, Huntsville, Texas.

Purpose

The purpose of this journal-ready dissertation was to determine the relationship of high school size with the academic achievement (i.e., reading and mathematics) of English Language Learners enrolled in Texas high schools. In the first journal article, the relationship of high school size and student achievement as function of poverty for English Language Learners was determined. In the second study, the extent to which high school size was related to the academic achievement of English Language Learners by their ethnicity/race was ascertained. Finally, in the third empirical investigation, the relationship between high school size and the academic achievement of English Language Learner boys and girls was examined. Each of these empirical investigations had two years of statewide public school data analyzed. This 2-year analysis of data permitted a determination of the degree to which trends were present in the relationship of high school size with the academic achievement of English Language Learners as a function of their economic status, ethnicity/race, and gender.

Method

A causal-comparative research design (Johnson & Christensen, 2014) was used for this quantitative study. Previously obtained archival data from the Texas Education Agency Public Education Information Management System for the 2008-2009 and the 2009-2010 school years were utilized. The independent variable in this research study

was student enrollment at the high school level in which the University Interscholastic League (2013) conference cutoff numbers for the State of Texas were used to determine school sizes.

Findings

Statistically significant results were present for a majority of the analyses, with English Language Learners who were enrolled in Large-size high schools having statistically significant better results than English Language Learners who were enrolled in Small-size high schools. The lowest performance in reading and mathematics was present for English Language Learners who were enrolled in Small-size schools. Effect sizes ranged from small to large. Results from this study were congruent with much of the empirical literature. Academic achievement was better for English Language Learners enrolled in Large-size high schools than for English Language Learners in Small-size high schools Implications for policy and recommendations for research were provided.

KEY WORDS: English Language Learners, Economically disadvantaged, Ethnicity/Race, Gender, Reading, Mathematics.

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CHAPTER I

INTRODUCTION

The fundamental principle of the No Child Left Behind Act (2001) required all schools to improve the performance of all students. To achieve this 2001 mandate, schools were required to test and account for minority subgroups, and ensure their academic progress from one year to the next. Hailed by critics as inflexible and unrealistic, President Obama enacted new federal education policy in 2015, the Every Student Succeeds Act. In this new law, the spirit of the No Child Behind Act was preserved, along with concerns of its critics being addressed, primarily the idea that one size fits all. In both of these federal policies, every student, regardless of economic status, race/ethnicity, gender, or English language proficiency, is required to demonstrate proficiency on state assessments in Grades 3-8, and then again in high school, in English Language Arts, Mathematics, History, and Science. Public schools are faced with ensuring all students achieve, yet, how best to educate English Language Learners is open to much debate.

Review of the Literature for School Size and Student Economic Status

Valid and reliable data on how best to serve English Language Learners and address their academic success is needed as the population of English Language Learners dramatically increases in the United States (Intercultural Development Research, 2015). English Language Learners are the fastest growing subgroup in the United States. Approximately 4.7 million English Language Learners are enrolled in U.S public schools (Intercultural Development Research, 2015). The National Clearinghouse for English Language Acquisition (2006) estimated 25% of the student population in the United

States would be of English Language Learners by 2025. In the 2010-2011 school year, 11% of public school students faced the overwhelming task of learning English and acquiring academic proficiency (Maxwell, 2012). With respect to the state of interest in this article, Texas public schools enrolled more than 800,000 English Language Learners (200,000 in middle and high schools) in 2014, with the majority of English Language Learners in Texas being born in the United States (Intercultural Development Research, 2015).

Questions regarding the academic achievement of English Language Learners have gained prominence at the national level (August & Shanahan, 2006; Solórzano, 2008). The rapid growth of English Language Learners in the United States and states such as Texas place mounting pressures on schools and school district to ensure that English Language learners are achieving academically. Unfortunately, test scores in reading and mathematics for English Language Learners remain far below their native English-speaking peers (Ardasheva, Tretter, & Kinny, 2012; Fry & Pew, 2008; Intercultural Development Research, 2015; National Center for Public Policy and Higher Education, 2005). English Language Learners are one of the lowest performing subgroups in Texas (Intercultural Development Research, 2015). In Texas, middle and high school English Language Learners are twice as likely as native English speakers to be retained. Moreover, the achievement gap between English Language Learners and native English speakers increases as their academic careers progress (Intercultural Development Research, 2015). Consistent achievement gaps have been noted between English Language Learners and native English speakers on the State of Texas

Assessments of Academic Readiness Reading and Mathematics college readiness rates (Rodriguez & Slate, 2015).

Although consistent evidence exists that English Language Learners are more than likely to drop out of school than their English-speaking peers, data are lacking regarding dropout rates for English Language Learners (Sheng, Sheng, & Anderson, 2011). Unlike race or ethnicity, which once established remains constant, a student's English language proficiency may improve as fluency is achieved over time, making it impossible to assess dropout rates meaningfully based on current English Language Learner populations (Abedi, 2004). Additionally, having limited English proficiency negatively influences academic achievement and is a risk factor for dropping out of school (Abedi, 2004; Genesse, Lindholm-Leary, Saunders, & Christian, 2005; Maxwell, 2012; The Course Crafters Guide to the ELL Market, 2012). Complicating the issue for English Language Learners is the fact that English Language Learners are concentrated in a small number of schools located in predominantly poor, urban areas (Darling-Hammond, 2004; De Cohen, Deterding, & Clewell, 2005; Noguera, 2011; Yeakey, 2012).

In the 2008-2009 school year, the 100 largest public school districts in the United States and its territories were responsible for educating 22% of all public school students, and the majority of students in those districts were Hispanic or Black (Sable, Plotts, Mitchell, & National Center for Education Statistics, 2010). Three states (i.e., Texas, Florida, and California) accounted for nearly one-half of the 100 largest school districts in the country, and each of those school districts enrolled at least 47,448 students (Sable et al., 2010). In an investigation examining the relationship of school district size and the

academic achievement of Texas Limited English Proficient students on the Texas Assessment of Knowledge and Skills (TAKS) tests in the 2010-2011 school year, Limited English Proficient students performed better in large-size school districts than in moderate or small-size school districts (Barnes & Slate, 2014). Despite the fact that Texas public schools have experienced a 19.8% increase in school enrollment over a 10-year period, 1998 to 2008 (Texas Education Agency, 2009), the number of school districts has seen a rapid decrease (Riha, Slate, & Martinez-Garcia, 2013).

In regard to school size, school size is often considered to be one of the factors that influences student achievement. School size is one factor that has been investigated extensively in regard to academic achievement (Barnes & Slate, 2014; Bracey, 1998; Greeney, 2010; Howley, 1996; Ketchum & Slate, 2010). However, recently, the culmination of overpopulated schools and the resulting academic and behavioral consequences that have arisen have initiated proposals to reverting large schools back into smaller ones (Vejar, 2015). Despite widespread initiatives to reduce school size, minimal research has been conducted regarding the relationship between school size, engagement, and student achievement in high school (Weiss, Carolan, & Baker-Smith, 2010). Although disagreements still exist regarding optimal school size and student academic success (Bickel, 1999; Black, 2006), researchers (Greeney, 2010; Greeney & Slate, 2012; Ketchum & Slate, 2012; Riha et al., 2013; Weiss et al., 2010; Zoda, Slate & Combs, 2011) have established that students perform statistically significantly better in larger-size schools than in smaller-size schools.

However, Howley (1996) reported in a West Virginia study that small schools promoted the academic achievement of students in poverty, whereas large schools most

benefited affluent student. Discussion on optimal school size is often centered on specialization versus humanization (Bracey, 1998). The most cited complaint by high school students in large-size schools was the anonymity experienced. Many students indicated feeling dehumanized. On the other hand, large-size schools have advantages smaller-size schools do not, such as the ability to have more course offerings. Additionally, discussion on optimal school size is frequently centered on the theoretical framework of economies of scale, whereas one large school can operate more efficiently than can two small schools (Barnes & Slate, 2014; Bracey, 1998; Moore, Combs, & Slate, 2012).

Greeney and Slate (2012) contended school size may also be related to school connectedness. School connectedness is the attachment students experience toward their school as a result of the positive and respectful interactions the students have with adults in their schools (Wilson, 2004). When students develop an attachment with their school, coupled with high academic standards, student academic achievement improves, along with increase in attendance and completion rates (Blum, 2005; Greeney & Slate 2012). School connectedness has been investigated extensively across many fields (e.g., medicine, education, psychology, sociology), and related concepts (e.g., student engagement and school climate), and thus the concept of school connectedness does not provide a distinctly pragmatic base (Blum, 2005).

Extensive research has been conducted over the last 20 years regarding academic achievement and economic status (Bickel, 1999, 2000; Lee & Slate, 2014; Shera & Mitre, 2012). The major finding in this body of literature is that school success is greatly influenced by family socio-economic status. Poverty and access to college-ready

academic opportunities are among one of the most persuasive indicators in determining whether students attend college (Maxwell, 2012). Bickel (1999) and Lee and Slate (2014) established the presence of statistically significant differences in academic achievement between Texas students who were economically disadvantaged from students who were not economically disadvantaged.

In research investigations on school size, socioeconomic status, and achievement, in states such as West Virginia, Texas, Georgia and California, researchers have linked school size to both effectiveness and equity (Bickel, 1999; Bickel, Howley, Williams, & Glascock, 2000). In a Texas replication study conducted by Bickel (2000), statistically significant effects were present for students in Grades 8 and 10, such that student achievement for less advantaged students decreased as school size increased. In other words, as schools became larger, those schools having a substantial numbers of students living in poverty performed increasingly less well than schools having lower numbers of students in poverty. These findings may be indicative of society's failure in providing educational opportunities for all students regardless of their social and economic status.

Family socioeconomic status is one of the best predictors regarding school failure and student dropout (Sirin, 2005). English Language Learners are more likely than their English speaking peers to come from low-income families and are much more likely to be economically disadvantaged than non-English language learners (Maxwell, 2012; Sheng, Sheng, & Anderson, 2011). As reported in the Schools and Staffing Survey for the 2007-2008 school year, more than 60% of English Language Learners were eligible for free and reduced lunch programs, and 40% of English Language Learners had parents who did not complete high school (Keigher, 2009). With regard to secondary school size

and Texas students who were economically disadvantaged, differences were investigated for the English Language Arts and Mathematics passing rates on the Texas state assessment tests (Ketchum & Slate, 2012). Ketchum and Slate (2012) established that students in the largest school-size group (i.e., 2,099 to 4,697 enrolled students) statistically significantly outperformed students in the moderately large schools (i.e., 1,159 to 2,098 enrolled students). Readers should note the conflicting results between the Bickel (2000) investigation and the more recent Ketchum and Slate (2012) study.

The student population in U.S. public schools will continue to be culturally and linguistically diverse as the English language learning population continues to explode. Noted in the Intercultural Development Research (2015) was that the youth population that was the fastest growing has the highest risk of dropping out of school. Although dropping out of school may be associated with many factors, English Language Learners share some important characteristics (e.g., economically disadvantaged, Limited English Proficient, diverse cultural background) that place them at risk of dropping out of school. Yet, minimal to no published literature exists on school size and the academic achievement of English Language Learners in poverty.

Review of the Literature for School Size and Student Ethnicity/Race

In 2012, one in nine public school students faced the daunting task of learning English and acquiring academic proficiency (Flores, Batalova, & Fix, 2012). The highest percentage of English Language Learner students can be located in eight states: Alaska, California, Colorado, Hawaii, Nevada, New Mexico, Oregon, and Texas (Intercultural Development Research, 2015). Texas, the state with the second-largest number of English Language Learners in the nation behind California, enrolled over 800,000

English Language Learners in the 2013-2014 school year, approximately 17% of the total student population (Intercultural Development Research, 2015). As the number of English Language Learners has grown over time, so has the interest of educators and policymakers regarding their educational outcomes (August & Shanahan, 2006; Flores et al., 2012; Solórzano, 2008).

Shifting demographic changes in culture, race/ethnicity, and language in the United States, is raising concerns on the ability of U.S public schools to educate all students successfully (Yates, 2008). Additionally, the No Child Left Behind Act of 2001, and the most recent comprehensive federal education policy, Every Student Succeeds Act (2015), not only requires states to assess English language proficiency, but holds all public schools accountable for ensuring English Language Learners learn English and achieve academic proficiency comparable to their English-speaking peers. Unfortunately, educational outcome data for English Language Learners highlights concerns regarding U.S public schools to educate all students successfully (Flores et al., 2012; Intercultural Development Research, 2015; Rodriguez & Slate, 2015). Test scores in reading and mathematics for English Language Learners consistently lag their native English-speaking peers (Ardasheva, Tretter, & Kinny, 2012; Fry & Pew, 2008; Intercultural Development Research, 2015; National Center for Public Policy and Higher Education, 2005).

In a 2012 Texas study conducted by Flores et al., substantial differences were documented in the test scores of English Language Learners by race and ethnicity. As noted in the study, Asian students were the top performing group, followed by White, then Black, and Hispanic students. Although only 13-25% of English Language Learners

reached the Commended Performance level on the state assessment, despite the fact that the Texas Education Agency recognizes the Commended Performance level as the goal for all students (Flores et al., 2012). Furthermore, Asian and White English Language Learners who were ever classified as English Language Learners were almost as likely to graduate from high school as native English-speakers, demonstrating that the graduation of English Language Learners from high school may be more correlated with race and ethnicity than with English Language Learner status.

In regard to school size, in 2009, the 100 largest school districts in the United States were responsible for educating 22% of all students enrolled in public schools (Sable et al., 2010). The majority of students enrolled in those 100 districts were Black and Hispanic, with each school district enrolling at least 47,448 students (Sable et al., 2010). Nearly half of these 100 largest school districts were located in Texas, Florida, and California. In 2010, The National Center for Education Statistics estimated a 7% student population growth for public elementary and secondary schools in the United States through the year 2020. Despite the projected growth in student population, the number of school districts has steadily declined (Robertson, 2007). As the student population continues to grow, so will questions of school size. Educational leaders in school districts across the country will be forced to decide whether they want to open new schools, thus keeping campuses smaller, build bigger campuses, or to expand existing schools, making them larger. During difficult economic times, expanding schools may seem to appear as a viable economic option, but at what expense? How large is too large? How will school expansion influence student performance and achievement?

Considerable research (Greeney, 2010; Greeney & Slate, 2012; Riha et al., 2013; Slate & Jones, 2006, 2008) into school size and student performance has been conducted. These researchers all indicated that students enrolled in large-size schools academically outperformed those students enrolled in small-size schools. It is important to note for the reader that the investigations were limited to Texas public schools. Investigations concerning school size for Texas public schools continues to be a relevant topic of study, because of the substantial increase in student enrollment, and the projected enrollment over the next decade (Texas Education Agency, 2011). According to the Texas Education Agency (2011), the student population growth in Texas (23.6%) outpaced the student population growth in the United States (12.6%) over a 10-year period (1999-2009). Given the increase in student enrollment, and in the English Language Learner student population in the United States and in states such as Texas, the relationship of high school size and the academic achievement of students identified as being Limited English Proficient (i.e., the phrase used in Texas) is critical to ensuring that public schools remain viable and no child is left behind.

Review of the Literature for School Size and Student Gender

The United States is in the midst of one of the largest diverse ethnic/racial immigration waves in its history (Jimenez & Horowith, 2013). Public schools in the United States present a true picture of the rapid changes in the United States, particularly because the educational system has more universal access to the U.S. population than any other organization or institution (Yates, 2008). In a 10-year span, between 1996 and 2006, a 57% enrollment increase transpired in the number of English Language Learners in U.S. public schools (Intercultural Development Research, 2009). In 2007, the number

of school-age students enrolled in public schools who spoke a language other than English was almost 11 million (Goldenberg & Coleman, 2010). Of concern is that in 2012, 11% of public school students experienced difficulties in learning English and acquiring academic proficiency (Flores et al., 2012). With regard to Texas, Texas public schools enrolled over 800,000 English Language Learners in the 2013-2014 school year (Intercultural Development Research, 2015). The Intercultural Development Research (2015) association determined that only a handful of secondary schools in Texas exceeded the academic benchmarks for English Language Learners. The burgeoning demographic changes in culture, race/ethnicity, and language in the United States and in U.S. public schools raises concerns regarding the ability of the educational system to educate all students in U.S. public schools (Yates, 2008).

Key issues regarding the assessment and accountability of English Language Learners often revolved around the mandates proposed in the No Child Left behind Act (2001), an education policy in which English Language Learners were required to take high-stakes assessments in a language, that by definition, they have yet to master (Menken, 2010). This federal education act placed an urgency and expectation on U.S. public schools to educate all students, regardless of their English proficiency. For those schools that failed to meet adequate yearly progress for two or more years, the possibility of facing severe sanctions, such as closure, the firing of teachers, or having to offer public school choice was present (Freeman & Crawford, 2008). The foundational belief in the No Child Left Behind Act was the predisposition that every public school student deserved a better education than what was being offered (Freeman & Crawford, 2008; Goldenberg & Coleman, 2010; Menken, 2010; No Child Left Behind Act, 2001). Many

educators, however, have argued the pressure was unfair, misguided, and had actually caused more harm than good (Goldenberg & Coleman, 2010). The truth of the matter is that a test given in English to English Language Learners makes it difficult to access the content knowledge of an English Language Learner (Menken, 2000; 2008). Unfortunately, President Obama continued to ignore the critics of the No Child Left Behind Act, by imposing the same mandates in his administration's federal education act, the Every Student Succeeds Act (2015), requiring states to assess English language proficiency, while also being held accountable for ensuring English Language Learners achieve academic proficiency comparable to their English-speaking peers.

An extensive history exists in U.S. public schools of educating English Language Learners with conflicting and questionable approaches (Gil & Burdock, 2010). Despite extensive research that supports differentiated approaches to teaching English Language Learners, the lack of federal guidelines coupled with the preconceived notions of educators further exacerbates the confusion concerning appropriate policies and strategies in which the needs of English Language Learners are addressed (Gil & Burdock, 2010). Even though the United States has had decades of experience in attempting to address the academic needs of public school English Language Learners, researchers (Intercultural Development Research, 2015) indicate that substantial improvements are still needed at the federal, state, and local level, to address the needs of English Language Learners in U.S. public schools. Schools with comparable assets and challenges may produce dramatically different academic achievement results for English Language Learners (Aleman, Johnson, & Perez, 2009). For English Language Learners to be academically successful, Aleman et al. (2009) recommended that schools set high expectations for their

English Language Learners, focus on conceptual understanding, develop a culture of appreciation, and hire leadership that create a caring and persistent culture within their schools for all students. The current state of English Language Learner education in the United States is a challenge, but this challenge provides an opportunity for schools and school districts to demonstrate how English Language Learners can be effectively served.

Between 1992 and 2002, an increased interest in gender differences had occurred, particularly related to academic achievement, motivation, and knowledge development (Kitchenham, 2002). Furthermore, the research appears to be divided by geography and approach. Whereas researchers in countries such as Australia, New Zealand, and Great Britain examined the sociological causes of gender differences; researchers in countries such as Canada and the United States explored the biological causes with regard to gender differences and academic achievement (Kitchenham, 2002). Whether or not gender differences can be explained by sociological or biological variables, any gender differences ultimately must be addressed in the classroom.

With regard to gender differences in test scores, research has been conducted for many decades (Baker, 1987; Buchmann, DiPrete, & McDaniel, 2008; Gipps & Murphy, 1994; Maccoby & Jacklin, 1974). In numerous United States and international assessments (Gallagher & Kaufman, 2005; Marks, 2008), boys outperformed girls in mathematics, and girls outperformed boys in reading. These documented gender differences persist in standardized tests, such as the SAT. Despite extensive research in this area, disagreements remain in several measures regarding gender differences (Buchmann et al., 2008). Disagreements with questions pertaining to, for example, as to when during the course of the student's education do gender differences in mathematics

appear, are boys more variable than girls on measures of achievement, and whether differences in test scores are declining between boys and girls. Some researchers (e.g., Hyde et al., 1990) argued test scores between girls and boys were declining, whereas other researchers (Hedges & Nowell, 1995; De San Roman & De La Rica, 2016) have argued test scores have remained stable over the last 10-30 years. Even though disagreements may still exist, researchers (Buchmann et al., 2008; Lapayese et al., 2014; Legewie & DiPrete, 2012) examining gender differences tend to focus on social and economic factors.

The student academic achievement may be influenced by student motivation (Mahdavy, 2013; Yeung, Lau, & Nie, 2011). Unfortunately, researchers (e.g., Watt, 2008) have suggested students have reduced motivation and lower self-perceptions as they become older. Yeung et al. (2011) also suggested that boys and girls may differ in some motivational constructs (e.g., self-efficiency, interest, goal orientation, engagement, and avoidance), although some of these differences may be due to gender-role stereotypes. With regard to developmental trends, boys and girls begin with a similar sense of ability, however, gender differences often emerge as students move from elementary to secondary schools (Usher & Pajares, 2008). Usher and Pajares (2008) suggested that gender stereotypes often lead girls to underestimate their abilities in tasks often perceived as masculine (e.g., mathematics and science). Because motivation and student self-abilities appear to have an influence on the academic achievement of students, both of these variables should be given serious consideration with regard to grade and gender related patterns for girls in secondary schools (Yeung et al., 2011).

In addition, biliteracy, the ability to read and write in two languages, has been documented to play a vital role in the academic achievement of English Language Learners (Lapayese et al., 2014). In an exploratory study on gender and the academic achievement of Hispanic English Language Learners on benchmark tests in fiction and nonfiction across five academic years, Lapayese et al. (2014) indicated gender played a considerable role in the biliteracy of Hispanic English Language Learners across all grades. Boys considerably underperformed girls in both English and Spanish Assessments. In addition, in the 2009 school year, although girls outperformed boys, less than 50% of the girls were on grade level.

Altermatt and Pomerantz (2003) also reported girls worry more about school performance than boys. Pomerantz, Altermatt, and Saxon, (2002) provided at least two reasons to explain why girls worry more about their school performance than do boys. First, girls are more concerned than boys with pleasing adults, making girls more vulnerable to fears that failure may cause adults (e.g., teachers, parents) to feel disappointed in them. Second, girls are more likely than boys to feel that academic performance is a reflection of their abilities. Whereas boys are more likely to blame a poor mathematics test score on other causes, such as lack of studying, girls tend to perceive a poor mathematics score as an indication of their overall math abilities. Despite the fact that girls outperform boys academically in school (Buchmann et al., 2008; Klotter, 2000; Lapayese et al., 2014), girls' heightened level of worrying may lead girls to avoid challenges they are highly capable of handling, making them disinclined to pursue careers in mathematics and science.

Researchers (e.g., Buchmann et al., 2008; Klotter, 2000; Lapayese et al., 2014) continue to emphasize that English Language Learners boys and girls perform differently despite the fact they have equal access to effective educational programs. Additionally, researchers often examine entire groups as a single phenomenon (e.g., English Language Learners and race/ethnicity, or English Language Learners and socioeconomic status), so determining how boys and girls learn is often lost in the investigation (Lapayese et al., 2014). Ultimately, academic achievement is the most important end-product in any discussion regarding gender differences. Thus, it is important to examine sound teaching methods to reduce achievement gaps between boys and girls (Buchmann et al., 2008).

Statement of the Problem

Of all subgroups, English Language Learners constitute the fastest growing subgroup in the United States. Almost five million English Language Learners are enrolled in U.S. public schools (Intercultural Development Research, 2015). In 2014, Texas enrolled more than 800,000 English Language Learners. The rapid growth of English Language Learners in the United States and in states such as Texas is placing mounting pressure on schools and school districts across the country to ensure English Language Learners are achieving academically. The achievement gap between Texas English Language Learners and native English speakers is increasing (Intercultural Development Research, 2015; Rodriguez & Slate, 2015). Complicating the issue for English Language Learners is the fact English Language Learners are frequently enrolled in schools in poor, urban areas (Darling-Hammond, 2004; De Cohen et al., 2005; Noguera, 2011; Yeakey, 2012). Given the increase in the enrollment of English Language Learners across the country and in states such as Texas (Intercultural

Development Research, 2015), the relationship of school size, poverty, and the academic achievement of English Language Learners needs to be ascertained.

Regarding school size, the number of students enrolled at a school campus has been documented as a statistically significant factor influencing student academic achievement. Current researchers (Greeney, 2010; Greeney & Slate, 2012; Riha et al., 2013; Zoda et al., 2011) have provided extensive results supporting student academic performance being statistically significantly better in larger-size schools than in smaller-size schools, thus supporting the economies of scale theory. However, previous researchers (Bickel, 1999; Black, 2006) reported differences of opinions with regard to school size and student achievement. McNeely, Nonnemaker, and Blum (2002) contended students enrolled in small size high schools felt more connected to their school than students who were enrolled in larger size schools. It is important to note that current studies have been supportive of large-size schools having better student performance (Barnes & Slate, 2014; Greeney, 2010; Greeney & Slate, 2012; Ketchum & Slate, 2012; Riha et al., 2013) than smaller-size schools. Of note is that these consistent results in support of large-size schools were based on investigations of Texas schools (Barnes & Slate, 2014; Greeney, 2010; Greeney & Slate, 2012; Ketchum & Slate, 2012; Riha et al., 2013). Given the increase in English Language Learner enrollment in U.S. public schools, and in state such as Texas, the relationship of school size and the academic achievement of English Language Learners, regardless of their ethnicity/race, needs to be ascertained.

Despite extensive research supporting differentiated approaches in the instruction of English Language Learners, conflicting and questionable policies and strategies

remain with regard to meeting the needs of English Language Learners (Gil & Burdock, 2010). Aleman et al. (2009) offered guidance and recommendations for schools concerning best practices for meeting the needs of English Language Learners. The current state of English Language Learner education in the United States is a challenge, but this challenge provides schools and school districts across the country to demonstrate best policies to educating the rapidly growing English Language Learner population.

Purpose of the Study

The purpose of this journal-ready dissertation was to determine the relationship of high school size with the academic achievement (i.e., reading and mathematics) of English Language Learners enrolled in Texas high schools. In the first journal article, the relationship of high school size and student achievement as function of poverty for English Language Learners was determined. In the second study, the extent to which high school size was related to the academic achievement of English Language Learners by their ethnicity/race was ascertained. Finally, in the third empirical investigation, the relationship between high school size and the academic achievement of English Language Learner boys and girls was examined. Each of these three empirical investigations had two years of statewide public school data analyzed. This 2-year analysis of data permitted a determination of the degree to which consistencies were present in the relationship of high school size with the academic achievement of English Language Learners as a function of their economic status, ethnicity/race, and gender.

Significance of the Study

Many researchers (Greeney, 2010; Greeney & Slate, 2012; Ketchum & Slate, 2012; Riha et al., 2013; Weiss et al., 2010; Zoda et al., 2011) have examined the relationship of school size and academic performance. However, minimal to no published literature exists on school size and the academic achievement of English Language Learners. The findings from the three articles in this journal-ready dissertation may provide insight and practical application to educational leaders and policymakers regarding high school size and the academic achievement of English Language Learners with regard to their economic status, ethnicity/race, and gender.

Theoretical Framework

For this journal-ready dissertation two theoretical frameworks were provided, school connectedness and economies of scale. The term school connectedness is defined as the attachment students experience toward their school as a result of a positive interaction and perceived caring from school staff members (Wilson, 2004). Wilson (2004) determined a connected school environment increased the likelihood of student academic success. When students develop an attachment with their school, coupled with high academic standards, student academic achievement improves, along with increase in attendance and completion rates (Blum, 2005; Greeney & Slate, 2012). Essentially, the quality of the social relationships that exists within the school environment is described in school connectedness. The fundamental features of school connectedness include a sense of belonging, school climate, school involvement, and motivation (Rawatial, 2012). School connectedness can have an important influence on classroom engagement, student

achievement, and school completion rates, for which schools are currently being held accountable.

Current authors (e.g., Barnes & Slate, 2014; Greeney & Slate, 2012) in exploring school district size have relied on the theoretical framework of economies of scale and its relationship to cost efficiency and/or student performance. Consolidation of schools to take advantage of scale economies is often proposed as an approach to increase the quality of education and efficiency in rural school districts (Andrews, Duncombe, & Yinger, 2000). As early as the 1930s U.S. public school districts began consolidating under the assumption that larger schools could achieve higher student performance at a lower cost due to economies of scale and specialization (Robertson, 2007).

Moreover, improving student performance in U.S. public schools has been a legislative initiative for the last 20 years (e.g., Every Student Succeeds Act, 2015; No Child Left Behind Act, 2001). As state and federal mandates continue to raise performance standards for all students in U.S. public schools, pressure continues to rise for both improved productive efficiency and student performance. Greeney (2010) and Greeney and Slate (2012) asserted that economies of scale favor large size schools, because large size schools promote efficiency and development of specialized curriculum. However, proponents of large size schools tend to argue that large size schools are often formally structured and bureaucratic, which can result in impersonalized human relationships (Crosnoe, Johnson, & Elder, 2004).

Definition of Terms

The following terms, used in this study, are defined to assist the reader in understanding the context of this investigation.

Economically Disadvantaged

In this study, the term economically disadvantaged refers to students who are "eligible for free or reduced price lunch or eligible for other public assistance" (Texas Education Agency, Glossary for the Texas Academic Performance report, 2012, p. 10). The free and reduced lunch program indicator is frequently used to designate student living in poverty. The Department of Health and Human Services sets the poverty guidelines for the 48 Contiguous States and the District of Columbia. In 2015 the poverty line for a household of four was set at $24, 250 (Federal Register, 2015).

Economies of Scale

Efficiency and fiscal resources are the essential component of the economies of scale theory (Bowles & Bosworth, 2002). Hypothesized in the economy of scales theory is that larger-size schools outperform smaller-size schools due to the financial resources that can be utilized to influence student success (Zimmer, DeBoer, & Hirth, 2009).

English Language Learner

In this study, an English Language Learner is used to describe students identified as having limited English proficiency, or English Language Learner, by the Language Proficiency Assessment Committee according to criteria established in the Texas Administrative Code (Texas Education Agency, Glossary for the Texas Academic Performance Report, 2012, p. 10).

Ethnicity/Race

In October 2007, the United States Department of Education (USDE) issued their final guidance to educational institutions on the adoption of new federal standards for collecting and reporting ethnicity and race data for students and staff (Federal Register, 2007). The United States Department of Education requires that ethnicity and race be collected separately using a specific two-part question, presented in a specific order. The Texas Education Agency implemented the new federal standard for the collection of ethnicity and race information beginning with data collected in the 2009- 2010 school year. For this study, reading and mathematics achievement data from the English Language Learner ethnic/racial groups (i.e., Asian, Black, White, Hispanic) will be analyzed.

High School

In this study, a high school will be a school that consists of Grades 9-12. Secondary schools with other grade span configurations will not be considered as high schools for purposes of this investigation. Secondary school "means a day or residential school which provides secondary education as determined under State law."(Marshall v. Rosemont, Inc., 584 F.2d 319, 321 (9th Cir. 1978).

Hispanic

In this study, the term Hispanic is used to describe students who are of Hispanic origin (Texas Education Agency, 2014a). A person of Hispanic ethnicity is an individual of Cuban, Mexican, Puerto Rican, South or Central American descent, other Spanish culture or origin, regardless of race (Texas Education Agency Appendix F, 2010, p. 5).

Public Education Information Management System

The Texas Education Agency Public Education Information Management System is a collection of detailed demographic student data used to assist in the monitoring of student achievement and tracking. All data received and requested about public education by the Texas Education Agency are compiled using the Public Education Information Management System, including "student demographic and academic performance, personnel, financial, and organizational information" (Public Education Information Management System - Overview, 2015, para. 1). Legal review and functional oversight of public education in Texas is conducted by the Texas Education Agency and the Texas state legislature with the assistance of necessary Public Education Information Management System data (Public Education Information Management System – Overview, 2015).

School Connectedness

This term is defined as the attachment students experience toward their school as a result of a positive interaction and perceived caring from school staff members (Wilson, 2004).

Texas Assessment of Knowledge and Skills (TAKS)

Texas Assessment of Knowledge and Skills assessments are "criterion-referenced achievement tests designed to measure the extent to which a student has learned and is able to apply the defined knowledge and skills at each tested grade level" (Texas Education Agency, 2011, para. 87).

Texas Education Agency

The Texas Education Agency is the agency that supervises and organizes public education in the state of Texas (Texas Education Agency About TEA, 2015, para. 1). The mission of the Texas Education Agency is to "provide leadership, guidance and resources to help schools meet the educational needs of all students and prepare them for success in the global economy" (Texas Education Agency About TEA, 2015, para. 2).

University Interscholastic League

In this study, the University Interscholastic League conference cutoff numbers were used to determine school size (University Interscholastic League, 2013). A Very Small-size 1A conference high school will have less than 104.9 students; Small-size 2A conference high schools will have between 105 and 219 students; Moderate-size conference 3A high schools will have between 220 and 464 students; Medium-size conference 4A high schools will have between 465-1059 students; Large-size conference high schools will have between 1060-2099 students, and Very Large-size conference 6A high schools will have a student enrollment of 2,100 or more students.

Literature Review Search Procedures

For the purpose of this journal-ready dissertation, the literature regarding school size, and English Language Learners, by economic status, ethnicity/race, and gender, and the relationship of these variables to student academic achievement in reading and mathematics was examined. Phrases that were used in the search for relevant literature were: *school size, English Language Learners, student poverty, economically disadvantaged, economies of scale, ethnicity/race, gender differences, as well as academic achievement and school engagement.* All searches were conducted through the

EBSCO Host database for academic journals that contained scholarly peer-reviewed articles.

Key word searches for “school size” yielded 129,784 results, and by narrowing the search to include “academic performance”, the search was reduced to 23,192 articles. A key word “English Language Learners” was used and 74,705 articles from 1990 to 2016 were displayed. This number was condensed to 19,069 when “student performance” was added to the search. The number of articles were further condensed to 4,813when the key word “poverty” was added to the search. Key word searches for “school size” and “English Language Learners” and “student performance” yielded only 15 articles. No articles were displayed when a key word search included “high school size” and English Language Learner” and “student performance”. Relevant articles were reviewed pertaining to their relationship to school size and academic performance. Additionally, relevant articles were reviewed pertaining to English Language Learners and student performance.

Delimitations

The three studies in this journal-ready dissertation were delimited to traditionally configured public high schools in Texas, specifically high schools comprised of Grades 9 through 12. Data on private, charter, and alternative schools were not used in this journal-ready dissertation. Specifically examined in this journal-ready dissertation were the differences in the academic achievement of English Language Learners on the TAKS assessment (i.e., reading and mathematics) and their relationship to high school size, as a function of economic status, ethnicity/race, and gender. Only data on English Language Learner students were analyzed in this journal-ready dissertation. Furthermore, two

school years of data were analyzed, the 2008-2009, and the 2009-2010 school years, delimiting the generalizability of the results to the stated two consecutive school years. Finally, findings are also limited to Texas traditionally configured public high schools that had English Language Learners and the independent variable factors (i.e., economic status, ethnicity/race, and gender) available were analyzed.

The State of Texas changed the assessment system from the Texas Assessment of Knowledge and Skills (TAKS) to the State of Texas Assessment of Academic Readiness (STAAR) in the 2011-2012 school year. High school students enrolled in Grade 9 in the 2010-2011 school year continued to take the TAKS tests. The extent to which TAKS results and STAAR results are comparable are not known. Thus, results from this journal-ready dissertation may not be generalized to results that would be obtained from analyzing the current Texas mandated assessment, the STAAR.

Limitations

In this journal-ready dissertation, the relationships of high school size with the academic achievement of English Language Learners on the exit-level TAKS Reading and Mathematics assessments were addressed. As such, several important limitations are present. A major limitation involves the fact that the school variables of economic status and ethnicity/race are self-reported by each high school campus to the state. As such, inaccurate discrepancies in reporting to the state may occur. This limitation, however, is believed to be minimal because the Texas Education Agency conducts audits of the data provided by campuses and penalizes schools that do not provide accurate data. A second limitation involves the fact that only quantitative data were used to measure the academic achievement of English Language across two school years. Accordingly, the extent to

which other factors (e.g., test anxiety) may contribute to the academic achievement of English Language Learners is not known. A third limitation involves the use of archival data. In causal-comparative studies in which archival data are analyzed, no determination of a cause-effect relationship can be made. Accordingly, other variables other than school size may be contributing to any differences that may be obtained in reading and mathematics achievement of English Language Learners by economic status, ethnicity/race, and gender.

Assumptions

For the purpose of this journal-ready dissertation, the assumption was made that the achievement data for English Language Learners, and their economic status, ethnicity/race, and gender in the Public Education Information Management System were accurately reported. Additionally, the consistency in which high schools in Texas collect and report student data to the Texas Education Agency was assumed to be accurate and consistent statewide. A second assumption made was that all English Language Learners had been appropriately identified and labeled into district databases. Consequently, any modifications to these assumptions may result in inaccurate data and contradictory findings.

Procedures

Following approval of the journal-ready dissertation proposal by the researcher's dissertation committee, an application was submitted to the Sam Houston State University's Institutional Review Board. Once a letter of approval was received from the Institutional Review Board, archival data for the 2008-2009 and the 2009-2010 school years on Grade 9 through Grade 12 for English Language Learner students in Texas

public schools were analyzed. These data had already been obtained through a Public Information Request form submitted for a previous doctoral dissertation.

Organization of the Study

In this investigation, three journal-ready manuscripts were generated. In the first study, research questions specifically related to high school size and the reading and mathematics achievement of English Language Learners as a function of their economic status were analyzed. In the second study, research questions specifically related to high school size and the reading and mathematics achievement of English Language Learners as a function of their ethnicity/race were addressed. In the third investigation, research questions specifically related to high school size and the reading and mathematics achievement of English Language Learners by their gender were examined.

Five chapters compose this journal-ready dissertation. Chapter I includes the background of the study, statement of the problem, purpose of this study, significance of the study, theoretical framework, definitions of terms, assumptions, delimitations, and limitations of the three proposed research investigations. Chapter II includes the first empirical research investigation. Chapter III includes the second empirical research study. Chapter IV constitutes the third proposed empirical research investigation. Finally, Chapter V includes a discussion of research results of the three empirical investigations, implications for policy and practice, and recommendations for future research regarding school size.

CHAPTER II

HIGH SCHOOL SIZE AND DIFFERENCES IN ACADEMIC ACHIEVEMENT OF TEXAS ENGLISH LANGUAGE LEARNERS BY ECONOMIC STATUS: A TEXAS MULTIYEAR STATEWIDE ANALYSIS

This dissertation follows the style and format of *Research in the Schools* (RITS)

Abstract

In this investigation, the academic achievement of English Language Learners on the Texas Assessment of Knowledge and Skills Exit-Level Reading and Mathematics tests by school size was examined. Data on two groups of English Language Learners (i.e., students who were economically disadvantaged and students who were not economically disadvantaged) were analyzed. Archival data that had already been obtained through a Public Information Request form from the Texas Education Agency were utilized. University Interscholastic League categories for student enrollment (i.e., school size) were used to form the school size groupings. Inferential analyses revealed the presence of statistically significant differences, with small to moderate effect sizes. In all cases, reading and mathematics achievement was higher for English Language Learners in Large-size (1,060-2,099 students) high schools than in Small-size (105-219 students) through Medium-size (465-1,059) high schools. Results were commensurate for both groups of English Language Learners. Implications for policy and practice, as well as recommendations for research, are provided.

Keywords: English Language Learners, School Size, Academic Achievement, Texas Assessment of Knowledge and Skills, Economic Disadvantage

HIGH SCHOOL SIZE AND DIFFERENCES IN ACADEMIC ACHIEVEMENT OF TEXAS ENGLISH LANGUAGE LEARNERS BY ECONOMIC STATUS: A TEXAS MULTIYEAR STATEWIDE ANALYSIS

Valid and reliable data on how best to serve English Language Learners and address their academic success is needed as the population of English Language Learners dramatically increases in the United States (Intercultural Development Research, 2015). English Language Learners are the fastest growing subgroup in the United States. Approximately 4.7 million English Language Learners are enrolled in U.S public schools (Intercultural Development Research, 2015). The National Clearinghouse for English Language Acquisition (2006) estimated 25% of the student population in the United States would be of English Language Learners by 2025. In the 2010-2011 school year, 11% of public school students faced the overwhelming task of learning English and acquiring academic proficiency (Maxwell, 2012). With respect to the state of interest in this article, Texas public schools enrolled more than 800,000 English Language Learners (200,000 in middle and high schools) in 2014, with the majority of English Language Learners in Texas being born in the United States (Intercultural Development Research, 2015).

Questions regarding the academic achievement of English Language Learners have gained prominence at the national level (August & Shanahan, 2006; Solórzano, 2008). The rapid growth of English Language Learners in the United States and states such as Texas place mounting pressures on schools and school district to ensure that English Language learners are achieving academically. Unfortunately, test scores in reading and mathematics for English Language Learners remain far below their native

English-speaking peers (Ardasheva, Tretter, & Kinny, 2012; Fry & Pew, 2008; Intercultural Development Research, 2015; National Center for Public Policy and Higher Education, 2005). English Language Learners are one of the lowest performing subgroups in Texas. In Texas, middle and high school English Language Learners are twice as likely as native English speakers to be retained. Moreover, the achievement gap between English Language Learners and native English speakers increases as their academic careers progress (Intercultural Development Research, 2015). Consistent achievement gaps have been noted between English Language Learners and native English speakers on the State of Texas Assessments of Academic Readiness Reading and Mathematics college readiness rates (Rodriguez & Slate, 2015).

Although consistent evidence exists that English Language Learners are more than likely to drop out of school than their English-speaking peers, data are lacking regarding dropout rates for English Language Learners (Sheng, Sheng, & Anderson, 2011). Unlike race or ethnicity, which once established remains constant, a student's English language proficiency may improve as fluency is achieved over time, making it impossible to assess dropout rates meaningfully based on current English Language Learner populations (Abedi, 2004). Additionally, having limited English proficiency negatively influences academic achievement and is a risk factor for dropping out of school (Abedi, 2004; Genesse, Lindholm-Leary, Saunders, & Christian, 2005; Maxwell, 2012; The Course Crafters Guide to the ELL Market, 2012). Complicating the issue for English Language Learners is the fact that English Language Learners are concentrated in a small number of schools located in predominantly poor, urban areas (Darling-

Hammond, 2004; De Cohen, Deterding, & Clewell, 2005; Noguera, 2011; Yeakey, 2012).

In the 2008-2009 school year, the 100 largest public school districts in the United States and its territories were responsible for educating 22% of all public school students, and the majority of students in those districts were Hispanic or Black (Sable, Plotts, Mitchell, & National Center for Education Statistics, 2010). Three states (i.e., Texas, Florida, and California), accounted for nearly one-half of the 100 largest school districts in the country, and each of those school districts enrolled at least 47,448 students (Sable et al., 2010). In an investigation examining the relationship of school district size and the academic achievement of Texas Limited English Proficient students on the Texas Assessment of Knowledge and Skills (TAKS) tests in the 2010-2011 school year, Limited English Proficient students performed better in large-size school districts than in moderate or small-size school districts (Barnes & Slate, 2014). Despite the fact that Texas public schools have experienced a 19.8% increase in school enrollment over a 10-year period, 1998 to 2008 (Texas Education Agency, 2009), the number of school districts has seen a rapid decrease (Riha, Slate, & Martinez-Garcia, 2013).

In regard to school size, school size is often considered to be one of the factors that influences student achievement. School size is one factor that has been investigated extensively in regard to academic achievement (Barnes & Slate, 2014; Bracey, 1998; Greeney, 2010; Howley, 1996; Ketchum & Slate, 2010). However, recently, the culmination of overpopulated schools and the resulting academic and behavioral consequences that have arisen have initiated proposals to reverting large schools back into smaller ones (Vejar, 2015). Despite widespread initiatives to reduce school size,

minimal research has been conducted regarding the relationship between school size, engagement, and student achievement in high school (Weiss, Carolan, & Baker-Smith, 2010). Although much argument still exists regarding optimal school size and student academic success (Bickel, 1999; Black, 2006), researchers (Greeney, 2010; Greeney & Slate, 2012; Ketchum & Slate, 2012; Riha et al., 2013; Weiss et al., 2010; Zoda, Slate & Combs, 2011) have established that students perform statistically significantly better in larger-size schools than in smaller-size schools. Readers are directed to Table 2.1 for a summary of studies on high school size and student achievement.

Insert Table 2.1 about here

However, Howley (1996) reported in a West Virginia study that small schools promoted the academic achievement of students in poverty, whereas large schools benefited affluent students most. Discussion regarding optimal school size is often centered on specialization versus humanization (Bracey, 1998). The most cited complaint by high school students in large-size schools was the anonymity experienced. Many students indicated feeling dehumanized. On the other hand, large-size schools have advantages smaller-size schools do not, such as the ability to have more course offerings. Additionally, discussion on optimal school size is frequently centered on the theoretical framework of economies of scale, whereas one large school can operate more efficiently than can two small schools (Barnes & Slate, 2014; Bracey, 1998; Moore, Combs, & Slate, 2012).

Greeney and Slate (2012) contended school size may also be related to school connectedness. School connectedness is the attachment students experience toward their school as a result of the positive and respectful interactions the students have with adults in their schools (Wilson, 2004). When students develop an attachment with their school, coupled with high academic standards, student academic achievement improves, along with increase in attendance and completion rates (Blum, 2005; Greeney & Slate, 2012). School connectedness has been investigated extensively across many fields (e.g., medicine, education, psychology, sociology), and related concepts (e.g., student engagement and school climate), and thus the concept of school connectedness does not provide a distinctly pragmatic base (Blum, 2005).

Extensive research has been conducted over the last 20 years regarding academic achievement and economic status (Bickel, 1999, 2000; Lee & Slate, 2014; Shera & Mitre, 2012). The major finding in this body of literature is that school success is greatly influenced by family socio-economic status. Poverty and access to college-ready academic opportunities are among one of the most persuasive indicators in determining whether students attend college (Maxwell, 2012). Bickel (1999) and Lee and Slate (2014) established the presence of statistically significant differences in academic achievement between Texas students who were economically disadvantaged from students who were not economically disadvantaged.

In research investigations on school size, socioeconomic status, and achievement, in states such as West Virginia, Texas, Georgia and California, researchers (Bickel, 1999; Bickel, Howley, Williams, & Glascock, 2000) have linked school size to both effectiveness and equity. In a Texas replication study conducted by Bickel (2000),

statistically significant effects were present for students in Grades 8 and 10, such that student achievement for less advantaged students decreased as school size increased. In other words, as schools became larger, those schools having a substantial numbers of students living in poverty performed increasingly less well than schools having lower numbers of students in poverty. These findings may be indicative of society's failure in providing educational opportunities for all students regardless of their social and economic status.

Family socioeconomic status is one of the best predictors regarding school failure and student dropout (Sirin, 2005). English Language Learners are more likely than their English speaking peers to come from low-income families and are much more likely to be economically disadvantaged than non-English language learners (Maxwell, 2012; Sheng, Sheng, & Anderson, 2011). As reported in the Schools and Staffing Survey for the 2007-2008 school year, more than 60% of English Language Learners were eligible for free and reduced lunch programs, and 40% of English Language Learners had parents who did not complete high school (Keigher, 2009). With regard to secondary school size and Texas students who were economically disadvantaged, differences were investigated for the English Language Arts and Mathematics passing rates on the Texas state assessments (Ketchum & Slate, 2012). Ketchum and Slate (2012) established that students in the largest school-size group (i.e., 2,099 to 4,697 enrolled students) statistically significantly outperformed students in the moderately large schools (i.e., 1,159 to 2,098 enrolled students). Readers should note the conflicting results between the Bickel (2000) investigation and the more recent Ketchum and Slate (2012) study.

Table 2.2 contains a summary of research investigations on school size, poverty, and student achievement.

Insert Table 2.2 about here

The student population in U.S. public schools will continue to be culturally and linguistically diverse as the English language learning population continues to explode. Noted in the Intercultural Development Research (2015) was that the youth population that was the fastest growing has the highest risk of dropping out of school. Although dropping out of school may be associated with many factors, English Language Learners share some important characteristics (e.g., economically disadvantaged, Limited English Proficient, diverse cultural background) that place them at risk of dropping out of school. Yet, minimal to no published literature exists on school size and the academic achievement of English Language Learners in poverty.

Theoretical Framework

For this study, the school connectedness theory served as the theoretical framework. Wilson (2004) determined a connected school environment increased the likelihood of student academic success. School connectedness is the attachment students experience toward their school as a result of the positive and respectful interactions students have with adults in their schools (Wilson, 2004). When students develop an attachment with their school, coupled with high academic standards, student academic achievement improves, along with increase in attendance and completion rates (Blum, 2005; Greeney & Slate, 2012). Essentially, the quality of the social relationships that

exists within the school environment is described in school connectedness. The fundamental features of school connectedness include a sense of belonging, school climate, school involvement, and motivation (Rawatial, 2012). School connectedness can have an important influence on classroom engagement, student achievement, and school completion rates, for which schools are currently being held accountable.

School connections arise from individual actions on the part of teachers, administrators, and the school environment. Risk factors such as poverty, mobility rates, and limited English proficiency, are associated with negatively influencing school connectedness and promoting the achievement gaps between students (Lapan, 2014). Relevant research into school connectedness might have authors suggesting smaller class sizes, however, classroom culture matters more than class and school size (Blum, 2005). Teachers build connectedness when instruction is meaningful and relevant to students, and students can take stake in their own education. Teachers build connectedness when they create a classroom environment that is structured, providing a healthy setting for students to learn and practice decision-making skills (Blum, 2005).

Researchers (e.g., Crosnoe, Johnson, & Elder, 2004; McNeeley, Nonnemaker, & Blum, 2002) proposed school connectedness is strongest in smaller size schools than in larger size schools. In addition, the importance of school connectedness is its relationship to academic achievement and school completion rates. As such, English Language Learners who are enrolled in smaller size schools should have higher reading and mathematics performance than English Language Learners who are enrolled in either medium or in large size high schools.

Background of the Study

The English Language Learner population in Texas is rapidly increasingly. In the 2013-2014 school year the State of Texas enrolled more than 800,000 English Language Learners in public schools, and approximately 25% of those students were enrolled at the secondary level (intercultural Development Research, 2015). Research studies regarding the academic achievement of English Language Learners are increasing in number (August & Shanahan, 2006; Solórzano, 2008), unfortunately researchers (Intercultural Development Research, 2015; Rodriguez & Slate, 2015) are reporting English Language Learners are academically underperforming. Test scores in reading and mathematics for English Language Learners significantly lag their English-speaking peers (Fry & Pew, 2008; National Center for Public Policy and Higher Education, 2005; Rodriguez & Slate, 2015). In Texas, English Language Learners are the lowest performing subgroup, and secondary school English Language Learners are twice as likely as native English speakers to be retained (Intercultural Development Research, 2015). On the Texas state assessment tests in reading and mathematics, persistent achievement gaps between English Language Learners and native English speakers have been documented (Rodriguez & Slate, 2015).

In the last 20 years, numerous research investigations have been conducted regarding academic achievement and economic status (Bickel, 1999, 2000; Lee & Slate, 2014; Shera & Mitre, 2012). Regarding economic status, in the 2007-2008 school year more than 60% of English Language Learners were eligible for free and reduced lunch programs (Keigher, 2009). English Language Learners are more than likely to come from low-income families, and are more likely than native English speakers to be

economically disadvantaged (Maxwell, 2012; Sheng, Sheng, & Anderson, 2011). Economic status has a statistically significant influence on academic achievement (Bickel, 1999, 2000; Bickel et. al., 2000; Lee & Slate, 2014; Maxwell, 2012). Exacerbating the issue is the fact that English Language Learners often attend schools in predominantly poor, urban areas (Darling-Hammond, 2004; De Cohen et al., 2005; Noguera, 2011).

With respect to student achievement, school size is considered a factor influencing student achievement. Although substantial significant differences of opinions exist with optimal school size and student academic achievement (Bickel, 1999; Black, 2006), current researchers (Greeney, 2010; Greeney & Slate, 2012; Ketchum & Slate, 2012; Riha et al., 2013; Weiss et al., 2010; Zoda, Slate, & Combs, 2011) have established that students perform statistically significantly better in larger-size schools than in smaller-size schools. With the exception of the Weiss et al. (2010) study, readers should note that this set of recent investigations were all conducted on students who were enrolled in Texas schools. In a recent investigation, Barnes and Slate (2014) documented that Limited English Proficient students who were economically disadvantaged performed better in large-size schools than in moderate or small-size schools on the state assessment. These findings support the results of other researchers (Greeney, 2010; Greeney & Slate, 2012; Ketchum & Slate, 2012; Riha et al., 2013; Weiss et al., 2010; Zoda et al., 2011) who have conducted studies in the past six years.

Statement of the Problem

Of all subgroups, English Language Learners constitute the fastest growing subgroup in the United States. Almost five million English Language Learners are enrolled in U.S. public schools (Intercultural Development Research, 2015). In 2014, Texas enrolled more than 800,000 English Language Learners. The rapid growth of English Language Learners in the United States and in states such as Texas is placing mounting pressure on schools and school districts across the country to ensure English Language Learners are achieving academically. The achievement gap between Texas English Language Learners and native English speakers is increasing (Intercultural Development Research, 2015; Rodriguez & Slate, 2015). Complicating the issue for English Language Learners is the fact English Language Learners are frequently enrolled in schools in poor, urban areas (Darling-Hammond, 2004; De Cohen et al., 2005; Noguera, 2011; Yeakey, 2012).

Given the increase in the enrollment of English Language Learners across the country and in states such as Texas (Intercultural Development Research, 2015), the relationship of school size, poverty, and the academic achievement of English Language Learners needs to be ascertained. High school size affects student performance, and school size is an alterable variable or condition that can be addressed with regard to student academic success. English language proficiency may improve over time, thus making it difficult to assess the academic achievement of all English Language Learners (Abedi, 2004). Although extensive research (e.g., Barnes & Slate, 2014; Bickel, 1999, 2000; Bickel et al., 2000; Greeney, 2010; Ketchum & Slate, 2010) has been conducted on student academic achievement and school size, no published literature was located on

school size and the academic achievement of English Language Learners living in poverty. Findings from this current research may provide legislatures and educational leaders with important empirical data for policymaking regarding optimal school size and English Language Learner academic achievement.

Purpose of the Study

The purpose of this study was to analyze the relationship of high school size with the academic achievement (i.e., reading and mathematics) of English Language Learners as a function of their economic status (i.e., economically disadvantaged or not economically disadvantaged). The extent to which high school size influenced the reading and mathematics achievement for English Language Learners in poverty and for English Language Learners who were not in poverty was investigated. Through analyzing two years of Texas statewide data, the extent to which consistencies were present between high school size and the academic achievement of English Language Learners by their economic status was determined.

Significance of the Study

Through this study, essential information will be provided about high school size and the degree to which differences might be present in the academic achievement of English Language Learners by their economic status. Considerable research already exists (Barnes & Slate, 2014; Bickel, 1999, 2000; Bickel et al., 2000; Greeney, 2010; Howley, 1999) regarding student academic achievement and school size. Furthermore, researchers (e.g., Ketchum & Slate, 2010; Lee & Slate, 2014) have focused their attention on school size, poverty, and student achievement. However, no empirical research studies were located in which an emphasis has been placed on high school size, poverty,

and the academic achievement of English Language Learners. Accordingly, findings of this study will add additional research that could be beneficial regarding high school size and its effect on the academic achievement of English Language Learners by their economic status. In addition, the finding of this study may have practical applications for policymakers and educational leaders regarding best practices for English Language Learners, and ensuring that English Language Learners are achieving academically.

Research Questions

In this empirical investigation, the following research questions were addressed: (a) For English Language Learners in poverty, what is the effect of high school size on their reading achievement?; (b) For English Language Learners who are not in poverty, what is the effect of high school size on their reading achievement of English Language Learners?; (c) For English Language Learners in poverty, what is the effect of high school size on their mathematics achievement?; (d) For English Language Learners not in poverty, what is the effect of high school size on their mathematics achievement?; and (e) What is the extent to which consistencies are present in the reading and mathematics achievement of English Language Learners, both in poverty and not in poverty, as a function of school size for the 2008-2009 and the 2009-2010 school years? The first four research questions were repeated for each of the 2 school years whereas the fifth research question was repeated for reading and mathematics and by poverty status. Thus, a total of 12 research questions constituted this empirical investigation.

Method

Research Design

A non-experimental, causal-comparative research design (Creswell, 2009; Johnson & Christensen, 2014) was used for this study. In non-experimental, causal-comparative research, no manipulation of the independent variable can occur as the independent variables have already occurred and extraneous variables are not controlled. The archival data that were utilized herein represent past events (Johnson & Christensen, 2014). The independent variable involved in this research article was student enrollment at the high school level.

For purposes of this investigation, the University Interscholastic League conference cutoff numbers for the State of Texas (University Interscholastic League, 2013) for the 2013-2014 through the 2015-2016 school years were used to determine school sizes. Very Small-size 1A conference high schools had less than 104.9 students; Small-size 2A conference high schools had between 105 and 219 students; Moderate-size conference 3A high schools had between 220 and 464 students; Medium-size conference 4A high schools had between 465-1059 students; Large-size conference 5A high schools had between 1060-2099 students, and Very Large-size conference 6A high schools had a student enrollment of 2,100 or more students. Thus, the independent variable of school size consisted of six school size groupings. For each school year (i.e., 2008-2009 and 2009-2010), the dependent variables were the Texas Assessment of Knowledge and Skills Reading and Mathematics test scores of English Language Learners. Data on two samples of English Language Learners were analyzed in this investigation: English Language Learners who had been determined to meet the criteria for being economically

disadvantaged and English Language Learners who were not economically disadvantaged.

Participants and Instrumentation

For the purpose of this study, archival data that had already been obtained through a previously submitted and fulfilled Public Information Request from the Texas Education Agency were utilized. Specific information examined was the grade span configuration of each high school campus; student enrollment at each campus; student economic status, reading test scores, and mathematics test scores. Two years of available Texas statewide data were obtained: 2008-2009 and 2009-2010 school years. The specific number of high school campuses with a grade span configuration of Grades 9-12 was estimated to be about 1,000 high schools. Data from high school campuses that did not have a grade span configuration of 9-12, that were charter schools or that were alternative education settings were not analyzed in this investigation.

For this investigation four variables were of interest: English Language Learner status, high school size, student achievement on the exit-level Texas Assessment of Knowledge and Skills Reading and Mathematics state assessments, and student economic status. The exit-level state assessments were taken at the end of each student's junior year. In accordance with the Family Educational Rights and Privacy Act, The Texas Education Agency masks the performance data so that no specific individual student may be identified. With regard to economic status, the Texas Education Agency defined students as economically disadvantaged as "coded eligible for free or reduced-price lunch or eligible for other public assistance" (Texas Education Agency, 2011, p.10). The free and reduced lunch program indicator is frequently used to designate student living in

poverty. The Department of Health and Human Services sets the poverty guidelines for the 48 Contiguous States and the District of Columbia. In 2015 the poverty line for a household of four was set at $24, 250 (Federal Register, 2015). Because students are reported as economically disadvantaged by their respective campus in the Public Education Information Management System with the Texas Education Agency, reliability and validity concepts are not applicable, and any errors that may result from the self-reported data are assumed to be minimal. For detailed score reliabilities and score validities on the Texas Assessment of Knowledge and Skills Reading and Mathematics assessments, readers are referred to the Texas Education Agency website.

Results

Before conducting inferential statistics to address the research questions, an Analysis of Variance (ANOVA) procedure was conducted. Checks for normality of data were conducted. The standardized skewness coefficients (i.e., skewness divided by the standard error of skewness) and the standardized kurtosis coefficients (i.e., kurtosis divided by the standard error of kurtosis) were computed, yielding values that were not within the range of normality, +/-3 range (Onwuegbuzie & Daniel, 2002). Another assumption underlying use of a parametric Analysis of Variance (ANOVA) procedure, the Levene's Test of Error Variance, was not met. Fields (2009) contends that the parametric ANOVA is robust enough to withstand this violation, thus the use of a parametric ANOVA procedure was justified. The average raw score refers to the average number of questions answered correctly, either more questions answered correctly for a higher average raw score, or fewer items answered correctly for a lower average raw score.

Overall Results for the Two School Years for English Language Learners Who Were Not Economically Disadvantaged

For the 2008-2009 school year, TAKS Reading raw scores were determined to be statistically significantly different by school size (i.e., Very Small, Small, Medium, Moderate, Large, and Very Large) for English Language Learners who were not economically disadvantaged, $F(4, 663) = 6.10$, $p < .001$, partial $\eta^2 = .036$, small effect size. Scheffe` post hoc procedures were then used to determine which pairs of school sizes differed from each other. As revealed in Table 2.3, in the 2008-2009 school year, English Language Learners who were not economically disadvantaged and who were enrolled in Large-size schools had an average raw score that was 22.32 points higher than the TAKS Reading raw scores of English Language Learners who were enrolled in Small-size schools. Differences were also present between English Language Learners who were enrolled in Large-size schools and Medium-size schools. Large-size schools had average TAKS Reading raw scores that were 14.76 points higher than Medium-size schools. Reading performance was not different for English Language Learners in the other school size groupings.

Insert Table 2.3 about here

Concerning the 2009-2010 school year, TAKS Reading raw scores were also statistically significantly different by school size for English Language Learners who were not economically disadvantaged, $F(4, 925) = 16.72$, $p < .001$, partial $\eta^2 = .067$, moderate effect size. In the 2009-2010 school year, English Language Learners who

were not economically disadvantaged and who were enrolled in Large-size schools had an average TAKS Reading raw score that was 24.20 points higher than the average TAKS Reading raw scores of English Language Learners who were enrolled in Small-size schools. The TAKS Reading raw scores were also different between Large-size and Moderate-size schools, and between Large-size and Medium-size schools. English Language Learners who were enrolled in Medium-size schools had a lower average TAKS Reading raw score than did their counterparts who were enrolled in Large-size schools. Moreover, English Language Learners who were enrolled in Large-size schools had lower average TAKS Reading raw scores than did English Language Learners who were enrolled in Very Large-size schools. Descriptive statistics for this analysis are presented in Table 2.3.

With regard to the 2008-2009 school year, TAKS Mathematics raw scores were determined to be statistically significantly different by school size for English Language Learners who were not economically disadvantaged, $F(5, 700) = 5.63$, $p < .001$, partial $\eta^2 = .039$, small effect size. Scheffe` post hoc procedures revealed that English Language Learners who were not economically disadvantaged had higher average TAKS Mathematics raw scores in Large-size schools than their counterparts who were enrolled in Small-size schools. As revealed in Table 2.4, English Language Learners who were not economically disadvantaged and who were enrolled in Large-size schools had an average TAKS Mathematics raw score that was 18.12 points higher than the average TAKS Mathematics raw scores of English Language Learners who were enrolled in Small-size schools. Moreover, English Language Learners who were enrolled in Large-size schools had an average TAKS Mathematics raw score that was almost 14 points

higher than the TAKS Mathematics raw scores of English Language Learners enrolled in Medium-size schools. No other school size grouping pairs were different in their average TAKS Mathematics raw scores.

Insert Table 2.4 about here

With respect to the 2009-2010 school year, TAKS Mathematics raw scores were again statistically significantly different by school size for English Language Learners who were not economically disadvantaged, $F(4, 935) = 15.31$, $p < .001$, partial $\eta^2 = .061$, moderate effect size. In this school year, English Language Learners who were not economically disadvantaged and who were enrolled in Large-size schools had an average TAKS Mathematics raw score that was 20.72 points higher than the average TAKS Mathematics raw score of English Language Learners who were enrolled in Small-size schools. English Language Learners who were enrolled in Very Large-size schools had an average TAKS Mathematics raw score that was 22.67 points higher than Moderate-size schools, and 22.0 points higher than Medium-size schools. Delineated in Table 2.4 are the descriptive statistics for this analysis.

Overall Results for the Two School Years for English Language Learners Who Were Economically Disadvantaged

For the 2008-2009 school year, TAKS Reading raw scores were determined to be statistically significantly different by school size (i.e., Very Small, Small, Medium, Moderate, Large, and Very Large) for English Language Learners who were economically disadvantaged, $F(5, 6174) = 28.16$, $p < .001$, partial $\eta^2 = .022$, small effect

size. Scheffe` post hoc procedures were then used to determine which pairs of school sizes differed from each other. In the 2008-2009 school year, two pairwise comparisons were statistically significantly different. English Language Learners who were economically disadvantaged had higher average TAKS Reading raw scores in Medium-size and Large-size schools than their counterparts who were enrolled in Small-size or Moderate-size schools. Only these two comparisons yielded statistically significant differences. Descriptive statistics for this analysis are presented in Table 2.5.

Insert Table 2.5 about here

Concerning the 2009-2010 school year, TAKS Reading raw scores were statistically significantly different by school size for English Language Learners who were economically disadvantaged, $F(5, 7544) = 29.50$, $p < .001$, partial $\eta^2 = .019$, small effect size. As revealed in Table 2.5, English Language Learners who were economically disadvantaged had an average TAKS Reading raw score that was 32.42% higher in Very Large-size schools than did English Language Learners who were enrolled in Small-size schools. For English Language Learners who were enrolled in Medium-size schools, their TAKS Reading raw score averages were 15 points higher in comparison to English Language Learners who were enrolled in Moderate-size schools, and 30 points higher than for English Language Learners who were enrolled in Small-size schools.

Furthermore, in the 2009-2010 school year, English Language Learners who were economically disadvantaged and who were enrolled in Very Large-size schools had an average TAKS Reading raw score that was 33.23 points higher than for English

Language Learners who were enrolled in Very Small-size schools, and 20 points higher than for English Language Learners who were enrolled in Moderate-size schools. For English Language Learners who were enrolled in Moderate-size schools, their TAKS Reading raw scores were 13 points higher than the TAKS Reading raw scores of their counterparts who were enrolled in Very Small-size schools.

With respect to the 2008-2009 school year, TAKS Mathematics raw scores were determined to be statistically significantly different by school size (i.e., Very Small, Small, Medium, Moderate, Large, and Very Large) for English Language Learners who were economically disadvantaged, $F(5, 6226) = 19.06$, $p < .001$, partial $\eta^2 = .015$, small effect size. In the 2008-2009 school year, Scheffe` post hoc procedures revealed differences between some, but not all, school size pairings, in their TAKS Mathematics raw scores. English Language Learners who were economically disadvantaged had an average TAKS Mathematics raw score that was 28.73 points higher in Very Large-size schools than did English Language Learners who were enrolled in Very Small-size schools. Large-size schools had an average TAKS Mathematics raw score that was 25 points higher than Small-size schools, and 14 points higher than Moderate-size schools. Revealed in Table 2.6 are the descriptive statistics for this analysis.

Insert Table 2.6 about here

For the 2009-2010 school year, TAKS Mathematics raw scores were again determined to be statistically significantly different by school size for English Language Learners who were economically disadvantaged, $F(5, 7575) = 23.09$, $p < .001$, partial η^2

= .015, small effect size. In the 2009-2010 school year, English Language Learners who were economically disadvantaged and who were enrolled in Very Large-size schools had an average TAKS Mathematics raw score that was 29.78 points higher than for English Language Learners who were enrolled in Very Small-size schools, and 21 points higher than English Language Learners who were enrolled in Moderate-size schools. For English Language Learners who were enrolled in Moderate-size schools, their average TAKS Mathematics raw scores were 8.79 points higher than for English Language Learners who were enrolled in Very Small-size schools. Minimal differences were noted between the average scores of English Language Learners who were enrolled in either Medium-size or Large-size schools. Revealed in Table 2.6 are the descriptive statistics for this school year.

Results for the TAKS Reading Met Standard

To determine the degree to which economic status was related to the TAKS Reading Met Standard for English Language Learners in the 2008-2009 and 2009-2010 school years, Pearson chi-square procedures were conducted. This statistical procedure was the ideal analysis to calculate because frequency data were present for both economic status and for the student reading performance standard on the TAKS Exit-Level exams for the 2008-2009 and 2009-2010 school years. A large sample size was readily available, providing at least five responses per cell. Therefore, the assumptions for utilizing a chi-square were met.

With respect to the 2008-2009 school year, the chi-square analysis resulted in a statistically significant difference on the TAKS Reading Met Standard, $\chi^2(2) = 10.97$, $p = .027$, for English Language Learners who were not economically disadvantaged. The

effect size for this finding, Cramer's V, was small, .136 (Cohen, 1988). Regarding the 2009-2010 school year, a statistically significant difference was again present on the TAKS Reading Met Standard, $\chi^2(2) = 17.67$, $p = .001$, for English Language Learners who were not economically disadvantaged. The effect size for this finding, Cramer's *V*, was small, .145 (Cohen, 1988). As can be seen in Table 2.7, in the 2008-2009 and 2009-2010 school years, Very Large-size schools had 35.30% to 45.40% of their English Language Learners who were not economically disadvantaged who achieved the TAKS Reading Met Standard. In contrast, Very-Small size through Moderate-size schools had no English Language Learners who were not economically disadvantaged and who achieved the TAKS Reading Met Standard.

Insert Table 2.7 about here

For the 2008-2009 school year, a statistically significant difference was again revealed on the TAKS Reading Met Standard, $\chi^2(2) = 21.81$, $p = .001$, for English Language Learners who were economically disadvantaged. The effect size for this finding, Cramer's V, was trivial, .06 (Cohen, 1988). Regarding the 2009-2010 school year, a statistically significant difference was again present on the TAKS Reading Met Standard, $\chi^2(2) = 23.16$, $p < .001$, for English Language Learners who were economically disadvantaged. The effect size for this finding, Cramer's *V*, was trivial, .056 (Cohen, 1988). As revealed in Table 2.8, in the 2008-2009 and 2009-2010 school years, Very Large-size schools had nearly 50% of their English Language Learners who were economically disadvantaged who attained the TAKS Reading Met Standard. Very-

Small-size through Moderate-size schools had less than 27.3% of their English Language Learners who were economically disadvantaged who achieved the TAKS Reading Met Standard.

Insert Table 2.8 about here

Results for the TAKS Mathematics Met Standard

To determine the degree to which economic status was related to the TAKS Mathematics Met Standard, Pearson chi-square procedures were calculated. In the 2008-2009 school year, the chi-square analysis did not yield a statistically significant difference on the TAKS Mathematics Met Standard, $\chi^2(2) = 1.67$, $p = .64$, for English Language Learners who were not economically disadvantaged. With regard to the 2009-2010 school year, the chi-square analysis resulted in a statistically significant difference on the TAKS Mathematics Met Standard, $\chi^2(2) = 25.11$, $p < .001$, for English Language Learners who were not economically disadvantaged. The effect size for this finding, Cramer's V, was small, .177 (Cohen, 1988). In the 2008-2009 and 2009-2010 school year, schools smaller than Medium-size schools had between 0 to 25% of their English Language Learners who were not economically disadvantaged achieved the TAKS Mathematics Met Standard, whereas, Large-size schools had between 35.60% to 46.6% of their English Language Learners who attained the TAKS Mathematics Met Standard. Delineated in Table 2.9 are the frequencies and percentages for this analysis.

Insert Table 2.9 about here

For the 2008-2009 school year, the chi-square analysis resulted in a statistically significant difference on the TAKS Mathematics Met Standard, $\chi^2(2) = 18.64$, $p = .001$, for English Language Learners who were economically disadvantaged. The effect size for this finding, Cramer's V, was trivial, .057 (Cohen, 1988). In the 2009-2010 school year, the chi-square analysis resulted in a statistically significant difference on the TAKS Mathematics Met Standard, $\chi^2(2) = 33.24$, $p < .001$, for English Language Learners who were economically disadvantaged. The effect size for this finding, Cramer's *V*, was trivial, .068 (Cohen, 1988). As revealed in Table 2.10, in the 2008-2009 and 2009-2010 school years, Medium-size to Very Large-size schools had nearly 50% of their English Language Learners who were economically disadvantaged who achieved the TAKS Mathematics Met Standard. In contrast, Small-size schools had less than 15% of their English Language Learners who were economically disadvantaged who attained the TAKS Mathematics Met Standard.

Insert Table 2.10 about here

Discussion

In this investigation, the extent to which differences were present in the reading and mathematics performance as a function of school size for English Language Learners was examined. Two years of statewide data were obtained and analyzed on the TAKS

Reading and Mathematics Exit-Level tests for English Language Learners who were enrolled in traditionally configured high schools (i.e., Grade 9 through 12). In both school years, statistically significant results were present. Following the statistical analyses in this investigation, consistencies that were present on the TAKS Reading and Mathematics performance of English Language Learners for the two school years by economic status will now be discussed. Results are summarized in the next section.

Summary of Results on the TAKS Reading and Mathematics Raw Scores

In both school years, 2008-2009 and 2009-2010, English Language Learners who were not economically disadvantaged and who were enrolled in Very Large-size schools (i.e., 2,100 or more students) outperformed English Language Learners who were not economically disadvantaged and who were enrolled in smaller size schools in both the TAKS Reading and Mathematics raw scores. On the TAKS Reading exam, English Language Learners had a 15.0-20.0 point higher average raw score in Very Large-size schools than their counterparts who were enrolled in Medium-size schools. In general, the smaller the school size with respect to student enrollment, the greater the differences were in their TAKS Reading raw scores with their counterparts in Very Large-size schools. A stair-step effect (Carpenter, Ramirez, & Severn, 2006) was present for the TAKS Reading passing rates of English Language Learners in both school years, in that the smaller the school size the lower the raw scores. On the TAKS Mathematics test, English Language Learners who were not economically disadvantaged and who were enrolled in Very Large-size schools had a 14-22 point higher average raw score than English Language Learners who were not economically disadvantaged and who were enrolled in Medium-size schools. In both school years, regardless of economic status,

average raw scores on the TAKS Mathematics exam became greater as school student enrollment increased.

Similar consistencies were revealed for both school years on the TAKS Reading and Mathematics exam for English Language Learners who were economically disadvantaged. On the TAKS Reading exam, the average raw scores of English Language Learners who were economically disadvantaged and who were enrolled in Very Large-size schools was 16-20 points higher than their counterparts who were enrolled in Moderate-size schools. In both school years, the average TAKS Reading raw scores for English Language Learners who were economically disadvantaged increased as student enrollment increased.

Similar consistencies were also revealed in the TAKS Mathematics raw scores across the two school years. The larger the school size with respect to student enrollment, the higher the average raw score was on the TAKS Mathematics test for English Language Learners who were economically disadvantaged. Differences in average raw scores between Moderate-size and Medium-size high schools were 13.5-19.0 points. In both school years, the differences in average raw scores on TAKS Mathematics exam were minimal between Medium-size and Very Large-size schools, whereas, differences in average TAKS Mathematics raw scores between Moderate-size and Very Large-size schools were 15-21 points.

Summary of Results on the TAKS Reading and Mathematics Met Standard

Approximately 35-45% of English Language Learners who were not economically disadvantaged and who were enrolled in Very Large-size schools achieved the TAKS Reading Met Standard. For Large-size schools, however, only 28.8-40.1% of

English Language Learners who were not economically disadvantaged achieved the TAKS Reading Met Standard. In both the 2008-2009 and the 2009-2010 school years, less than 7% of English Language Learners who were not economically disadvantaged achieved the TAKS Reading Met Standard. On the TAKS Mathematics Met Standard, 37.4 to 46.6% of English Language Learners who were not economically disadvantaged and who were enrolled in Very Large-size schools attained the Met Standard. In both school years, the Met Standard percentages increased for the TAKS Mathematics exam for English Language Learners who were not economically disadvantaged as school size increased.

Across both school years, English Language Learners who were economically disadvantaged had similar percentages on the TAKS Reading Met Standard between Medium size and Large size schools. Passing percentages for English Language Learners who were enrolled in either Large-size or in Very Large-size schools were minimal, 2.5-5.0%. Similar results were noted in TAKS Mathematics Met Standard for English Language Learners who were economically disadvantaged. Differences in achievement rates between Medium-size and Very Large- size schools were 0-2.3%, and 3.5-6.7% between Large-size and Very large-size schools.

Connections with Existing Literature

In this multiyear, statewide investigation, results were congruent with recent researchers (e.g., Greeney, 2010; Greeney & Slate, 2012; Ketchum & Slate, 2012; Riha et al., 2013; Weiss et al., 2010; Zoda, Slate, & Combs, 2011) who had established that students perform statistically significantly better in larger-size schools than in smaller-size schools. In addition, recent researchers (e.g., Barnes & Slate, 2011) have

documented that Limited English Proficient students who were economically disadvantaged performed better in Large-size schools than in either Moderate-size or Small-size schools on state assessments. In this statewide investigation, English Language Learners who were not economically disadvantaged had average TAKS Reading and Mathematics raw scores that were 14%-22% higher in Large-size schools than in Small-size schools. Similar consistencies were also revealed in the TAKS Reading and Mathematics raw scores across the two school years for English Language Learners who were economically disadvantaged. English Language Learners had higher average raw scores on the TAKS Reading and Mathematics tests in Large-size schools.

Connection to Theoretical Framework

In this study, the school connectedness theory was used as the theoretical framework. Wilson (2004) determined a connected school environment increased the likelihood of student academic success. Researchers (e.g., Crosnoe, Johnson, & Elder, 2004; McNeely, Nonnemaker, & Blum, 2002) proposed that school connectedness is strongest in smaller size schools than in larger size schools. In addition, the importance of school connectedness is its relationship to academic achievement and school completion rates. As such, English Language Learners who were enrolled in Small-size schools should have higher reading and mathematics performance than English Language Leaners who were enrolled in either Medium-size or large-size high schools. Results from this study are not supportive of Small-size schools having more student connectedness than Large-size schools. In this study, in every case, raw scores were lowest in Small-size schools. In addition, the percentage of English Language Learners

meeting the TAKS Reading and Mathematics Met Standard were higher in Large-size schools.

Implications for Policy and Practice

Although questions regarding the academic achievement of English Language Learners have gained prominence at the national level (August & Shanahan, 2006; Solórzano, 2008), no empirical research studies were located in which the academic achievement of English Language Learners was examined by high school size and poverty. In this study essential information was provided about high school size and the degree to which differences were present in the academic achievement of English Language Learners by their economic status. In this investigation English Language Learners who were, and were not, economically disadvantaged, and who were enrolled in Very Large-size schools (i.e., 2,100 or more students), outperformed English Language Learners who were enrolled in smaller size schools in both the TAKS Reading and Mathematics raw scores.

Academic performance standards represent the passing score or scores on the TAKS test. Three categories are used to describe student performance: Did Not Meet Standard, Met Standard, and Commended Performance. These academic achievement standards are the cut scores on the TAKS test that divide the students into these three distinct categories. Students are considered to have passed the TAKS test if they earned a score at least as high as the cut score for the Met Standard performance category. As documented in this investigation, economic disadvantage had a negative influence on student performance on the Texas state-mandated assessments. Approximately 37.90% to 49.80% of the English Language Learners who were economically disadvantaged and

who attended Large-size schools achieved the TAKS Reading and Mathematics Met Standard. These percentages reflect that more than 50% of Texas English Language Learners did not pass the state assessment.

The student population in U.S. public schools will continue to be culturally and linguistically diverse as the English language learning student population continues to grow (Intercultural Development Research, 2015). Extensive research supports differentiated approaches in the instruction of English Language Learners, yet, conflicting and questionable policies and strategies remain with regard to meeting their needs (Gil & Burdock, 2010). Schools districts need to examine best practices for educating students struggling to learn the English language. Furthermore, English Language Learners share some important characteristics, such as being economically disadvantaged, that place them at risk of dropping out of school (Maxwell, 2012). As such, educational leaders and policy makers should consider consolidating high schools to maximize district resources and efficiently provide educational opportunities for all students regardless of their economic status or English language proficiency.

Recommendations for Future Research

For this study, differences in the academic achievement of English Language Learners on Texas state assessments were established. State accountability measures hold all school districts and schools accountable in ensuring all students meet progress measures, regardless of economic status or English Language proficiency. Given the importance of the results in this study, researchers are encouraged to extend this study to present state assessments such as the State of Texas Assessments of Academic Readiness exam. Another recommendation for future research is to extend this study to other states

with state mandated assessments having a large population of English Language Learners. The extent to which the findings of this study would generalize to other groups of students is not known, hence, expanding this study to students who are at-risk, to students who speak other languages but are not receiving formal language instruction, and to students who are enrolled in special education, may be warranted. A fourth recommendation for future study is to repeat this study at the middle school and elementary level for English Language Learners.

Only quantitative data were analyzed in this study. Researchers are encouraged to collect qualitative data examining the perceptions of educational leaders, teachers, and students receiving English language services, with regard to Bilingual and English as a Second Language programs and its relationship to school size. Moreover, research should be conducted into the underlying factors involved in school size that might explain the obtained differences in English Language Learner achievement on state assessments. Finally, a mixed method research study should be considered to examine similarities in educator personnel views and English Language Learner academic achievement rates in regard to graduation and enrollment in postsecondary institutions.

Conclusion

The purpose of this of this research study was to determine the extent to which differences were present in the academic achievement as a function of high school size for Texas English Language Learners by their economic status. Data were analyzed for two school years for English Language Learners who were enrolled in traditionally configured high schools in Texas. University Interscholastic League enrollment grouping sizes were utilized. In both school years, statistically significant results were present.

English Language Learners who were not economically disadvantaged and who were enrolled in Very Large-size schools (i.e., 2,100 or more students) outperformed English Language Learners who were not economically disadvantaged and who were enrolled in smaller size schools in both the TAKS Reading and Mathematics raw scores. Similar consistencies were revealed for both school years on the TAKS Reading and Mathematics exam for English Language Learners who were economically disadvantaged.

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Table 2.1

Summary of Studies on High School Size and Student Achievement

Author(s)	Year	Topic	Outcome
Vejar	2015	School size and academic achievement	Overpopulated schools resulted in lower student achievement and an increase in behavioral issues
Barnes & Slate	2014	School size and LEP performance	Students performed better in large-size schools
Riha et al.	2012	Middle school size and student performance	Students performed better in large-size schools
Greeney & Slate	2012	School climate and high school size	Students performed better in large-size schools
Moore et al.	2012	Black student college readiness and Texas high school size	Large-size schools operate more efficiently
Zoda et al.	2011	School size and Hispanic student achievement	Students performed better in large-size schools
Greeney	2010	School size and Texas student achievement	Students performed better in large-size schools
Weiss et al.	2010	High school size, school engagement and mathematics achievement	Students performed better in large-size schools
Black	2006	School size and student achievement	Students performed better in small-size schools
Bracey	1998	Optimal size for high schools	Schools greater than 900 students had achievement gaps widened between low and high minority schools

Table 2.2

Summary of Studies on School Size, Poverty, and Student Achievement

Author(s)	Year	Topic	Outcome
Ketchum & Slate	2012	School size, and students in poverty in Texas	Students performed better in large-size schools
Bickel	2000	School size, student achievement, and poverty	As school size increased, student achievement decreased for students in poverty
Bickel et al.	2000	High school size, achievement equity and cost	As school size increase, achievement test scores costs associated with Eco. disadvantaged student's increases
Bickel	1999	School size, socioeconomic status, and achievement	Small schools promoted academic achievement of students in poverty
Howley	1996	School size, student achievement, and poverty	Small schools promoted academic achievement of students in poverty, large schools benefited affluent students

Table 2.3

Descriptive Statistics for English Language Learner TAKS Reading Raw Scores by School Size and Economic Status for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009 (Not Economically Disadvantaged)			
Very Small-size	0	0.0	0.0
Small-size	4	0.0	0.0
Moderate-size	5	0.0	0.0
Medium-size	18	7.56	13.35
Large-size	209	22.32	17.75
Very Large-size	432	22.19	18.58
2009-2010 (Not Economically Disadvantaged)			
Very Small-size	3	0.0	0.0
Small-size	3	0.0	0.0
Moderate-size	8	0.0	0.0
Medium-size	31	4.77	12.52
Large-size	231	24.20	18.51
Very Large-size	657	27.71	19.47

Table 2.4

Descriptive Statistics for English Language Learner TAKS Mathematics Raw Scores by School Size and Economic Status for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009 (Not Economically Disadvantaged)			
Very Small-size	1	0.0	0.0
Small-size	5	0.0	0.0
Moderate-size	7	0.0	0.0
Medium-size	29	5.69	13.31
Large-size	215	18.12	18.12
Very Large-size	449	19.85	19.73
2009-2010 (Not Economically Disadvantaged)			
Very Small-size	0	0.0	0.0
Small-size	4	0.0	0.0
Moderate-size	7	2.86	7.56
Medium-size	37	3.54	9.22
Large-size	225	20.72	20.26
Very Large-size	667	25.53	20.378

Table 2.5

Descriptive Statistics for English Language Learner TAKS Reading Raw Scores by School Size and Economic Status for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009 (Economically Disadvantaged)			
Very Small-size	4	0.0	0.0
Small-size	10	0.0	0.0
Moderate-size	16	15.81	18.83
Medium-size	424	30.83	13.54
Large-size	2,990	30.74	12.73
Very Large-size	2,736	32.42	12.03
2009-2010 (Economically Disadvantaged)			
Very Small-size	3	0.0	0.0
Small-size	25	15.00	18.15
Moderate-size	37	13.08	17.52
Medium-size	555	32.87	14.62
Large-size	3,345	33.03	13.09
Very Large-size	3,585	33.23	13.27

Table 2.6

Descriptive Statistics for English Language Learner TAKS Mathematics Raw Scores by School Size and Economic Status for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009 (Economically Disadvantaged)			
Very Small-size	2	0.0	0.0
Small-size	18	2.33	9.90
Moderate-size	20	13.70	19.78
Medium-size	453	27.23	15.14
Large-size	2,978	27.31	14.41
Very Large-size	2,761	28.73	14.81
2009-2010 (Economically Disadvantaged)			
Very Small-size	5	0.0	0.0
Small-size	17	7.65	11.16
Moderate-size	28	8.79	14.99
Medium-size	566	28.14	16.08
Large-size	3,360	29.47	14.61
Very Large-size	3,605	29.78	15.05

Table 2.7

Frequencies and Percentages on the TAKS Reading Met Standard for English Language Learners Who Were Not Economically Disadvantaged for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small-size	(*n* = 0) 0.0%	(*n* = 3) 100.0%
Moderate-size	(*n* = 0) 0.0%	(*n* = 4) 100.0%
Medium-size	(*n* = 1) 6.30%	(*n* = 15) 93.80%
Large-size	(*n* = 53) 28.80%	(*n* = 131) 71.20%
Very Large-size	(*n* = 135) 35.30%	(*n* = 247) 64.70%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Moderate-size	(*n* = 0) 0.0%	(*n* = 5) 100.0%
Medium-size	(*n* = 1) 5.00%	(*n* = 19) 95.00%
Large-size	(*n* = 83) 40.10%	(*n* = 124) 59.90%
Very Large-size	(*n* = 275) 45.40%	(*n* = 331) 54.60%

Table 2.8

Frequencies and Percentages on the TAKS Reading Met Standard for English Language Learners Who Were Economically Disadvantaged for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small-size	(*n* = 0) 0.0%	(*n* = 7) 100.0%
Moderate-size	(*n* = 3) 27.30%	(*n* = 8) 72.70%
Medium-size	(*n* = 155) 37.40%	(*n* = 259) 62.60%
Large-size	(*n* = 1106) 37.90%	(*n* = 1814) 62.10%
Very Large-size	(*n* = 1149) 42.90%	(*n* = 1532) 57.10%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small-size	(*n* = 3) 15.80%	(*n* = 16) 84.20%
Moderate-size	(*n* = 7) 21.20%	(*n* = 26) 78.80%
Medium-size	(*n* = 275) 51.40%	(*n* = 260) 48.60%
Large-size	(*n* = 1634) 49.80%	(*n* = 1646) 50.20%
Very Large-size	(*n* = 1799) 51.30%	(*n* = 1708) 48.70%

Table 2.9

Frequencies and Percentages on the TAKS Mathematics Met Standard for English Language Learners Who Were Not Economically Disadvantaged for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small-size	(*n* = 0) 0.0%	(*n* = 1) 100.0%
Moderate-size	(*n* = 0) 0.0%	(*n* = 0) 100.0%
Medium-size	(*n* = 4) 25.00%	(*n* = 12) 75.00%
Large-size	(*n* = 57) 35.60%	(*n* = 103) 64.40%
Very Large-size	(*n* = 138) 37.40%	(*n* = 231) 62.60%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small-size	(*n* = 0) 0.0%	(*n* = 1) 100.0%
Moderate-size	(*n* = 0) 0.0%	(*n* = 4) 100.0%
Medium-size	(*n* = 0) 0.0%	(*n* = 25) 100.0%
Large-size	(*n* = 78) 43.80%	(*n* = 100) 56.20%
Very Large-size	(*n* = 277) 46.60%	(*n* = 318) 53.40%

Table 2.10

Frequencies and Percentages on the TAKS Mathematics Met Standard for English Language Learners Who Were Economically Disadvantaged for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small-size	(*n* = 1) 14.30%	(*n* = 6) 85.70%
Moderate-size	(*n* = 6) 60.00%	(*n* = 4) 40.00%
Medium-size	(*n* = 182) 45.30%	(*n* = 220) 54.70%
Large-size	(*n* = 1145) 41.70%	(*n* = 1599) 58.30%
Very Large-size	(*n* = 1206) 47.00%	(*n* = 1360) 53.00%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small-size	(*n* = 0) 0.0%	(*n* = 11) 100.0%
Moderate-size	(*n* = 2) 10.00%	(*n* = 18) 90.00%
Medium-size	(*n* = 251) 49.10%	(*n* = 260) 50.90%
Large-size	(*n* = 1461) 45.60%	(*n* = 1740) 54.40%
Very Large-size	(*n* = 1693) 49.10%	(*n* = 1756) 50.90%

CHAPTER III

HIGH SCHOOL SIZE AND DIFFERENCES IN ACADEMIC ACHIEVEMENT OF TEXAS ENGLISH LANGUAGE LEARNERS BY ETHNICITY/RACE: A TEXAS MULTIYEAR STATEWIDE ANALYSIS

This dissertation follows the style and format of *Research in the Schools* (RITS)

Abstract

In this investigation, the academic achievement of English Language Learners by their ethnicity/race on the Texas Assessment of Knowledge and Skills Exit-Level Reading and Mathematics tests as a function of school size was examined. Archival data were analyzed from a previously fulfilled Public Information Request form from the Texas Education Agency. Student enrollment (i.e., school size) was based on University Interscholastic League categories. In both the 2008-2009 and 2009-2010 school years, Asian, Black, and Hispanic English Language Learners who were enrolled in Large-size schools (i.e., 1,060 or more students) outperformed Asian, Black, and Hispanic English Language Learners who were enrolled in smaller size schools in both the TAKS Reading and Mathematics raw scores. White English Language Learners, regardless of high school size, performed similarly on the 2008-2009 TAKS Mathematics raw scores, as did Black English Language Learners on the 2009-2010 TAKS Mathematics raw scores. Implications for policy and practice, as well as recommendations for research, are provided.

Keywords: English Language Learners, School Size, Ethnicity/Race, Texas Assessment of Knowledge and Skills.

HIGH SCHOOL SIZE AND DIFFERENCES IN ACADEMIC ACHIEVEMENT OF TEXAS ENGLISH LANGUAGE LEARNERS BY ETHNICITY/RACE: A TEXAS MULTIYEAR STATEWIDE ANALYSIS

The English Language Learner population is the fastest growing subgroup in U.S public schools today (Intercultural Development Research, 2015), with approximately 4.7 million English Language Learners enrolled in K-12 schools in the 2013-2014 school year. Estimated by the National Clearinghouse for English Language Acquisition (2006) was that 25% of the student population in U.S public schools by 2025 will be English Language Learners. In 2012, one in nine public school students faced the daunting task of learning English and acquiring academic proficiency (Flores, Batalova, & Fix, 2012). The highest percentage of English Language Learners can be located in eight states: Alaska, California, Colorado, Hawaii, Nevada, New Mexico, Oregon, and Texas (Intercultural Development Research, 2015). Texas, the state with the second-largest number of English Language Learners in the nation behind California, enrolled over 800,000 English Language Learners in the 2013-2014 school year, approximately 17% of the total student population (Intercultural Development Research, 2015). As the number of English Language Learners has grown over time, so has the interest of educators and policymakers regarding their educational outcomes (August & Shanahan, 2006; Flores et al., 2012; Solórzano, 2008).

Shifting demographic changes in culture, race/ethnicity, and language in the United States, is raising concerns on the ability of U.S public schools to educate all students successfully (Yates, 2008). Additionally, the No Child Left Behind Act of 2001, and the most recent comprehensive federal education policy, Every Student Succeeds Act

(2015), not only requires states to assess English language proficiency, but holds all public schools accountable for ensuring English Language Learners learn English and achieve academic proficiency comparable to their English-speaking peers. Unfortunately, educational outcome data for English Language Learners highlights concerns regarding U.S public schools to educate all students successfully (Flores et al., 2012; Intercultural Development Research, 2015; Rodriguez & Slate, 2015). Test scores in reading and mathematics for English Language Learners consistently lag their native English-speaking peers (Ardasheva, Tretter, & Kinny, 2012; Fry & Pew, 2008; Intercultural Development Research, 2015; National Center for Public Policy and Higher Education, 2005).

In Texas, English Language Learners enrolled in secondary schools (i.e., Grades 6-12) are twice as likely as native English speakers to be retained (Intercultural Development Research, 2015). Their achievement gaps consistently increased as their academic careers progressed from one year to the next (Intercultural Development Research, 2015). Moreover, in a 2012 Texas study conducted by Flores et al., substantial differences were documented in the test scores of English Language Learners by race and ethnicity. As noted in the study, Asian students were the top performing group, followed by White, then Black, and Hispanic students. Although only 13-25% of English Language Learners reached the Commended Performance level on the state assessment, despite the fact that the Texas Education Agency recognizes the Commended Performance level as the goal for all students (Flores et al., 2012). Furthermore, Asian and White English Language Learners who were ever classified as English Language Learners were almost as likely to graduate from high school as native English-speakers,

demonstrating that the graduation of English Language Learners from high school may be more correlated with race and ethnicity than with English Language Learner status.

In regard to school size, in 2009, the 100 largest school districts in the United States were responsible for educating 22% of all students enrolled in public schools (Sable, Plotts, & Mitchell, 2010). The majority of students enrolled in those 100 districts were Black and Hispanic, with each school district enrolling at least 47,448 students (Sable et al., 2010). Nearly half of these 100 largest school districts were located in Texas, Florida, and California. In 2010, The National Center for Education Statistics estimated a 7% student population growth for public elementary and secondary schools in the United States through the year 2020. Despite the projected growth in student population, the number of school districts has steadily declined (Robertson, 2007). As the student population continues to grow, so will questions of school size. Schools districts across the country will be forced to decide whether they want to open new schools, thus keeping campuses smaller, build bigger campuses, or to expand existing schools, making them larger. During difficult economic times, expanding schools may seem to appear as a viable economic option, but at what expense? How large is too large? How will school expansion influence student performance and achievement?

Considerable research (Greeney, 2010; Greeney & Slate, 2012; Riha, Slate, & Martinez-Garcia, 2013; Slate & Jones, 2006, 2008) into school size and student performance has been conducted. These researchers all indicated that students enrolled in large-size schools academically outperformed those students enrolled in small-size schools. It is important to note for the reader that the investigations were limited to Texas public schools. Investigations concerning school size for Texas public schools

continues to be a relevant topic of study, because of the substantial increase in student enrollment, and the projected enrollment over the next decade (Texas Education Agency, 2011). According to the Texas Education Agency (2011), the student population in Texas (23.6%) outpaced the student population growth in the United States (12.6%) over a 10-year period (1999-2009). Given the increase in student enrollment, and in the English Language Learner student population in the United States and in states such as Texas, the relationship of high size and the academic achievement of students identified as being Limited English Proficient is critical to ensuring that public schools remain viable and no child is left behind. A summary of empirical investigations into school size and student achievement is provided in Table 3.1.

Insert Table 3.1 about here

Theoretical Frameworks

For this study, two competing theoretical frameworks (i.e., economies of scale, school connectedness) were examined with regard to school size and student academic performance. Researchers (Barnes & Slate, 2014; Bickel, 1999, 2000; Bickel et al., 2000; Greeney, 2010; Howley, 1996; Ketchum & Slate, 2012) have documented statistically significant relationships between school size and student academic achievement. The specific size of schools, with respect to student enrollment, however, is still a question often debated by researchers and lay people (Weston, 2010).

Research on school size has been investigated from different perspectives. Quantitative researchers typically examine the mean differences between groups of

similar size schools, or between school size and a range of outcome variables (Newman, et al., 2006). Empirical research on school size frequently varies in terms of the factors that are examined, and quite often do not isolate or account for race or ethnicity (Ketchum & Slate, 2012). Current authors (e.g., Barnes & Slate, 2014; Greeney & Slate, 2012) in exploring school district size have relied on the theoretical framework of economies of scale and its relationship to cost efficiency and/or student performance.

Consolidation of schools to take advantage of scale economies is often proposed as an approach for increasing the quality of education and efficiency in rural school districts (Andrews, Duncombe, & Yinger, 2000). As early as the 1930s U.S. public school districts began consolidating under the assumption that larger schools could achieve higher student performance at a lower cost due to economies of scale and specialization (Robertson, 2007). Improving student performance in U.S. public schools has been a legislative initiative for the last 20 years (e.g., Every Student Succeeds Act, 2015; No Child Left Behind Act, 2001). As state and federal mandates continue to raise performance standards for all students in U.S. public schools, pressure continues to rise for both improved productive efficiency and student performance.

Greeney (2010) and Greeney and Slate (2012) asserted that economies of scale favor large size schools, because large size schools promote efficiency and development of specialized curriculum. However, critics of large size schools tend to argue that large size schools are often formally structured and bureaucratic, which can result in impersonalized human relationships (Crosnoe, Johnson, & Elder, 2004). Greeney and Slate (2012) contended school connectedness and school size are closely related. Wilson (2004) defined school connectedness as the positive and respectful interactions and

attachments students experience in schools. Student perceptions of their relationships with others in schools influence their overall attitude toward their schools. According to Blum (2005), when students feel connected to school their attendance and academic performance increases, along with completion rates. Yet, young adults are not likely to feel connected in schools in which their developmental needs are not addressed (Ozer, Wolf, & Kong, 2016). Increasing the number of students who feel connected to school is likely to influence critical state and federal accountability measures (e.g., academic performance, school completion rates, and school attendance), and reduce the possibility of student engagement in health-compromising behaviors (Blum, 2005).

Background of the Study

The assimilation of English Language Learners into the U.S. school system has had a long and contentious educational and legal history (Flores et al., 2012), even more so in the state of Texas. In 2010, in the state of Texas, the U.S. Court of Appeals reversed the Texas court decision that had ordered Texas to implement a major restructuring of its English Language Learner programs (Flores et al., 2012). The decision was alarming considering the rapidly increasing population of English Language Learners in the state of Texas. In 2011, Texas had about 800,000 English Language Learners enrolled, second only to the state of California (Flores et al., 2012). In the 2013-2014 school year, the state of Texas enrolled more than 830,000 English Language Learner students (Intercultural Development Research, 2015), and approximately 200,000 English Language Learners were enrolled in Grades 6-12. The English Language Learner population comprise the fastest growing segment of the student population in Texas public schools, yet they are one of the lowest academically

performing groups (Intercultural Development Research, 2015; Rodriguez & Slate, 2015). Furthermore, in regard to secondary schools and English Language Learners, no secondary school consistently exceeded academic benchmarks in Texas (Intercultural Development Research, 2015).

With respect to student achievement, school size is often referenced as a factor influencing student academic achievement (Greeney, 2010; Greeney & Slate, 2012; Ketchum & Slate, 2012; Riha et al., 2013; Slate & Jones, 2006, 2008; Weiss, Carolan, & Baker-Smith, 2010; Zoda et al., 2011). Researchers have established that students perform statistically significantly better in larger-size schools compared to smaller-size size schools. Research concerning school size, and the academic achievement of students enrolled in Texas public schools is warranted, given the substantial increase in student enrollment and in the English Language Learner population (Texas Education Agency, 2011). Undoubtedly, this research investigation will constitute only a starting point in understanding the relationship between school size and English Language Learner academic progress by their respective ethnicity/race. Further research is warranted on how better performing, better funded high schools, support the education of their English Language Learners.

Statement of the Problem

In 1990, 5% of all K-12 students were English Language Learners (Goldenberg & Coleman, 2010). Today more than 10% of the student population in K-12 schools in the United States is an English Language Learner. About five million English Language Learners were enrolled in PK-12 public schools in the United States in the 2013-2014 school year (Intercultural Development Research, 2015). The State of Texas enrolled

more than 800,000 English Language Learners in the 2013-2014 school year (Intercultural Development Research, 2015).

With regard to English Language Learners, they have an English proficiency level that is limited and can compromise meaningful participation in mainstream classrooms. Yet, federal legislation does not require school districts or states to implement a specific language instruction program for English Language Learners. The No Child Left Behind Act, specifically Title III, profoundly influenced instruction and the academic achievement of English Language Learners, requiring schools to establish standards for raising the level of English proficiency, and ensuring English Language Learners succeed academically (The Course Crafters Guide to the ELL Market, 2012). However, the academic achievement of English Language Learners is statistically significantly poorer than the academic achievement of native English speakers (Intercultural Development Research, 2015; Rodriguez & Slate, 2015; The Course Crafters Guide to the ELL Market, 2012). With respect to Texas English Language Learners, in the 2013-2014 school year no secondary school in the state of Texas exceeded academic benchmarks (Intercultural Development Research, 2015).

Regarding school size, the number of students enrolled at a school campus has been documented as a statistically significant factor influencing student academic achievement. Current researchers (Greeney, 2010; Greeney & Slate, 2012; Riha et al., 2013; Zoda, Slate, & Combs, 2011) have provided extensive results supporting student academic performance being statistically significantly better in larger-size schools than in smaller-size schools, thus supporting the economies of scale theory. However, previous researchers (Bickel, 1999; Black, 2006) reported differences of opinions with regard to

school size and student achievement. McNeely, Nonnemaker, and Blum (2002) contended students enrolled in small size high schools felt more connected to their school than students who were enrolled in larger size schools. It is important to note that current studies have always been supportive of large-size schools having better student performance (Barnes & Slate, 2014; Greeney, 2010; Greeney & Slate, 2012; Ketchum & Slate, 2012; Riha et al., 2013) than smaller-size schools. Of note is that these consistent results in support of large-size schools were based on investigations of Texas schools (Barnes & Slate, 2014; Greeney, 2010; Greeney & Slate, 2012; Ketchum & Slate, 2012; Riha et al., 2013).

Given the increase in English Language Learner enrollment in U.S. public schools, and in states such as Texas, the relationship of school size and the academic achievement of English Language Learners, regardless of their ethnicity/race, needs to be ascertained. Although extensive research has been conducted examining student academic achievement and school size (Barnes & Slate, 2014; Bickel, 1999, 2000; Bickel et al., 2000; Greeney, 2010; Ketchum & Slate, 2012), no published research studies were located regarding the ethnicity/race of English Language Learner and their academic achievement by school size. This current investigation could provide local, state, and federal policymakers the direction they may need to address the academic achievement of English Language Learners across different ethnic/racial groups. Table 3.2 contains a summary of empirical studies for on school size, poverty, and student achievement.

Insert Table 3.2 about here

Purpose of the Study

The purpose of this study was to examine the degree to which differences might be present in academic achievement (i.e., reading and mathematics) as a function of high school size for English Language Learners by their ethnicity/race (Asian, Black, White, and Hispanic). Specifically analyzed were the University Interscholastic League (2013) conference cutoff numbers for high school sizes (i.e., Very Small-size, Small-size, Moderate-size, Medium-size, Large-size, and Very Large-size) and student reading and mathematics test scores for Asian, Black, White and Hispanic English Language Learners enrolled in Texas public high schools. Through analyzing two years of Texas statewide data, the degree to which the academic achievement of English Language Learners by their ethnicity/race is influenced by their high school size was determined.

Significance of the Study

Through this study, essential information was provided about school size and the differences in the academic achievement of English Language Learners by ethnicity/race (i.e., Asian, Black, White, and Hispanic). A considerable body of research exists (Barnes & Slate, 2014; Bickel, 1999, 2000; Bickel et al., 2000; Greeney, 2010; Ketchum & Slate, 2012) regarding student academic achievement and school size. However, negligible research exists in which an emphasis has been placed on school size and the academic achievement of English Language Learners by ethnicity/race. Research collected and synthesized in this study will offer educational leaders greater understanding into school

size, and the academic achievement of English Language Learners by their ethnicity/race. Ideally, these research findings could assist local, state, and federal policymakers regarding best practices for English Language Learners, and to ensure English Language Learners are achieving academically.

Research Questions

In this empirical investigation, the following research questions were addressed: (a) For Asian students, what is the effect of high school size on the reading and mathematics achievement of English Language Learners?; (b) For Black students, what is the effect of high school size on the reading and mathematics achievement of English Language Learners?; (c) For White students, what is the effect of high school size on the reading and mathematics achievement of English Language Learners?; (d) For Hispanic students, what is the effect of high school size on the reading and mathematics achievement of English Language Learners?; and (e) What is the degree to which consistencies are present in the reading and mathematics achievement of Asian, Black, White, and Hispanic English Language Learners as a function of high school size for the 2008-2009 and the 2009-2010 school years? The first four research questions were repeated for each of the 2 school years, whereas the last research question was repeated for each of the four ethnic/racial groups. Thus, a total of 12 research questions comprised this quantitative investigation.

Method

Research Design

A non-experimental, causal-comparative research design (Creswell, 2009; Johnson & Christensen, 2014) was used for this study. Due to the design of the study, the

independent variables had already occurred, and thus could not be manipulated. Furthermore, the archival data that were utilized herein represent past events (Johnson & Christensen, 2014). The independent variable involved in this research article was the school size variable. To permit results from this investigation to be compared with the existing literature, the University Interscholastic League (2013) athletic conference cutoff size were used to determine school sizes: Very Small-size 1A high schools consisted of less than 104.9 students; Small-size high schools had 105 to 219 students; Moderate-size high schools had 220 to 464 students; Medium-size high schools had 465-1059 students; Large-size high schools had 1060-2099 students, and Very Large-size high schools had at least 2,100 students. For each school year (i.e., 2007-2008 and 2011-2012 school years), the dependent variable was the academic achievement of English Language Learners for Asian, Black, White, and Hispanic students.

Participants and Instrumentation

For the purpose of this study, archival data that had already been obtained through a previously submitted and fulfilled Public Information Request from the Texas Education Agency were utilized. Specific information that were analyzed were: the grade span configuration of each high school campus; student enrollment at each campus; student ethnicity/race, reading and mathematics test scores. The 2 years of available Texas statewide data that were obtained were for the 2008-2009 and 2009-2010 school years. The specific number of high school campuses with a grade span configuration of Grades 9-12 was estimated to be about 1,000 high schools. Data on high school campuses that did not have a grade span configuration of 9-12, that were charter schools or that were alternative education settings were not analyzed in this investigation.

For this investigation four variables are of interest: English Language Learner status, student ethnicity/race, high school size, and achievement on the reading and mathematics state assessments. Because English Language Learner status and student ethnicity/race are reported to the Texas Education Agency by each school campus, traditional reliability and validity concepts are not applicable. For detailed score reliabilities and score validities on the Texas Assessment of Knowledge and Skills assessments, readers are referred to the Texas Education Agency website.

Results

Prior to conducting inferential statistics to address each research question, the underlying assumptions of the Analysis of Variance (ANOVA) procedure was conducted. Examined were the standardized skewness coefficients and the standardized kurtosis coefficients, yielding values that were not within the range of normality, +/-3 range (Onwuegbuzie & Daniel, 2002). Another assumption underlying use of a parametric Analysis of Variance (ANOVA) procedure, the Levene's Test of Error Variance, was also not met. Although the majority of the assumptions were not met, the parametric ANOVA is fittingly robust enough to withstand this violation, thus the use of a parametric ANOVA procedure was justified (Fields, 2009). The average raw score refers to the average number of questions answered correctly, either more questions answered correctly for a higher average raw score, or fewer items answered correctly for a lower average raw score.

Overall Results for the Two School Years for Asian English Language Learners

For the 2008-2009 school year, TAKS Reading raw scores were determined to be statistically significant by school size (i.e., Very Small, Small, Medium, Moderate, Large, and Very Large) for Asian English Language Learners, $F(2, 188) = 5.79$, $p = .004$, partial $\eta^2 = .058$, moderate effect size. Scheffe` post hoc procedures were then used to determine which pairs of school sizes differed from each other. As revealed in Table 3.3, in the 2008-2009 school years, Asian English Language Learners who were enrolled in Very Large-size schools had an average TAKS Reading raw score that was 18.68 points higher than the average TAKS Reading raw scores of Asian English Language Learners who were enrolled in Medium-size schools, and 10.85 points higher than the TAKS Reading raw scores of Asian English Language Learners who were enrolled in Large-size schools. Large-size schools had average TAKS raw scores that were 7.83 points higher than Medium-size schools. No other school size grouping pairs were different in their average TAKS Reading raw scores for Asian English Language Learners.

Insert Table 3.3 about here

Concerning the 2009-2010 school year, TAKS Reading raw scores were also statistically significant by school size for Asian English Language Learners, $F(4, 241) = 4.86$, $p = .001$, partial $\eta^2 = .075$, moderate effect size. Asian English Language Learners who were enrolled in Very Large-size schools had an average TAKS Reading raw score that was 26.72 points higher than the average TAKS Reading raw scores of Asian

English Language Learners who were enrolled in Medium-size schools, and 9.28% higher than the TAKS Reading raw scores of Asian English Language Learners who were enrolled in Large-size schools. Large-size schools had average TAKS raw scores that were 17.44 points higher than Medium-size schools. No other school size grouping pairs were different in their average TAKS Reading raw scores. Presented in Table 3.3 are the descriptive statistics for this analysis.

With regard to the 2008-2009 school year, TAKS Mathematics raw scores were determined to be statistically significant by school size for Asian English Language Learners, $F(3, 191) = 3.86$, $p = .01$, partial $\eta^2 = .057$, moderate effect size. Scheffe` post hoc procedures revealed that in the 2008-2009 school year, Asian English Language Learners had higher average TAKS Mathematics raw scores in Larger-size schools than their counterparts who were enrolled in Small-size schools. As revealed in Table 3.4, Asian English Language Learners who were enrolled in Very Large-size schools had an average TAKS Mathematics raw score that was 22.21 points higher than the TAKS Mathematics raw scores of Asian English Language Learners who were enrolled in schools smaller than Large-size. Moreover, Very Large-size schools had an average raw score that was almost 13.0 points higher than the TAKS Mathematics raw scores of Asian English Language Learners enrolled in Large-size schools. No other school size grouping pairs were different in their average TAKS Mathematics raw scores.

Insert Table 3.4 about here

With respect to the 2009-2010 school year, TAKS Mathematics raw scores were again statistically different by school size for Asian English Language Learners, $F(4, 240) = 3.48$, $p = .009$, partial $\eta^2 = .055$, moderate effect size. Asian English Language Learners who were enrolled in Very Large-size schools had an average TAKS Mathematics raw score that was 28.94 points higher than the average TAKS Mathematics raw score of Asian English Language Learners who were enrolled in schools smaller than Large-size schools, and Asian English Language Learners who were enrolled in Very Large-size schools had an average TAKS Mathematics raw score that was 6.99 points higher than Large-size schools. Asian English Language Learners who were enrolled in Large-size schools had average TAKS Mathematics raw scores that were 21.95 points higher than their peers who were enrolled in Small-size, Moderate-size, or Medium-size schools. Delineated in Table 3.4 are the descriptive statistics for this analysis.

Overall Results for the Two School Years for Black English Language Learners

For the 2008-2009 school year, TAKS Reading raw scores were determined to be statistically significant by school size (i.e., Very Small, Small, Medium, Moderate, Large, and Very Large) for Black English Language Learners, $F(3, 32) = 3.93$, $p = .017$, partial $\eta^2 = .27$, large effect size. Scheffe` post hoc procedures were then used to determine which pairs of school sizes differed from each other. In the 2008-2009 school year, only one pairwise comparison was different. Black English Language Learners had higher average TAKS Reading raw scores in Large-size schools than their counterparts who were enrolled in any of the other school sizes. Descriptive statistics for this analysis are presented in Table 3.5.

Insert Table 3.5 about here

Concerning the 2009-2010 school year, TAKS Reading raw scores were not statistically significant by school size for Black English Language Learners, $F(2, 34) = 2.16$, $p = .13$. For Black English Language Learners, their TAKS Reading raw scores were similar across the school sizes. Descriptive statistics for this analysis are revealed in Table 3.5.

With respect to the 2008-2009 school year, TAKS Mathematics raw scores were determined to be statistically significant by school size (i.e., Very Small, Small, Medium, Moderate, Large, and Very Large) for Black English Language Learners, $F(2, 36) = 3.90$, $p = .029$, partial $\eta^2 = .18$, large effect size. Scheffe` post hoc procedures revealed differences between Large-size schools and all other group sizes in their TAKS Mathematics raw scores. As revealed in Table 3.6, Black English Language Learners had an average TAKS Mathematics raw score that was 11.47 points higher in Large-size schools than did Black English Language Learners who were enrolled in all other school sizes.

Insert Table 3.6 about here

For the 2009-2010 school year, TAKS Mathematics raw score were not statistically significantly different by school size for Black English Language Learners, $F(3, 29) = 1.26$, $p = .30$. For Black English Language Learners, their average TAKS

Mathematics raw scores were similar across the school sizes. Descriptive statistics for this analysis are presented in Table 3.6.

Overall Results for the Two School Years for White English Language Learners

For the 2008-2009 school year, TAKS Reading raw scores were not statistically significantly different by school size (i.e., Very Small, Small, Medium, Moderate, Large, and Very Large) for White English Language Learners, $F(2, 48) = 0.00$, $p = .00$. Concerning the 2009-2010 school year, again TAKS Reading raw scores were not statistically significantly different by school size for White English Language Learners, $F(4, 89) = 0.00$, $p = .00$. As revealed in Table 3.7, in the 2008-2009 and the 2009-2010 school years, White English Language Learners had similar average TAKS Reading raw scores across the different school sizes.

Insert Table 3.7 about here

With regard to the 2008-2009 school year, TAKS Mathematics raw scores were not statistically significantly different by school size for White English Language Learners, $F(2, 54) = 1.30$, $p = .28$. In the 2008-2009 school year, White English Language Learners had similar average TAKS Mathematics raw scores across the school sizes. Descriptive statistics for this analysis are presented in Table 3.8.

Insert Table 3.8 about here

With respect to the 2009-2010 school year, TAKS Mathematics raw scores were statistically significantly different by school size for White English Language Learners, $F(4, 80) = 6.35$, $p < .001$, partial $\eta^2 = .24$, large effect size. White English Language Learners who were enrolled in Moderate-size schools had an average TAKS Mathematics raw score that was 4.25 points higher than the average TAKS Mathematics raw scores of White English Language Learners who were enrolled in all other school size groupings. Table 3.8 contains the descriptive statistics for this analysis.

Overall Results for the Two School Years for Hispanic English Language Learners

For the 2008-2009 school year, TAKS Reading raw scores were statistically significantly different by school size (i.e., Very Small, Small, Medium, Moderate, Large, and Very Large) for Hispanic English Language Learners, $F(5, 6567) = 34.35$, $p < .001$, partial $\eta^2 = .025$, small effect size. Scheffe` post hoc procedures were then used to determine which pairs of school sizes differed from each other. In the 2008-2009 school year, Hispanic English Language Learners who were enrolled in Large-size and Medium-size schools had an average TAKS Reading raw score that was 30.30 to 30.64 points higher than the TAKS Reading raw scores of Hispanic English Language Learners who were enrolled in Small-size schools, and 17.99 to 19.41 points higher than the TAKS Reading raw scores of Hispanic English Language Learners who were enrolled in Moderate-size schools. Furthermore, Moderate-size schools had an average raw score that was 12.65 points higher than the TAKS Reading raw scores of Hispanic English Language Learners who were enrolled in Small-size schools. Presented in Table 3.9 are the descriptive statistics for this analysis.

Insert Table 3.9 about here

Concerning the 2009-2010 school year, TAKS Reading raw scores were statistically significantly different by school size for Hispanic English Language Learners, $F(5, 8129) = 31.52$, $p < .001$, partial $\eta^2 = .019$, small effect size. Hispanic English Language Learners who were enrolled in Medium-size to Large-size schools had an average TAKS Reading raw score that was 31.0 to 33.0 points higher than the average TAKS Reading raw score of Hispanic English Language Learners who were enrolled in Very Small-size schools, and 17.0 to 19.0 points higher than the TAKS Reading raw scores of Hispanic English Language Learners who were enrolled in Moderate-size schools. Moderate-size schools had an average raw score that was 3.0 to 12.0 points higher than the TAKS Reading raw scores of Hispanic English Language Learners who were enrolled in Small-size schools. Table 3.9 contains the descriptive statistics for this analysis.

With respect to the 2008-2009 school year, TAKS Mathematics raw scores were determined to be statistically significantly different by school size (i.e., Very Small, Small, Medium, Moderate, Large, and Very Large) for Hispanic English Language Learners, $F(5, 6646) = 24.43$, $p < .001$, partial $\eta^2 = .018$, small effect size. Scheffe` post hoc procedures revealed differences between all school size groupings in their TAKS Mathematics raw scores. As revealed in Table 3.10, Hispanic English Language Learners had an average TAKS Mathematics raw score that was 25.0 to 31.0 points higher in Medium-size and Large-size schools, than did Hispanic English Language

Learners who were enrolled in Small- size schools. Moderate-size schools had an average TAKS Mathematics raw score that was 9.0 to 10.0 points higher than Small-size schools, and Medium-size schools had an average TAKS Mathematics raw score that was 16.0 points higher than did Hispanic English Language Learners who were enrolled in Moderate-size schools.

Insert Table 3.10 about here

For the 2009-2010 school year, TAKS Mathematics raw score were statistically significantly different by school size for Hispanic English Language Learners, $F(5, 8163) = 25.54$, $p < .001$, partial $\eta^2 = .015$, small effect size. Hispanic English Language Learners who were enrolled in Large-size and Medium-size schools had an average TAKS Mathematics raw score that was 20.0 to 22.0 points higher than the average TAKS Mathematics raw scores of Hispanic English Language Learners who were enrolled in Small-size schools, and 19.0 to 21.0 points higher than the average TAKS Mathematics raw scores of Hispanic English Language Learners who were enrolled in Moderate-size schools. Moderate-size schools had an average raw score that was 1.0 to 8.0 points higher than the average TAKS Mathematics raw scores of Hispanic English Language Learners who were enrolled in Small-size schools. Presented in Table 3.10 are the descriptive statistics for this analysis.

Results for the TAKS Reading Met Standard

To determine the degree to which ethnicity/race was related to the TAKS Reading Met Standard for English Language Learners in the 2008-2009 and 2009-2010 school

years, Pearson chi-square procedures were conducted. This statistical procedure was the ideal method to calculate because frequency data were present for both ethnicity/race and for the student TAKS Exit-Level Reading Met Standard for the 2008-2009 and 2009-2010 school years. A large sample size was readily available, providing at least five responses per cell. Therefore, the assumptions for utilizing a chi-square were met.

With respect to the 2008-2009 school year, the chi-square analysis resulted in a statistically significant difference on the TAKS Reading Met Standard, $\chi^2(2) = 6.90$, $p = .032$, for Asian English Language Learners. The effect size for this finding, Cramer's V, was small, .21 (Cohen, 1988). Regarding the 2009-2010 school year, a statistically significant difference was again present on the TAKS Reading Met Standard, $\chi^2(2) = 9.691$, $p = .008$, for Asian English Language Learners. The effect size for this finding, Cramer's V, was small, .21 (Cohen, 1988). As presented in Table 3.11, in the 2008-2009 and 2009-2010 school years, Very Large-size schools had 40.20% to 50.90% of their Asian English Language Learners who achieved the TAKS Reading Met Standard. In contrast, Large-size schools had 15.40% to 32.50% of their Asian English Language Learners who achieved the TAKS Reading Met Standard.

Insert Table 3.11 about here

For the 2008-2009 school year, a statistically significant difference was not revealed on the TAKS Reading Met Standard, $\chi^2(2) = 1.98$, $p = .37$, for Black English Language Learners. Regarding the 2009-2010 school year, again a statistically significant difference was not present on the TAKS Reading Met Standard, $\chi^2(2) = 0.15$,

p = .93, for Black English Language Learners. As revealed in Table 3.12, in the 2008-2009 and 2009-2010 school years, similar percentages of Black English Language Learners on their TAKS Reading Met Standard were present across the school sizes.

Insert Table 3.12 about here

In the 2008-2009 school year, the chi-square procedures could not be calculated because no White English Language Learners met the standard. Regarding the 2009-2010 school year, again, the chi-square procedure could not be calculated because no White English Language Learners met the TAKS Reading Standard. In Table 3.13 are the descriptive statistics for this analysis.

Insert Table 3.13 about here

For the 2008-2009 school year, a statistically significant difference was revealed on the TAKS Reading Met Standard, $\chi^2(2) = 25.21$, $p < .001$, for Hispanic English Language Learners. The effect size for this finding, Cramer's V, was trivial, .06 (Cohen, 1988). Regarding the 2009-2010 school year, again a statistically significant difference was present on the TAKS Reading Met Standard, $\chi^2(2) = 24.89$, $p < .001$, for Hispanic English Language Learners. The effect size for this finding, Cramer's V, was trivial, .06 (Cohen, 1988). As revealed in Table 3.14, in the 2008-2009 school year, Very Large-size and Medium-size schools had 36.70% to 42.30% of their Hispanic English Language Learners who achieved the TAKS Reading Met Standard. Small-size to Moderate size

schools had 0% to 20% who achieved the TAKS Reading Met Standard. In the 2009-2010 school years, Large-size and Medium-size schools had more than 50% of their Hispanic English Language Learners who achieved the TAKS Reading Met Standard. In contrast, Small-size to Moderate size schools had 0% to 18.90% of their Hispanic English Language Learners who achieved the TAKS Reading Met Standard.

Insert Table 3.14 about here

Results for the TAKS Mathematics Met Standard

To determine the degree to which ethnicity/race was related to the TAKS Mathematics Met Standard, Pearson chi-square procedures were calculated. In the 2008-2009 school year, the chi-square analysis did not yield statistically significant difference on the TAKS Mathematics Met Standard, $\chi^2(2) = 4.38$, $p = .11$, for Asian English Language Learners. With regard to the 2009-2010 school year, the chi-square analysis resulted in a statistically significant difference on the TAKS Mathematics Met Standard, $\chi^2(2) = 10.01$, $p = .04$, for Asian English Language Learners. The effect size for this finding, Cramer's V, was small, .21 (Cohen, 1988). In the 2009-2010 school year, schools smaller than Large-size schools had no Asian English Language Learners who achieved the TAKS Mathematics Met Standard, whereas, Very Large-size schools had between 49.60% to 58.50% of their Asian English Language Learners who attained the TAKS Mathematics Met Standard. Delineated in Table 3.15 are the frequencies and percentages for this analysis.

Insert Table 3.15 about here

For the 2008-2009 school year, the chi-square analysis did not result in a statistically significant difference on the TAKS Mathematics Met Standard, $\chi^2(2) = 0.15$, $p = .70$, for Black English Language Learners. In the 2009-2010 school year, the chi-square analysis did not yield a statistically significant difference on the TAKS Mathematics Met Standard, $\chi^2(2) = 1.07$, $p = .59$, for Black English Language Learners. As revealed in Table 3.16, Black English Language Learners had a similar performance on the TAKS Mathematics Met Standard, regardless of the school size in which they were enrolled.

Insert Table 3.16 about here

With respect to the 2008-2009 school year, the chi-square analysis did not reveal a statistically significant difference on the TAKS Mathematics Met Standard, $\chi^2(2) = 3.58$, $p = .17$, for White English Language Learners. Regarding the 2009-2010 school year, the chi-square procedure could not be calculated because no White English Language Learners met the standard. Regardless of high school size, White English Language Learners had a similar performance on the TAKS Mathematics Met Standard. The descriptive statistics for this analysis are revealed in Table 3.17.

Insert Table 3.17 about here

For the 2008-2009 school year, the chi-square analysis resulted in a statistically significant difference on the TAKS Mathematics Met Standard, $\chi^2(2) = 15.23$, $p = .004$, for Hispanic English Language Learners. The effect size for this finding, Cramer's V, was trivial, .05 (Cohen, 1988). In the 2009-2010 school year, the chi-square analysis resulted in a statistically significant difference on the TAKS Mathematics Met Standard, $\chi^2(2) = 30.88$, $p < .001$, for Hispanic English Language Learners. The effect size for this finding, Cramer's *V*, was trivial, .06 (Cohen, 1988). Revealed in Table 3.18, in the 2008-2009 and 2009-2010 school years, Medium-size to Large-size schools had 41.80% to 48.80% of their Hispanic English Language Learners who achieved the TAKS Mathematics Met Standard. In contrast, Small-size schools had 0% to 12.50% of their Hispanic English Language Learners who attained the TAKS Mathematics Met Standard.

Insert Table 3.18 about here

Discussion

In this investigation, the extent to which differences were present in the reading and mathematics performance of English Language Learners separately by their ethnicity/race as a function of school size was examined. Two years of statewide data were obtained and analyzed on the TAKS Reading and Mathematics Exit-Level test for English Language Learners who were enrolled in traditionally configured high schools

with Grades 9 through 12. In both school years, statistically significant results were present. Following the statistical analyses in this investigation, consistencies that were present on the TAKS Reading and Mathematics performance of English Language Learners for the two school years for each of the four ethnic/racial groups are discussed. Results are summarized in the next section.

Summary of Results on the TAKS Reading and Mathematics Raw Scores

In both the 2008-2009 and 2009-2010 school years, Asian, Black, and Hispanic English Language Learners who were enrolled in Large-size schools (i.e., 1,060 or more students) outperformed Asian, Black, and Hispanic English Language Learners who were enrolled in smaller size schools in both the TAKS Reading and Mathematics raw scores. On the TAKS Reading exam, Asian and Hispanic English Language Learners had an 18-33.0 point higher average raw score in Very Large-size schools than their counterparts who were enrolled in Small-size schools. On the TAKS Reading and Mathematics exams, Black English Language Learners who were enrolled in Large-size schools outperformed Black English Language Learners who were enrolled in all other school size groupings. In the 2008-2009 school year, White English Language Learners had higher average TAKS Mathematics raw scores in Large-size schools, and in the 2009-2010 school year in Moderate-size schools. Regardless of school size, in both school years, Hispanic English Language Learners had higher TAKS Reading and Mathematics raw scores in Large-size schools. A stair-step effect (Carpenter, Ramirez, & Severn, 2006) was present for the TAKS Reading and Mathematics raw scores of Hispanic English Language Learners in both school years, in that the smaller the school size the lower raw scores.

Summary of Results on the TAKS Reading and Mathematics Met Standards

Approximately 15-51% of Asian English Language Learners who were enrolled in Large-size schools achieved the TAKS Reading Met Standard. All other school size groupings had no Asian English Language Learners who achieved the TAKS Reading Met Standard. Black English Language Learners enrolled in Large-size schools had between 13-35% who achieved the TAKS Reading Met Standard. Regardless of school size, no White English Language Learners achieved the TAKS Reading Met Standard. For Hispanic English Language Learners enrolled in Small-size to Large-size schools, in both the 2008-2009 and the 2009-2010 school years, 17-51% achieved the TAKS Reading Met Standard. In both school years, for Hispanic English Language Learners, the TAKS Reading Met Standard percentages increased as school size increased.

Across both school years, 33-59% of Asian English Language Learners who were enrolled in Large-size schools achieved the TAKS Mathematics Met Standard. Schools smaller than Large-size had no Asian English Language Learners who achieved the TAKS Mathematics Met Standard. For Black English Language Learners, only those Black English Language Learners who were enrolled in Large-size schools achieved the TAKS Mathematics Met Standard. Approximately 10% of White English Language Leaners enrolled in Large-size schools in the 2008-2009 school achieved the TAKS Mathematics Met Standard. In the 2009-2010 school year, regardless of school size, no White English Language Learners achieved the TAKS Mathematics Met Standard. In both school years, 2008-2009 and 2009-2010, approximately 42-49% of Hispanic English Language Learners who enrolled in Medium-size to Large-size schools achieved the

TAKS Mathematics Met Standard. In the 2009-2010 school year, less than 10% of Hispanic English Language Learners enrolled in schools smaller than Medium-size achieved the TAKS Mathematics Met Standard.

Connections with Existing Literature

Considerable research (Greeney, 2010; Greeney & Slate, 2012; Riha, Slate, & Martinez-Garcia, 2013; Slate & Jones, 2006, 2008) into school size and Texas student performance has been conducted. In this multiyear, statewide investigation, results were congruent to previous researchers (Greeney, 2010; Greeney & Slate, 2012; Riha et al., 2013; Slate & Jones, 2006, 2008), wherein students who were enrolled in Large-size high schools had better performance than students who were enrolled in Small-size or Medium-size schools. Research concerning school size for Texas public schools continues to be relevant due to the substantial increase in student enrollment (Texas Education Agency, 2011). Given the increase in student enrollment, and in the English Language Learner student population in the United States and in states such as Texas, the relationship of high school size and the academic achievement of students identified as being Limited English Proficient is critical to ensuring that public schools remain viable and no child is left behind.

Connection to Theoretical Framework

In this study, two competing theoretical frameworks (i.e., economies of scale, school connectedness) were examined with regard to school size and student academic performance. Results from this study, in which the academic achievement of English Language Learners was examined by ethnicity/race as a function of high school size, are not supportive of the school connectedness theory. In every case in this study, English

Language Learners had higher average raw scores in Large-size schools on the reading and mathematics state assessments.

Consolidation of schools to take advantage of economies of scale is often proposed as an approach for increasing the quality of education and efficiency in rural school districts (Andrews, Duncombe, & Yinger, 2000). In this investigation, results were consistent with Greeney and Slate (2012), who asserted that economies of scale favor large size schools, because large size schools promote efficiency and development of specialized curriculum. In both the 2008-2009 and 2009-2010 school years, Asian, Black, and Hispanic English Language Learners who were enrolled in Large-size schools (i.e., 1,060 or more students) outperformed Asian, Black, and Hispanic English Language Learners who were enrolled in smaller size schools in both the TAKS Reading and Mathematics raw scores.

Implications for Policy and Practice

In 2011, Texas had about 800,000 English Language Learners enrolled in its public schools, second only to the state of California (Flores et al., 2012). With respect to student achievement, school size is often referenced as a factor influencing student academic achievement (Greeney, 2010; Greeney & Slate, 2012; Ketchum & Slate, 2012; Riha et al., 2013; Slate & Jones, 2006, 2008; Weiss, Carolan, & Baker-Smith, 2010; Zoda et al., 2011). Given the increase in English Language Learner enrollment in U.S. public schools, and in state such as Texas, the relationship of school size and the academic achievement of English Language Learners, regardless of their ethnicity/race, needs to be ascertained. This current investigation could provide local, state, and federal policy-

makers the direction they may need to address the academic achievement of English Language Learners across different ethnic/racial groups.

School leaders must develop specific interventions to support English Language Learners. The No Child Left Behind Act of 2001, and the most recent comprehensive federal education policy, Every Student Succeeds Act (2015), not only requires states to assess English language proficiency, but holds all public schools accountable for ensuring English Language Learners learn English and achieve academic proficiency comparable to their English-speaking peers. Another implication would be for educational leaders and policy makers to examine more closely the relationship of student academic achievement with school size. The consolidation of Small-size high schools into Medium-size and Large-size high schools needs to be considered. Considering the estimated future increase in English Language Learner population in U.S. public schools and in states such as Texas (Intercultural Development Research, 2015), administrators of Small-size schools with a high percentage of English Language Learners need to consider consolidation of schools to maximize resources and to increase the quality of education and efficiency in rural school districts.

Recommendations for Future Research

For this study, differences in the academic achievement of English Language Learners by ethnicity/race on the Texas TAKS state assessments were examined. Federal and state accountability measures hold all school districts accountable in ensuring all students meet progress measures, regardless of student economic status or their English language proficiency. Given the importance of the results in this investigation, researchers are encouraged to extend this study to the Texas State of Texas Assessments

of Academic Readiness tests. A second recommendation for future research is to extend this study to states with state-mandated assessments. The extent to which the findings of this study would generalize to other groups of students is not known, consequently, extending this study to include other populations such as students who are at-risk, English Language Learners who are not receiving formal language instruction, and to students who are enrolled in and receiving special education, may be warranted. Furthermore, a recommendation for future study is to repeat this study at lower grades.

Due to the fact that only quantitative data were analyzed in this study, researchers are encouraged to collect data examining the perceptions of educational leaders, educators, and students who are receiving English language services. Moreover, research should be conducted into the underlying factors involved in school size that may help explain the differences in English Language Learner achievement on state assessments. Lastly, a mixed method research study in which the personnel views of English Language Learners and STAAR assessment achievement data could be examined.

Conclusion

In this investigation, the relationship of school size and the reading and mathematics achievement of English Language Learners, as a function of their ethnicity/race, on the Texas Assessment of Knowledge and Skills for 2 school years (i.e., 2008-2009, 2009-2010), were examined. Data were analyzed for English Language Learners who were enrolled in traditionally configured Grades 9 through 12 high schools. Six school size categories were utilized that aligned to the University Interscholastic League enrollment numbers. In both school years, statistically significant results were present. In both, the 2008-2009 and 2009-2010 school years, Asian, Black, and Hispanic

English Language Learners who were enrolled in Large-size schools (i.e., 1,060 or more students) outperformed Asian, Black, and Hispanic English Language Learners who were enrolled in smaller size schools in both the TAKS Reading and Mathematics raw scores. Asian, Black, and Hispanic English Language Learners who were enrolled in Large-size schools had higher achievement percentages on the TAKS Reading Met Standard. Similar results were present for the TAKS Mathematics Met Standard.

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Table 3.1

Summary of Studies on School Size and Student Achievement

Author(s)	Year	Topic	Outcome
Barnes & Slate	2014	School size and LEP performance	Students performed better in large-size schools
Riha et al.	2013	Middle school size and student performance	Students performed better in large-size schools
Greeney & Slate	2012	School climate and high school size	Students performed better in large-size schools
Zoda et al.	2011	School size and Hispanic student achievement	Students performed better in large-size school
Greeney	2010	School size and Texas student achievement	Students performed better in large-size schools
Black	2006	School size and student achievement	Students performed better in small-size schools
Slate & Jones	2006	Black student performance and Texas secondary school size	Students performed better in large-size schools
Newman et al.	2006	Secondary school size	Large-size schools have lower exam attainment

Table 3.2

Summary of Studies on School Size, Poverty, and Student Achievement

Author(s)	Year	Topic	Outcome
Ketchum & Slate	2012	School size, and students in poverty in Texas	Students performed better in large-size schools
Bickel	2000	School size, student achievement, and poverty	As school size increased, student achievement decreased for students in poverty
Bickel et al.	2000	High school size, achievement, equity, and cost	As school size increase, achievement test scores costs associated with Eco. disadvantaged student's increases
Bickel	1999	School size, socioeconomic status, and achievement	Small schools promoted academic achievement of students in poverty
Howley	1996	School size, student achievement, and poverty	Small schools promoted academic achievement of students in poverty, large schools benefited affluent students

Table 3.3

Descriptive Statistics for Asian English Language Learner TAKS Reading Raw Scores by School Size for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009 (Asian)			
Very Small-size	0	0.0	0.0
Small-size	0	0.0	0.0
Moderate size	0	0.0	0.0
Medium size	3	0.0	0.0
Large size	35	7.83	14.80
Very Large-size	153	18.68	19.92
2009-2010 (Asian)			
Very Small-size	0	0.0	0.0
Small-size	1	0.0	0.0
Moderate size	2	0.0	0.0
Medium	6	0.0	0.0
Large size	48	17.44	19.94
Very Large-size	189	26.72	21.72

Table 3.4

Descriptive Statistics for Asian English Language Learner TAKS Mathematics Raw Scores by School Size for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009 (Asian)			
Very Small-size	0	0.0	0.0
Small-size	0	0.0	0.0
Moderate size	1	0.0	0.0
Medium size	3	0.0	0.0
Large size	36	9.56	20.08
Very Large-size	155	22.21	23.99
2009-2010 (Asian)			
Very Small-size	0	0.0	0.0
Small-size	1	0.0	0.0
Moderate size	2	0.0	0.0
Medium size	6	0.0	0.0
Large size	42	21.95	23.59
Very Large-size	194	28.94	25.04

Table 3.5

Descriptive Statistics for Black English Language Learner TAKS Reading Raw Scores by School Size for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009 (Black)			
Very Small-size	0	0.0	0.0
Small-size	0	0.0	0.0
Moderate size	1	0.0	0.0
Medium size	1	0.0	0.0
Large size	29	21.79	16.17
Very Large-size	5	0.0	0.0
2009-2010 (Black)			
Very Small-size	0	0.0	0.0
Very Small-size	0	0.0	0.0
Small-size	0	0.0	0.0
Moderate size	0	0.0	0.0
Medium size	1	0.0	0.0
Large size	19	11.16	16.74
Very Large-size	17	2.06	8.49

Table 3.6

Descriptive Statistics for Black English Language Learner TAKS Mathematics Raw Scores by School Size for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009 (Black)			
Very Small-size	0	0.0	0.0
Small-size	0	0.0	0.0
Moderate size	0	0.0	0.0
Medium size	2	0.0	0.0
Large size	30	11.47	12.04
Very Large-size	7	0.0	0.0
2009-2010 (Black)			
Very Small-size	1	0.0	0.0
Small-size	0	0.0	0.0
Moderate size	0	0.0	0.0
Medium size	3	0.0	0.0
Large size	16	7.81	14.47
Very Large-size	3	0.0	0.0

Table 3.7

Descriptive Statistics for White English Language Learner TAKS Reading Raw Scores by School Size for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009 (White)			
Very Small-size	0	0.0	0.0
Small-size	0	0.0	0.0
Moderate size	0	0.0	0.0
Medium size	2	0.0	0.0
Large size	13	0.0	0.0
Very Large-size	36	0.0	0.0
2009-2010 (White)			
Very Small-size	0	0.0	0.0
Small-size	3	0.0	0.0
Moderate size	5	0.0	0.0
Medium size	6	0.0	0.0
Large size	24	0.0	0.0
Very Large-size	56	0.0	0.0

Table 3.8

Descriptive Statistics for White English Language Learner TAKS Mathematics Raw Scores by School Size for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009 (White)			
Very Small-size	0	0.0	0.0
Small-size	0	0.0	0.0
Moderate size	0	0.0	0.0
Medium size	4	0.0	0.0
Large size	16	2.31	9.25
Very Large-size	37	0.0	0.0
2009-2010 (White)			
Very Small-size	0	0.0	0.0
Small-size	0	0.0	0.0
Moderate size	4	4.25	8.50
Medium size	2	0.0	0.0
Large size	26	0.0	0.0
Very Large-size	51	0.0	0.0

Table 3.9

Descriptive Statistics for Hispanic English Language Learner TAKS Reading Raw Scores by School Size for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009 (Hispanic)			
Very Small-size	4	0.0	0.0
Small-size	14	0.0	0.0
Moderate size	20	12.65	17.94
Medium size	436	30.30	13.93
Large size	3,123	30.64	12.87
Very Large-size	2,976	32.06	12.43
2009-2010 (Hispanic)			
Very Small-size	3	0.0	0.0
Small-size	25	15.00	18.15
Moderate size	40	12.10	17.19
Medium size	577	31.87	15.44
Large size	3,493	32.93	13.19
Very Large-size	3,997	33.09	13.62

Table 3.10

Descriptive Statistics for Hispanic English Language Learner TAKS Mathematics Raw Scores by School Size for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009 (Hispanic)			
Very Small-size	3	0.0	0.0
Small-size	23	1.83	8.76
Moderate size	26	10.54	18.22
Medium size	473	26.43	15.62
Large size	3,114	27.13	14.56
Very Large-size	2,976	32.06	12.43
2009-2010 (Hispanic)			
Very Small-size	4	0.0	0.0
Small-size	18	7.22	10.97
Moderate size	31	8.03	14.54
Medium size	594	27.03	16.61
Large size	3,503	29.30	14.82
Very Large-size	4,019	29.56	15.21

Table 3.11

Frequencies and Percentages on the TAKS Reading Met Standard by School Size for Asian English Language Learners for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Moderate size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Medium size	(*n* = 0) 0.0%	(*n* = 2) 100.0%
Large size	(*n* = 4) 15.40%	(*n* = 22) 84.60%
Very Large-size	(*n* = 51) 40.20%	(*n* = 76) 59.80%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Moderate size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Medium size	(*n* = 0) 0.0%	(*n* = 6) 100.0%
Large size	(*n* = 13) 32.50%	(*n* = 27) 67.50%
Very Large-size	(*n* = 88) 50.90%	(*n* = 85) 49.10%

Table 3.12

Frequencies and Percentages on the TAKS Reading Met Standard by School Size for Black English Language Learners for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Moderate size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Medium size	(*n* = 0) 0.0%	(*n* = 1) 100.0%
Large size	(*n* = 9) 34.60%	(*n* = 17) 65.40%
Very Large-size	(*n* = 0) 0.0%	(*n* = 3) 100.0%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Moderate size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Medium size	(*n* = 0) 0.0%	(*n* = 1) 100.0%
Large size	(*n* = 2) 13.30%	(*n* = 13) 86.70%
Very Large-size	(*n* = 1) 12.50%	(*n* = 7) 87.50%

Table 3.13

Frequencies and Percentages on the TAKS Reading Met Standard by School Size for White English Language Learners for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Moderate size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Medium size	(*n* = 0) 0.0%	(*n* = 2) 100.0%
Large size	(*n* = 0) 0.0%	(*n* = 6) 100.0%
Very Large-size	(*n* = 0) 0.0%	(*n* = 21) 100.0%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 1) 100.0%
Moderate size	(*n* = 0) 0.0%	(*n* = 1) 100.0%
Medium size	(*n* = 0) 0.0%	(*n* = 2) 100.0%
Large size	(*n* = 0) 0.0%	(*n* = 14) 100.0%
Very Large-size	(*n* = 0) 0.0%	(*n* = 8) 100.0%

Table 3.14

Frequencies and Percentages on the TAKS Reading Met Standard by School Size for Hispanic English Language Learners for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 10) 100.0%
Moderate size	(*n* = 3) 20.00%	(*n* = 12) 80.00%
Medium size	(*n* = 156) 36.70%	(*n* = 269) 63.30%
Large size	(*n* = 1,146) 37.60%	(*n* = 1,901) 62.40%
Very Large-size	(*n* = 1,233) 42.30%	(*n* = 1,680) 57.70%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 3) 16.70%	(*n* = 15) 83.30%
Moderate size	(*n* = 7) 18.90%	(*n* = 30) 81.10%
Medium size	(*n* = 276) 50.50%	(*n* = 271) 49.50%
Large size	(*n* = 1,702) 49.80%	(*n* = 1,716) 50.20%
Very Large-size	(*n* = 1,986) 51.00%	(*n* = 1,906) 49.00%

Table 3.15

Frequencies and Percentages on the TAKS Mathematics Met Standard by School Size for Asian English Language Learners for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Moderate size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Medium size	(*n* = 0) 0.0%	(*n* = 3) 100.0%
Large size	(*n* = 6) 33.30%	(*n* = 12) 66.70%
Very Large-size	(*n* = 66) 49.60%	(*n* = 67) 50.40%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 1) 100.0%
Moderate size	(*n* = 0) 0.0%	(*n* = 1) 100.0%
Medium size	(*n* = 0) 0.0%	(*n* = 5) 100.0%
Large size	(*n* = 16) 48.50%	(*n* = 17) 51.50%
Very Large-size	(*n* = 103) 58.50%	(*n* = 73) 41.50%

Table 3.16

Frequencies and Percentages on the TAKS Mathematics Met Standard by School Size for Black English Language Learners for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Moderate size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Medium size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Large size	(*n* = 1) 4.80%	(*n* = 20) 95.20%
Very Large-size	(*n* = 0) 0.0%	(*n* = 3) 100.0%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Moderate size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Medium size	(*n* = 0) 0.0%	(*n* = 1) 100.0%
Large size	(*n* = 1) 12.50%	(*n* = 7) 87.50%
Very Large-size	(*n* = 0) 0.0%	(*n* = 7) 100.0%

Table 3.17

Frequencies and Percentages on the TAKS Mathematics Met Standard by School Size for White English Language Learners for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Moderate size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Medium size	(*n* = 0) 0.0%	(*n* = 2) 100.0%
Large size	(*n* = 1) 10.00%	(*n* = 9) 90.00%
Very Large-size	(*n* = 0) 0.0%	(*n* = 33) 100.0%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 1) 100.0%
Moderate size	(*n* = 0) 0.0%	(*n* = 4) 100.0%
Medium size	(*n* = 0) 0.0%	(*n* = 2) 100.0%
Large size	(*n* = 0) 0.0%	(*n* = 20) 100.0%
Very Large-size	(*n* = 0) 0.0%	(*n* = 42) 100.0%

Table 3.18

Frequencies and Percentages on the TAKS Mathematics Met Standard by School Size for Hispanic English Language Learners for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 1) 12.50%	(*n* = 7) 87.50%
Moderate size	(*n* = 6) 60.00%	(*n* = 4) 40.00%
Medium size	(*n* = 186) 45.00%	(*n* = 227) 55.00%
Large size	(*n* = 1,194) 41.80%	(*n* = 1,661) 58.20%
Very Large-size	(*n* = 1,278) 46.20%	(*n* = 1,490) 53.80%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 10) 100.0%
Moderate size	(*n* = 2) 9.50%	(*n* = 19) 90.50%
Medium size	(*n* = 251) 47.50%	(*n* = 277) 52.50%
Large size	(*n* = 1,522) 45.90%	(*n* = 1,795) 54.10%
Very Large-size	(*n* = 1,867) 48.80%	(*n* = 1,956 51.20%

CHAPTER IV

HIGH SCHOOL SIZE AND DIFFERENCES IN ACADEMIC ACHIEVEMENT OF TEXAS ENGLISH LANGUAGE LEARNER BOYS AND GIRLS: A TEXAS MULTIYEAR STATEWIDE ANALYSIS

This dissertation follows the style and format of *Research in the Schools (RITS).*

Abstract

In this investigation, the academic achievement of English Language Learner boys and girls on the Texas Assessment of Knowledge and Skills Exit-Level Reading and Mathematics tests by school size was examined. Previously obtained archival data from the Texas Education Agency were utilized. School size groupings were formed using the University Interscholastic League categories for student enrollment**.** Inferential analyses revealed the presence of statistically significant differences for boys and for girls across both school years and both TAKS tests as a function of high school size. In all cases, reading and mathematics achievement was higher for English Language Learner boys and girls in Medium-size to Large-size (1,060-2,099 students) high schools than in Small-size (105-219 students) through Moderate-size (465-1,059) high schools. Implications for policy and practice, as well as recommendations for research, are provided.

Keywords: English Language Learners, School Size, Gender, Texas Assessment of Knowledge and Skills.

HIGH SCHOOL SIZE AND DIFFERENCES IN ACADEMIC ACHIEVEMENT OF TEXAS ENGLISH LANGUAGE LEARNER BOYS AND GIRLS: A TEXAS MULTIYEAR STATEWIDE ANALYSIS

The United States is in the midst of one of the largest diverse ethnic/racial immigration waves in its history (Jimenez & Horowith, 2013). Public schools in the United States present a true picture of the rapid changes in the United States, particularly because the educational system has more universal access to the U.S. population than any other organization or institution (Yates, 2008). In a 10-year span, between 1996 and 2006, a 57% enrollment increase transpired in the number of English Language Learners in U.S. public schools (Intercultural Development Research, 2009). In 2007, the number of school-age students enrolled in public schools who spoke a language other than English was almost 11 million (Goldenberg & Coleman, 2010). Of concern is that in 2012, 11% of public school students experienced difficulties in learning English and acquiring academic proficiency (Flores, Batalova, & Fix, 2012). With regard to Texas, Texas public schools enrolled over 800,000 English Language Learners in the 2013-2014 school year (Intercultural Development Research, 2015). The Intercultural Development Research (2015) Association determined that only a handful of secondary schools in Texas exceeded the academic benchmarks for English Language Learners. The burgeoning demographic changes in culture, race/ethnicity, and language in the United States and in U.S. public schools raises concerns regarding the ability of the educational system to educate all students in U.S. public schools (Yates, 2008).

Key issues regarding the assessment and accountability of English Language Learners often revolved around the mandates proposed in the No Child Left behind Act

(2001), an education policy in which English Language Learners were required to take high-stakes assessments in a language, that by definition, they have yet to master (Menken, 2010). This federal education act placed an urgency and expectation on U.S. public schools to educate all students, regardless of their English proficiency. For those schools that failed to meet adequate yearly progress for two or more years, the possibility of facing severe sanctions, such as closure, the firing of teachers, or having to offer public school choice was present (Freeman & Crawford, 2008). The foundational belief in the No Child Left Behind Act was the predisposition that every public school student deserved a better education than what was being offered (Freeman & Crawford, 2008; Goldenberg & Coleman, 2010; Menken, 2010; No Child Left Behind Act, 2001). Many educators, however, have argued the pressure was unfair, misguided, and had actually caused more harm than good (Goldenberg & Coleman, 2010). A test given in English to English Language Learners makes it difficult to access the content knowledge of an English Language Learner (Menken, 2000; 2008). Unfortunately, President Obama continued to ignore the critics of the No Child Left Behind Act, by imposing the same mandates in his administration's federal education act, the Every Student Succeeds Act (2015), requiring states to assess English language proficiency, while also being held accountable for ensuring English Language Learners achieve academic proficiency comparable to their English-speaking peers.

An extensive history exists in U.S. public schools of educating English Language Learners with conflicting and questionable approaches (Gil & Burdock, 2010). Despite extensive research that supports differentiated approaches to teaching English Language Learners, the lack of federal guidelines coupled with the preconceived notions of

educators further exacerbates the confusion concerning appropriate policies and strategies in which the needs of English Language Learners are addressed (Gil & Burdock, 2010). Even though the United States has had decades of experience in attempting to address the academic needs of public school English Language Learners, researchers (Intercultural Development Research, 2015) indicate that sizable improvements are still needed at the federal, state, and local level to address the needs of English Language Learners in U.S. public schools. Schools with comparable assets and challenges may produce dramatically different academic achievement results for English Language Learners (Aleman, Johnson, & Perez, 2009). For English Language Learners to be academically successful, Aleman et al. (2009) recommended that schools set high expectations for their English Language Learners, focus on conceptual understanding, develop a culture of appreciation, and hire leadership that create a caring and persistent culture within their schools for all students. The current state of English Language Learner education in the United States is a challenge, but this challenge provides an opportunity for schools and school districts to demonstrate how English Language Learners can be effectively served.

Between 1992 and 2002, an increased interest in gender differences had occurred, particularly related to academic achievement, motivation, and knowledge development (Kitchenham, 2002). Furthermore, the research appears to be divided by geography and approach. Whereas researchers in countries such as Australia, New Zealand, and Great Britain examined the sociological causes of gender differences, researchers in countries such as Canada and the United States explored the biological causes with regard to gender differences and academic achievement (Kitchenham, 2002). Whether or not

gender differences can be explained by sociological or biological variables, the point is that any gender differences ultimately must be addressed in the classroom.

With regard to gender differences in test scores, research has been conducted for many decades (Baker, 1987; Buchmann, DiPrete, & McDaniel, 2008; Gipps & Murphy, 1994; Maccoby & Jacklin, 1974). In numerous United States and international assessments (Gallagher & Kaufman, 2005; Marks, 2008), boys outperformed girls in mathematics, and girls outperformed boys in reading. These documented gender differences persist in standardized tests, such as the SAT. Despite the extensive research in this area, disagreements remain in several measures regarding gender differences (Buchmann et al., 2008). The disagreements begin with questions pertaining to, when during the course of the student's education do gender differences in mathematics appear, are boys more variable than girls on measures of achievement, and whether differences in test scores are declining between boys and girls. Some researchers (e.g., Hyde et al., 1990) argued test scores between girls and boys were declining, whereas other researchers (Hedges & Nowell, 1995; De San Roman & De La Rica, 2016) have argued test scores have remained stable over the last 10-30 years. Even though disagreements may still exist, researchers (Buchmann et al., 2008; Lapayese, Huchting, & Grimalt, 2014; Legewie & DiPrete, 2012) examining gender differences tend to focus on social and economic factors

Student academic achievement may be influenced by student motivation (Mahdavy, 2013; Yeung, Lau, & Nie, 2011). Unfortunately, researchers (e.g., Watt, 2008) have suggested students have reduced motivation and lower self-perceptions as they become older. Yeung et al. (2011) also suggested that boys and girls may differ in

some motivational constructs (e.g., self-efficiency, interest, goal orientation, engagement, and avoidance), although some of these differences may be due to gender-role stereotypes. With regard to developmental trends, boys and girls begin with a similar sense of ability, however, gender differences often emerge as students move from elementary to secondary schools (Usher & Pajares, 2008). Usher and Pajares (2008) suggested that gender stereotypes often lead girls to underestimate their abilities in tasks often perceived as masculine (e.g., mathematics and science). Because motivation and student self-abilities appear to have an influence on the academic achievement of students, both of these variables should be given serious consideration with regard to grade and gender related patterns for girls in secondary schools (Yeung et al., 2011).

In addition, biliteracy, the ability to read and write in two languages, has been documented to play a vital role in the academic achievement of English Language Learners (Lapayese et al., 2014). In an exploratory study on gender and the academic achievement of Hispanic English Language Learners on benchmark tests in fiction and nonfiction across five academic years (Lapayese et al., 2014), gender played a considerable role in the biliteracy of Hispanic English Language Learners across all grades. Boys considerably underperformed girls in both English and Spanish Assessments. However, in the 2009 school year, although girls outperformed boys, less than 50% of the girls were on grade level.

Altermatt and Pomerantz (2003) have also reported girls worry more about school performance than boys. Pomerantz, Altermatt, and Saxon (2002) have provided at least two reasons to explain why girls worry more about their school performance than do boys. First, girls are more concerned than boys with pleasing adults, making girls more

vulnerable to fears that failure may cause adults (e.g., teachers, parents) to feel disappointed in them. Second, girls are more likely than boys to feel that academic performance is a reflection of their abilities. Whereas boys are more likely to blame a poor mathematics test score on other causes, such as lack of studying, girls tend to perceive a poor mathematics score as an indication of their overall math abilities. Despite the fact that girls outperform boys academically in school (Buchmann et al., 2008; Klotter, 2000; Lapayese et al., 2014), girls' heightened level of worrying may lead girls to avoid challenges they are highly capable of handling, making them disinclined to pursue careers in mathematics and science.

Researchers (Buchmann et al., 2008; Klotter, 2000; Lapayese et al., 2014) continue to emphasize that English Language Learner boys and girls perform differently despite the fact they have equal access to effective educational programs. Additionally, researchers often examine entire groups as a single phenomenon (e.g., English Language Learners and race/ethnicity, or English Language Learners and socioeconomic status), so determining how boys and girls learn is often lost in the investigation (Lapayese et al., 2014). Ultimately, academic achievement is the most important end-product in any discussion regarding gender differences. Thus, it is important to examine sound teaching methods to reduce achievement gaps between boys and girls (Buchmann et al., 2008).

Background of the Study

The United States is once again experiencing an immigration wave of diverse ethnical/racial students. Approximately 4.7 million English Language Learners were enrolled in U.S. public schools in the 2013-2014 school year (Intercultural Development Research, 2015). By the year 2025, 25% of the student population in the United States

will be an English Language Learner (National Clearinghouse for English Language Acquisition, 2006). Public schools in the United States present a true picture of the rapid demographic changes occurring in the U.S., particularly because the educational system has a more universal access to the total population than any other organization or institution (Yates, 2008). The rapid demographic changes occurring in U.S public schools raises concerns regarding the ability of U.S. schools to educate all students (Yates, 2008). The United States has had decades of experience to address the academic needs of English Language Learners enrolled in U.S. public schools (Intercultural Development Research, 2015), yet, English Language Learner test scores in mathematics and reading consistently lag their native English-speaking peers (Ardasheva, Tretter, & Kinny, 2012; Fry & Pew, 2008; Intercultural Development Research, 2015; Rodriguez & Slate, 2015).

Researchers such as Mahdavy (2013) and Yeung et al. (2011) reported that student academic achievement may be influenced by a student's self-motivation. Unfortunately, for secondary schools, researchers (e.g., Watt, 2008) have contended student motivation and self-perceptions are lower as students become older. Furthermore, Yeung et al. (2001) suggested boys and girls differ in many motivational constructs (e.g., self-efficacy, interest, goal orientation, engagement, and avoidance), although many of the differences can be influenced by gender-role stereotypes.

Although boys and girls begin with a similar sense of ability, gender differences often emerge as student's transition from elementary to secondary schools (Usher & Pajares, 2008). Gender stereotypes often lead girls to underestimate their abilities in subjects (e.g., mathematics and science) perceived to be masculine (Usher & Pajares,

2008). Because researchers (Mahdavy, 2013; Yeung et al., 2011) report variables such as motivation and self-abilities may influence academic achievement, serious consideration should be given with regard to the academic achievement of English Language Learner girls.

Statement of the Problem

In the 2013-2014 school year, Texas public schools enrolled more than 800,000 English Language Learners (Intercultural Development Research, 2015). Yet, The No Child Left Behind Act (2001), and the most recent federal educational legislative act (Every Student Succeeds, 2015), has placed mounting pressure on U.S. schools to educate all students regardless of their English language proficiency. Opponents of the federal mandates argue the assessments and accountability standards are unfair, misguided, and cause more harm than good (Goldenberg & Coleman, 2010). The education policies require English Language Learners to take high-stakes assessments in a language, that by definition, they have yet to master (Menken, 2010). The Intercultural Development Research (2015) Association determined that only a select few secondary schools in Texas exceeded the academic benchmarks for English Language Learners. Unfortunately, schools that fail to meet adequate yearly progress for all students face the probability of encountering severe sanctions (e.g., closure, firing teachers, offering school choice) and public scrutiny (Freeman & Crawford, 2008).

Despite extensive research supporting differentiated approaches in the instruction of English Language Learners, conflicting and questionable policies and strategies still exist with regard to meeting the needs of English Language Learners (Gil & Burdock, 2010). Aleman, Johnson, and Perez (2009) offered guidance and recommendations for

schools concerning best practices for meeting the needs of English Language Learners. The current state of English Language Learner education in the United States is a challenge, but this challenge provides schools and school districts across the country to demonstrate best policies to educating the rapidly growing English Language Learner population.

From 1992 to 2002, an increased interest in gender differences occurred (Kitchenham, 2002), particularly with regard to academic achievement, student motivation, and knowledge development. The research concerning gender differences appeared divided by geography and approach (Kitchenham, 2002). International researchers in countries such as Australia, New Zealand, and Great Britain, focused on the sociological causes of gender differences, whereas researchers in Canada and the United States examined the biological causes leading to gender differences in academic achievement. With regard to gender differences in test scores, research goes back decades (Baker, 1987; Buchmann et al., 2008; Gipps & Murphy, 1994; Maccoby & Jacklin, 1974). In various U.S. and international assessments, researchers (Gallagher & Kaufman, 2005; Marks, 2008) reported that boys outperformed girls in mathematics, but girls outperformed boys in reading. These documented gender differences persisted in standardized tests such as the SAT. Some researchers (e.g., Hyde et al., 1990) contend test scores between girls and boys were declining, yet, others (Hedges & Nowell, 1995; De San Roman & De La Rica, 2016) argue test scores have remained stable over the last 10 to 30 years. Researchers (Buchmann et al., 2008; Lapayese et al., 2014; Legewie & DiPrete, 2012) tend to focus on the social and economic factors influencing test score differences between girls and boys.

Regardless of the cause of gender differences in academic achievement, whether sociological or biological, gender differences ultimately must be addressed in the classroom, because academic achievement is the most important end-product in any discussion regarding differences (Buchmann et al., 2008). However, minimal empirical research studies exist in which an emphasis has been placed on the differences in the academic achievement between English Language Learner boys and girls enrolled in U.S. public schools (Lapayese et al., 2014). Accordingly, findings from this study will add additional research that could be beneficial regarding the academic achievement of English Language Learners by gender. Furthermore, the findings from this study may offer educational leaders and policymakers across the country insight regarding best practices for English Language Learner boys and girls.

Purpose of the Study

The purpose of this study was to analyze the relationship of high school size with the academic achievement (i.e., reading and mathematics) of English Language Learner boys and girls. The extent to which high school size influences the reading and mathematics achievement for English Language Learner boys and girls was investigated. Through analyzing 2 years of Texas statewide data, the degree to which consistencies might be present between high school size and the academic achievement of English Language Learners by their gender was determined.

Significance of the Study

Through this study, essential information was provided about school size and academic achievement of English Language Learners by gender. A considerable body of research exists (Barnes & Slate, 2014; Bickel, 1999, 2000; Bickel et al., 2000; Greeney,

2010; Ketchum & Slate, 2012) regarding student academic achievement and school size. However, negligible research exists in which an emphasis has been placed on school size, and the academic achievement of English Language Learners by gender. Research collected and synthesized in this study will offer educational leaders greater understanding into school size, and the academic achievement of English Language Learners for both boys and girls. Ideally, these research findings could assist local, state, and federal policymakers regarding best practices for English Language Learners, and to ensure English Language Learners are achieving academically.

Research Questions

In this empirical investigation, the following research questions were addressed: (a) For English Language Learner boys, what is the effect of high school size on their reading achievement?; (b) For English Language Learner girls, what is the effect of high school size on their reading achievement?; (c) For English Language Learner boys, what is the effect of high school size on their mathematics achievement?; (d) For English Language Learner girls, what is the effect of high school size on their mathematics achievement?; and (e) What is the extent to which consistencies are present in the reading and mathematics achievement of English Language Learners, both boys and girls, as a function of school size for the 2008-2009 and the 2009-2010 school years? The first four research questions were repeated for each of the 2 school years whereas the fifth research question were repeated for reading and mathematics separately for boys and for girls. Thus, a total of 12 research questions constituted this investigation.

Method

Research Design

In this empirical study, a non-experimental causal-comparative research design (Creswell, 2009; Johnson & Christensen, 2014) was used. Due to the design of the study, the independent variables had already occurred, and thus could not be manipulated. The archival data that were utilized herein represent past events (Johnson & Christensen, 2014). That is, the independent variable involved in this research article is the school size variable. The Texas University Interscholastic League (2013) definition of school size was used to determine school sizes: Very Small-size high schools had between 50 and 104.9 students; Small-size high schools enrolled 105 to 219 students; Moderate-size high schools enrolled 220 to 464 students; Medium-size high schools enrolled 465 to 1,059 students; Large-size high schools enrolled 1,060 to 2,099 students, and Very Large-size high schools enrolled 2,100 or more students. Thus, the independent variables of school size were composed of six school size groupings. For each school year (i.e., 2007-2008, 2008-2009), the dependent variables were the Texas Assessment of Knowledge and Skills Reading and Mathematics test scores of English Language Learner boys and girls.

Participants and Instrumentation

For the purpose of this study, archival data that had already been obtained through a previously submitted and fulfilled Public Information Request from the Texas Education Agency were utilized. Specific information used in this study were: the grade span configuration of each high school campus; student enrollment at each campus; student gender, reading and mathematics test scores. The 2 years of available Texas

statewide data that were obtained were for the 2008-2009 and 2009-2010 school years. The specific number of high school campuses with a grade span configuration of Grades 9-12 is not known, however, it is estimated to be about 1,000 high schools. Data on students who were enrolled in high school campuses that did not have a grade span configuration of 9-12, that are charter schools or that are alternative education settings were not analyzed in this investigation.

For this investigation four variables were of interest: English Language Learner status, high school size, student gender, and achievement on the reading and mathematics state assessments. Because English Language Learner status and gender are reported to the Texas Education Agency by each school campus, traditional reliability and validity concepts are not applicable. For detailed score reliabilities and score validities on the Texas Assessment of Knowledge and Skills Reading and Mathematics assessments, readers are referred to the Texas Education Agency website.

Results

Before conducting any inferential statistical procedure, the underlying assumptions of the Analysis of Variance (ANOVA) procedure were checked. Explicitly examined were data normality and Levene's Test of Error Variance. Although the majority of the underlying assumptions were not met, Fields (2009) contends parametric ANOVA is appropriately robust to withstand this violation, hence the use of a parametric ANOVA procedure was justified to use on the data in this study. The average raw score refers to the average number of questions answered correctly, thus, a higher average raw score indicates more questions answered correctly, or fewer items answered for a lower average.

Overall Results for the Two School Years for English Language Learner Boys

For the 2008-2009 school year, TAKS Reading raw scores were determined to be statistically significantly different by school size (i.e., Very Small, Small, Medium, Moderate, Large, and Very Large) for English Language Learner boys, $F(5, 3465) = 10.92$, $p < .001$, partial $\eta^2 = .016$, small effect size. Scheffe` post hoc procedures were utilized to determine which pairs of school sizes differed from each other. As revealed in Table 4.1, English Language Learner boys who were enrolled in Very Large-size schools had an average TAKS Reading raw score that was 30.86 points higher than the TAKS Reading raw scores of English Language Learner boys who were enrolled in Small-size schools, and 11.40 points higher than the TAKS Reading raw scores of English Language Learner boys who were enrolled in Moderate-size schools. Large-size schools had average TAKS raw scores that was 10.30 points higher than Moderate-size schools. Furthermore, English Language Learner boys who were enrolled in Moderate-size schools had an average raw score that was 19.46 points higher than the TAKS Reading raw scores of English Language Learner boys who were enrolled in Small-size schools. Minimal differences were revealed in the other school size grouping pairs in their average TAKS Reading raw scores.

Insert Table 4.1 about here

Concerning the 2009-2010 school year, TAKS Reading raw scores were also statistically significantly different by school size for English Language Learner boys, $F(5, 4463) = 18.51$, $p < .001$, partial $\eta^2 = .02$, small effect size. English Language

Learner boys who were enrolled in Very Large-size schools had an average TAKS Reading raw score that was 21.45 to 31.75 points higher than the average TAKS Reading raw scores of English Language Learner boys who were enrolled in Very Small or Small-size schools, and 16.62 points higher than the TAKS Reading raw scores of English Language Learner boys who were enrolled in Moderate-size schools. Large-size schools had average TAKS raw scores that was 16.51 points higher than Moderate-size schools. English Language Learner boys who were enrolled in Moderate-size schools had an average TAKS Reading raw score that was 15.13 points higher than the TAKS Reading raw scores of English Language Learner boys who were enrolled in Small-size schools. Once again, minimum differences existed in average TAKS Reading raw scores among other school size grouping pairs. Presented in Table 4.1 are the descriptive statistics for this analysis.

With regard to the 2008-2009 school year, TAKS Mathematics raw scores were statistically significantly different by school size for English Language Learner boys, $F(5, 3515) = 9.00$, $p < .001$, partial $\eta^2 = .013$, small effect size. Scheffe` post hoc procedures revealed that in the 2008-2009 school year, English Language Learner boys had higher average TAKS Mathematics raw scores in Larger-size schools than their counterparts who were enrolled in Small-size schools. As revealed in Table 4.2, English Language Learner boys who were enrolled in Very Large-size schools had an average TAKS Mathematics raw score that was 27.55 points higher than the TAKS Mathematics raw scores of English Language Learner boys who were enrolled in Very Small-size schools. Moreover, English Language Learner boys who were enrolled in Very Large-size schools had an average TAKS Mathematics raw score that was 10.43 points higher

than the TAKS Mathematics raw scores of English Language Learner boys who were enrolled in Moderate-size schools. Moderate-size schools had average raw scores that were 13.11 points higher than Small-size schools.

Insert Table 4.2 about here

With respect to the 2009-2010 school year, TAKS Mathematics raw scores were again statistically significantly different by school size for English Language Learner boys, $F(5, 4509) = 17.19$, $p < .001$, partial $\eta^2 = .019$, small effect size. English Language Learner boys who were enrolled in Very Large-size schools had an average TAKS Mathematics raw score that was 29.40 points higher than the average TAKS Mathematics raw score of English Language Learner boys who were enrolled in Small-size schools. Very Large-size schools had an average TAKS Mathematics raw score that was 19.82 points higher than Moderate-size schools. Large-size schools had average TAKS Mathematics raw scores that was 10.73 points higher than schools that were Moderate-size, and 23.62 points higher than Small-size schools. Delineated in Table 4.2 are the descriptive statistics for this analysis.

Overall Results for the Two School Years for English Language Learner Girls

For the 2008-2009 school year, TAKS Reading raw scores were determined to be statistically significantly different by school size (i.e., Very Small, Small, Medium, Moderate, Large, and Very Large) for English Language Learner girls, $F(5, 3373) = 20.20$, $p < .001$, partial $\eta^2 = .029$, small effect size. Scheffe` post hoc procedures were then used to determine which pairs of school sizes differed from each other. In the 2008-

2009 school year, two pairwise comparisons were statistically significantly different. English Language Learner girls had higher average TAKS Reading raw scores in Medium-size and Large-size schools than their counterparts who were enrolled in Moderate-size or Small-size schools. Only these two comparisons yielded statistically significant differences. Descriptive statistics for this analysis are presented in Table 4.3.

Insert Table 4.3 about here

Concerning the 2009-2010 school year, TAKS Reading raw scores were statistically significantly different by school size for English Language Learner girls, $F(5, 4065) = 27.10$, $p < .001$, partial $\eta^2 = .032$, small effect size. As revealed in Table 4.3, English Language Learner girls had an average TAKS Reading raw score that was 32.71 points higher in Very Large-size schools than did English Language Learner girls who were enrolled in Very Small-size or Moderate-size schools. For English Language Learner girls who were enrolled in Medium-size schools, their TAKS Reading raw score averages were 20 points higher than for English Language Learner girls who were enrolled in Moderate-size schools, and 32.46 points higher than for English Language Learner girls who were enrolled in Small-size schools. The descriptive statistics for this analysis are presented in Table 4.3.

In the 2008-2009 school year, TAKS Mathematics raw scores were determined to be statistically significantly different by school size for English Language Learner girls, $F(5, 3416) = 14.62$, $p < .001$, partial $\eta^2 = .021$, small effect size. Scheffe` post hoc procedures revealed that in the 2008-2009 school year, English Language Learner girls

had higher average TAKS Mathematics raw scores in Larger-size and Medium-size schools than their counterparts who were enrolled in Moderate-size and Small-size schools. As revealed in Table 4.4, English Language Learner girls who were enrolled in Large-size schools had an average TAKS Mathematics raw score that was approximately 21.0 to 28.0 points higher than the TAKS Mathematics raw scores of English Language Learner girls who were enrolled in schools smaller than Medium-size. Moreover, Small-size schools had an average raw score that was almost 6.44 points higher than the TAKS Mathematics raw scores of English Language Learner girls who were enrolled in Moderate-size schools. No other school size grouping pairs were different in their average TAKS Mathematics raw scores.

Insert Table 4.4 about here

Regarding the 2009-2010 school year, TAKS Mathematics raw scores were statistically significantly different by school size for English Language Learner girls, $F(5, 4040) = 16.92$, $p < .001$, partial $\eta^2 = .021$, small effect size. English Language Learner girls who were enrolled in Large-size and Medium-size schools had an average TAKS Mathematics raw score that was 20.0 to 22.0 points higher than the average TAKS Mathematics raw scores of English Language Learner girls who were enrolled in Small-size schools, and 26.0 to 27.0 points higher than the average TAKS Mathematics raw scores of English Language Learner girls who were enrolled in Moderate-size schools. Small-size schools had an average TAKS Mathematics raw score that was 6.0 to 7.0 points higher than the average TAKS Mathematics raw scores of English Language

Learner girls who were enrolled in either Moderate-size or Very Small-size schools. Table 4.4 contains the descriptive statistics for this analysis.

Results for the TAKS Reading Met Standard

To determine the degree to which school size was related to the TAKS Reading Met Standard for English Language Learner boys and girls in the 2008-2009 and 2009-2010 school years, Pearson chi-square procedures were conducted. This statistical procedure was ideal for calculating frequency data because frequency data were present for both school size and for the TAKS Exit-Level Reading Met Standard for the 2008-2009 and 2009-2010 school years. A large sample size was readily available, providing at least five responses per cell. Hence, the assumptions for utilizing a chi-square were met.

With respect to the 2008-2009 school year, the chi-square analysis resulted in a statistically significant difference on the TAKS Reading Met Standard, $\chi^2(2) = 11.48$, $p = .04$, for English Language Learner boys as a function of school size. The effect size for this finding, Cramer's V, was trivial, .06 (Cohen, 1988). Regarding the 2009-2010 school year, a statistically significant difference was again present on the TAKS Reading Met Standard, $\chi^2(2) = 10.62$, $p = .03$, as a function of high school size for English Language Learner boys. The effect size for this finding, Cramer's V, was trivial, .05 (Cohen, 1988). As revealed in Table 4.5, in the 2008-2009 and 2009-2010 school years, Very Large-size schools had 39.20% to 48.40% of their English Language Learner boys who achieved the TAKS Reading Met Standard. In contrast, Small-size schools had 0% to 22.20% of their English Language Learner boys who achieved the TAKS Reading Met Standard.

Insert Table 4.5 about here

For the 2008-2009 school year, a statistically significant difference was revealed on the TAKS Reading Met Standard, $\chi^2(2) = 11.48$, $p = .04$, as a function of high school size for English Language Learner girls. The effect size for this finding, Cramer's *V*, was trivial, .07 (Cohen, 1988). In regard to the 2009-2010 school year, again a statistically significant difference was again present on the TAKS Reading Met Standard, $\chi^2(2) = 20.24$, $p = .001$, as a function of high school size for English Language Learner girls. The effect size for this finding, Cramer's V, was trivial, .07 (Cohen, 1988). Revealed in Table 4.7, in the 2008-2009 and 2009-2010 school years, Large-size schools had 40.20% to 52.70% of their Language Learner girls who attained the TAKS Reading Met Standard. Moderate-size and Small-size schools had less than 11.00% of their English Language Learner girls who achieved the TAKS Reading Met Standard.

Insert Table 4.7about here

Results for the TAKS Mathematics Met Standard

To determine the degree to which school size was related to the TAKS Mathematics Met Standard, Pearson chi-square procedures were calculated. In the 2008-2009 school year, the chi-square analysis yielded a statistically significant difference on the TAKS Mathematics Met Standard, $\chi^2(2) = 7.23$, $p = .012$, as a function of high school size for English Language Learner boys. The effect size for this finding, Cramer's V,

was trivial, .05 (Cohen, 1988). With respect to the 2009-2010 school year, the chi-square analysis resulted in a statistically significant difference on the TAKS Mathematics Met Standard, $\chi^2(2) = 16.22$, $p = .006$, as a function of high school size for English Language Learner boys. The effect size for this finding, Cramer's V, was trivial, .06 (Cohen, 1988). In the 2008-2009 and 2009-2010 school years, schools that were Medium-size to Large-size schools had 43% to 50.90% of their English Language Learner boys who achieved the TAKS Mathematics Met Standard. Small-size schools had between 0% to 25.00% of their English Language Learner boys who attained the TAKS Mathematics Met Standard. Although Moderate-size schools had 75% of their English Language Learner boys achieve the TAKS Mathematics Met Standard in the 2008-2009 school year, only 11.80% of the moderate-size schools achieved the TAKS Mathematics Met Standard in the 2009-2010 school year. Presented in Table 4.6 are the frequencies and percentages for this analysis.

Insert Table 4.6 about here

In the 2008-2009 school year, the chi-square analysis resulted in a statistically significant difference on the TAKS Mathematics Met Standard, $\chi^2(2) = 13.24$, $p = .001$, as a function of high school size for English Language Learner girls. The effect size for this finding, Cramer's V, was trivial, .07 (Cohen, 1988). With respect to the 2009-2010 school year, a statistically significant difference was again present on the TAKS Mathematics Met Standard, $\chi^2(2) = 22.37$, $p < .001$, as a function of high school size for English Language Learner girls. The effect size for this finding, Cramer's V, was trivial,

.06 (Cohen, 1988). Depicted in Table 4.8, in the 2008-2009 and 2009-2010 school years, Medium-size to Large-size schools had 39.20% to 46.00% of their English Language Learner girls who achieved the TAKS Mathematics Met Standard. All other school size groupings had no English Language Learner girls who achieved the TAKS Met Standard.

Insert Table 4.8 about here

Discussion

In this investigation, the extent to which differences were present in the reading and mathematics performance as a function of high school size for English Language Learner boys and girls was examined. Two years of statewide data on the TAKS Reading and Mathematics Exit-Level tests for English Language Learners who were enrolled in traditionally configured high schools with Grades 9 through 12 campuses were obtained and analyzed. In both school years, statistically significant results were present. Following the statistical analyses in this investigation, consistencies that were present on the TAKS Reading and Mathematics performance of English Language Learner boys and girls for the two school years are discussed. Results are summarized in the next section.

Summary of Results on the TAKS Reading and Mathematics Raw Scores

In both the 2008-2009 and 2009-2010 school years, English Language Learner boys and girls who were enrolled in Large-size schools (i.e., 1,060 or more students) outperformed English Language Learner boys and girls who were enrolled in smaller size schools in both the TAKS Reading and Mathematics raw scores. On the TAKS Reading

exam, English Language Learner boys had an 30.86 to 31.75 points higher average raw score in Very Large-size schools than their counterparts who were enrolled in Small-size schools. On the TAKS Mathematics exam, English Language Learner boys enrolled in Very Large-size schools outperformed English Language Learner boys enrolled in all other school size groupings. On the TAKS Reading exam, English Language Learner girls had a 28.69 to 32.71 points higher average raw scores in Medium-size to Large-size schools. On the TAKS Mathematics exam, English Language Learner girls enrolled in Very Large-size schools outperformed English Language Learner girls enrolled in all other school size groupings.

Summary of Results on the TAKS Reading and Mathematics Met Standards

Approximately 39.20% to 48.40% of English Language Learner boys who were enrolled in Very Large-size schools achieved the TAKS Reading Met Standard, whereas no English Language Learner boys who were enrolled in Very Small-size schools achieved the TAKS Reading Met Standard. English Language Learner girls enrolled in Very Large-size schools had 44.70% to 52.70% who achieved the TAKS Reading Met Standard. English Language Learner girls enrolled in Small-size to Moderate-size schools had 0-10% who achieved the TAKS Reading Met Standard.

Across both school years on the TAKS Mathematics Met Standard, English Language Learner boys who were enrolled in Moderate-size to Large-size schools outperformed English Language Learner boys who were enrolled in Small-size schools. On the TAKS Mathematics Met Standard, English Language Learner girls who were enrolled in Medium-size to Very large-size schools had 39.20% to 46.00% who attained the TAKS Mathematics Met Standard. English Language Learner girls who were

enrolled in very Small-size to Moderate-size schools had no English Language Learner girls who attained the TAKS Mathematics Met Standard.

Connections with Existing Literature

In 2007, the number of school-age students enrolled in public schools who spoke a language other than English was almost 11 million (Goldenberg & Coleman, 2010). Of concern is that 11% of public school students experienced difficulties in learning English and acquiring academic proficiency (Flores, Batalova, & Fix, 2012). With regard to Texas, Texas public schools enrolled over 800,000 English Language Learners in the 2013-2014 school year (Intercultural Development Research, 2015). Only a handful of secondary schools in Texas exceeded the academic benchmarks for English Language Learners (Intercultural Development Research, 2015). The burgeoning demographic changes in culture, race/ethnicity, and language in the United States and in U.S. public schools raises concerns regarding the ability of the educational system to educate all students in U.S. public schools (Yates, 2008).

In this multiyear, Texas investigation, the reading and mathematics achievement of English Language Learner boys and girls as a function of school size were examined. Researchers (Greeney, 2010; Greeney & Slate, 2012; Riha, Slate, & Martinez-Garcia, 2013; Slate & Jones, 2006, 2008) have examined the relationship of school size to student performance. In this 2-year statewide investigation, results were congruent with those researchers (Greeney, 2010; Greeney & Slate, 2012; Riha et al., 2013; Slate & Jones, 2006, 2008) who reported that students who were enrolled in Large-size high schools performed better than students who were enrolled in Small-size or Medium-size schools.

Implications for Policy and Practice

In the 2013-2014 school year, Texas public schools enrolled more than 800,000 English Language Learners (Intercultural Development Research, 2015). The No Child Left Behind Act (2001), and the most recent federal educational legislative act (Every Student Succeeds, 2015), has placed mounting pressure on U.S. schools to educate all students regardless of their English language proficiency. Education policies require English Language Learners to take high-stakes assessments in a language, that by definition, they have yet to master (Menken, 2010). The Intercultural Development Research (2015) Association determined that only a select few secondary schools in Texas exceeded the academic benchmarks for English Language Learners.

Schools leaders must develop policies that address the specific needs of English Language Learners enrolled in U.S public schools. The education policies require English Language Learners to take high-stakes assessments in a language, that by definition, they have yet to master is criticized by many as being unfair (Menken, 2010). Another implication would be for educational leaders to examine more closely the relationship of English Language Learner achievement with school size. The consolidation of Small-size high schools into Large-size high schools needs to be considered. Considering the estimated future increase in the English Language Learner population (Intercultural Development Research, 2015), school leaders of Small-size schools with a high percentage of English Language Learners should examine the possible consolidation of schools to increase the quality of education and efficiency in rural school districts.

Recommendations for Future Research

For this study, academic achievement as a function of high school size for English Language Learner boys and girls was examined. Given the importance of the results in this study, researchers are encouraged to extend this study to those states which require state assessments to all students, regardless of their English language proficiency. The extent to which the findings of this study would generalize to other student populations is unknown, therefore, expanding this study to other student subgroups who may be academically at-risk is warranted. Additionally, researchers may choose to replicate this study at the elementary or middle school grades.

Only quantitative data were examined in this study, thus, researchers are encouraged to collect and examine qualitative data with regard to school size definitions. Researchers are also encouraged to examine the perceptions of school administrators, teachers, and students. Furthermore, researchers are encouraged to examine the underlying factors involved in school size that may help explain the differences in student achievement on state assessments. Finally, a mixed method research study should be considered to examine similarities in school personnel views and student achievement in content courses.

Conclusion

In this investigation, the relationship of school size and the reading and mathematics achievement of English Language Learner boys and girls on the Texas Assessment of Knowledge and Skills for two school years (i.e., 2008-2009 & 2009-2010), were examined. Data were analyzed for students who were enrolled in traditionally configured high schools (e.g., Grades 9 through 12). Six school size

categories that aligned to the University Interscholastic League enrollment numbers were utilized. In both school years, statistically significant results were present. English Language Learner boys and girls who were enrolled in Medium-size to Large-size high schools (i.e., 1,060 or more students) outperformed English Language Learner boys and girls who were enrolled in Small-size schools. Furthermore, English Language Learner boys who were enrolled in Moderate-size to Large-size high schools, and English Language Learner girls who were enrolled in Medium-size to Large-size high schools, had higher achievement percentages on the TAKS Reading and Mathematics Met Standard.

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Table 4.1

Descriptive Statistics for English Language Learner Boys' TAKS Reading Raw Scores by School Size for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009			
Very Small-size	1	0.0	0.0
Small-size	7	0.0	0.0
Moderate-size	13	19.46	19.13
Medium-size	211	31.19	13.89
Large-size	1,638	29.76	13.53
Very Large-size	1,601	30.86	13.47
2009-2010			
Very Small-size	2	0.0	0.0
Small-size	17	10.35	17.21
Moderate-size	32	15.13	18.02
Medium-size	294	29.54	16.56
Large-size	1,852	31.64	13.87
Very Large-size	2,272	31.75	14.59

Table 4.2

Descriptive Statistics for English Language Learner Boys' TAKS Mathematics Raw Scores by School Size for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009			
Very Small-size	2	0.0	0.0
Small-size	13	3.23	11.65
Moderate-size	17	16.12	20.57
Medium-size	234	26.67	16.48
Large-size	1,623	26.85	15.48
Very Large-size	1,632	27.55	16.20
2009-2010			
Very Small-size	3	0.0	0.0
Small-size	6	0.0	0.0
Moderate-size	26	9.58	15.44
Medium-size	316	25.25	17.59
Large-size	1,868	29.08	15.40
Very Large-size	2,296	29.40	16.29

Table 4.3

Descriptive Statistics for English Language Learner Girls' TAKS Reading Raw Scores by School Size for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009			
Very Small-size	3	0.0	0.0
Small-size	7	0.0	0.0
Moderate-size	8	0.0	0.0
Medium-size	231	28.69	14.56
Large-size	1,561	30.65	12.97
Very Large-size	1,569	31.15	13.73
2009-2010			
Very Small-size	2	0.0	0.0
Small-size	16	12.44	17.32
Moderate-size	18	0.0	0.0
Medium-size	299	32.46	15.49
Large-size	1,742	33.01	13.76
Very Large-size	1,994	32.71	14.80

Table 4.4

Descriptive Statistics for English Language Learner Girls' TAKS Mathematics Raw Scores by School Size for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	*n*	*M*	*SD*
2008-2009			
Very Small-size	1	0.0	0.0
Small-size	10	0.0	0.0
Moderate-size	10	0.0	0.0
Medium-size	248	25.24	15.28
Large-size	1,572	26.49	14.22
Very Large-size	1,581	27.37	15.61
2009-2010			
Very Small-size	3	0.0	0.0
Small-size	17	7.65	11.16
Moderate-size	14	1.21	4.54
Medium-size	293	27.56	16.14
Large-size	1,728	28.57	15.05
Very Large-size	1,991	28.61	15.92

Table 4.5

Frequencies and Percentages on the TAKS Reading Met Standard by School Size for English Language Learner Boys for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 1) 100.0%
Small-size	(*n* = 0) 0.0%	(*n* = 6) 100.0%
Moderate size	(*n* = 3) 33.30%	(*n* = 6) 66.70%
Medium size	(*n* = 75) 36.20%	(*n* = 132) 63.80%
Large size	(*n* = 547) 34.50%	(*n* = 1,038) 65.50%
Very Large-size	(*n* = 611) 39.20%	(*n* = 949) 60.80%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small-size	(*n* = 2) 22.20%	(*n* = 7) 77.80%
Moderate-size	(*n* = 7) 24.10%	(*n* = 22) 75.90%
Medium-size	(*n* = 136) 49.80%	(*n* = 137) 50.20%
Large-size	(*n* = 835) 46.50%	(*n* = 960) 53.50%
Very Large-size	(*n* = 1,061) 48.40%	(*n* = 1,132) 51.60%

Table 4.6

Frequencies and Percentages on the TAKS Mathematics Met Standard by School Size for English Language Learner Boys for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 1) 25.00%	(*n* = 3) 75.00%
Moderate size	(*n* = 6) 75.00%	(*n* = 2) 25.00%
Medium size	(*n* = 97) 47.80%	(*n* = 106) 52.20%
Large size	(*n* =632) 43.50%	(*n* = 820) 56.50%
Very Large-size	(*n* = 693) 46.80%	(*n* = 787) 53.20%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 3) 100.0%
Small size	(*n* = 0) 0.0%	(*n* = 1) 100.0%
Moderate size	(*n* = 2) 11.80%	(*n* = 15) 88.20%
Medium size	(*n* = 132) 48.70%	(*n* = 139) 51.30%
Large size	(*n* = 846) 48.40%	(*n* = 902) 51.60%
Very Large-size	(*n* = 1,105) 50.90%	(*n* = 1,066) 49.10%

Table 4.7

Frequencies and Percentages on the TAKS Reading Met Standard by School Size for English Language Learner Girls for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 4) 100.0%
Moderate size	(*n* = 0) 0.0%	(*n* = 6) 100.0%
Medium size	(*n* = 81) 36.30%	(*n* = 142) 63.70%
Large size	(*n* = 612) 40.20%	(*n* = 909) 59.80%
Very Large-size	(*n* = 673) 44.70%	(*n* = 831) 55.30%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 1) 100.0%
Small size	(*n* = 1) 10.00%	(*n* = 9) 90.00%
Moderate size	(*n* = 0) 0.0%	(*n* = 10) 100.0%
Medium size	(*n* = 140) 49.10%	(*n* = 145) 50.90%
Large size	(*n* = 882) 52.00%	(*n* = 815) 48.00%
Very Large-size	(*n* = 1,014) 52.70%	(*n* = 911) 47.30%

Table 4.8

Frequencies and Percentages on the TAKS Mathematics Met Standard by School Size for English Language Learner Girls for the 2008-2009 and the 2009-2010 School Years

School Year and School Size	Met Standard *n* and %age of Total	Did Not Meet Standard *n* and %age of Total
2008-2009		
Very Small-size	(*n* = 0) 0.0%	(*n* = 0) 0.0%
Small size	(*n* = 0) 0.0%	(*n* = 4) 100.0%
Moderate size	(*n* = 0) 0.0%	(*n* = 2) 100.0%
Medium size	(*n* = 89) 41.40%	(*n* = 126) 58.60%
Large size	(*n* = 570) 39.20%	(*n* = 883) 60.83%
Very Large-size	(*n* = 651) 44.70%	(*n* = 806) 55.30%
2009-2010		
Very Small-size	(*n* = 0) 0.0%	(*n* = 1) 100.0%
Small size	(*n* = 0) 0.0%	(*n* = 12) 100.0%
Moderate size	(*n* = 0) 0.0%	(*n* = 9) 100.0%
Medium size	(*n* = 119) 44.40%	(*n* = 149) 55.60%
Large size	(*n* = 693) 42.30%	(*n* = 945) 57.70%
Very Large-size	(*n* = 866) 46.00%	(*n* = 1,015) 54.00%

CHAPTER V

DISCUSSION

The purpose of this journal-ready dissertation was to determine the relationship of high school size with English Language Learner academic achievement on the Texas Assessment of Knowledge and Skills (TAKS) state assessment for English Language Learners who were enrolled in Texas traditional (i.e., Grades 9 through 12) high schools. In the first journal article, the relationship of high school size and the academic achievement of English Language Learners by economic status was determined. In the second study, the extent to which high school size was related to the academic achievement of English Language Learners by their ethnicity/race was ascertained. Finally, in the third empirical investigation, the relationship between school size and the academic achievement of English Language Learner boys and girls was examined. Each of the three empirical investigations included two years of statewide public school data. This 2-year analysis of data permitted a determination of the extent to which consistencies were present in the relationship of school size to English Language Learner academic achievement on the state mandated TAKS Reading and Mathematics tests.

In this chapter, results are discussed and a summary of each of the three articles is provided. Implications for policy and practice are also discussed. Finally, recommendations for future research are given.

Study One

In the first investigation, the extent to which high school size influenced the reading and mathematics achievement of English Language Learners who were in poverty and of English Language Learners who were not in poverty was investigated.

Through analyzing two years of Texas statewide data, the extent to which consistencies were present between high school size and the academic achievement of English Language Learners by their economic status was determined. University Interscholastic League student enrollment numbers were used to form the school size groups.

In both school years, statistically significant results were present. English Language Learners who were not economically disadvantaged and who were enrolled in Very Large-size schools (i.e., 2,100 or more students) outperformed English Language Learners who were enrolled in smaller size schools in both the TAKS Reading and Mathematics raw scores. Similar consistencies were revealed for both school years on the TAKS Reading and Mathematics exam for English Language Learners who were economically disadvantaged.

In this multiyear, statewide investigation, results were congruent with recent researchers (e.g., Greeney, 2010; Greeney & Slate, 2012; Ketchum & Slate, 2012; Riha, Slate, & Martinez-Garcia, 2013; Weiss et al., 2010; Zoda, Slate & Combs, 2011) who had established that students perform statistically significantly better in larger-size schools than in smaller-size schools. In addition, recent researchers (e.g., Barnes & Slate, 2011) have documented that English Language Learners who were economically disadvantaged performed better in Large-size schools than in Moderate-size or Small-size schools on state assessments.

Study Two

Analyzed in the second investigation was the degree to which differences were present in academic achievement (i.e., reading and mathematics) as a function of high school size for English Language Learners by their ethnicity/race (i.e., Asian, Black,

White, and Hispanic). Specifically analyzed were the University Interscholastic League (2013) conference cutoff numbers for high school sizes (i.e., Very Small-size, Small-size, Moderate-size, Medium-size, Large-size, and Very Large-size) and student reading and mathematics test scores for Asian, Black, White, and Hispanic English Language Learners enrolled in Texas public high schools. Through analyzing two years of Texas statewide data, the degree to which the academic achievement of English Language Learners by their ethnicity/race was influenced by their high school size was determined.

In both school years, statistically significant results were present. In both the 2008-2009 and 2009-2010 school years, Asian, Black, and Hispanic English Language Learners who were enrolled in Large-size schools (i.e., 1,060 or more students) outperformed Asian, Black, and Hispanic English Language Learners who were enrolled in smaller size schools in both the TAKS Reading and Mathematics raw scores. Asian, Black, and Hispanic English Language Learners who were enrolled in Large-size schools had higher achievement percentages on the TAKS Reading Met Standard than their peers who were enrolled in smaller size schools. Similar results were present for the TAKS Mathematics Met Standard.

In this multiyear, statewide investigation, results were congruent to previous researchers (Greeney, 2010; Greeney & Slate, 2012; Riha et al., 2013; Slate & Jones, 2006, 2008), wherein students who were enrolled in Large-size high schools had better performance than students who were enrolled in Small-size or Medium-size schools. Research concerning school size for Texas public schools continues to be relevant due to the substantial increase in student enrollment (Texas Education Agency, 2011). Given the increase in student enrollment, and in the English Language Learner population in the

United States and in states such as Texas, the relationship of high size and the academic achievement of students identified as being English Language Learners is critical to ensuring that public schools remain viable and no child is left behind.

Study Three

Examined in this third investigation was the extent to which high school size influenced the reading and mathematics achievement of English Language Learner boys and girls. Through analyzing two years (i.e., 2008-2009, 2009-2010) of Texas statewide data, the degree to which trends were present between high school size and the academic achievement of English Language Learner boys and girls was determined.

In both school years, statistically significant results were present. English Language Learner boys and girls who were enrolled in Medium-size to Large-size high schools (i.e., 1,060 or more students) outperformed English Language Learner boys and girls who were enrolled in Small-size schools. Furthermore, English Language Learner boys who were enrolled in Moderate-size to Large-size high schools, and English Language Learner girls who were enrolled in Medium-size to Large-size high schools, had higher achievement percentages on the TAKS Reading and Mathematics Met Standard.

In this third multiyear, statewide investigation, results were congruent to previous studies. Researchers (Greeney, 2010; Greeney & Slate, 2012; Riha et al., 2013; Slate & Jones, 2006, 2008) reported that students who were enrolled in Large-size high schools performed better than students who were enrolled in Small-size or Medium-size schools. It is important to note that previous research investigations (Greeney, 2010; Greeney &

Slate, 2012; Riha et al., 2013; Slate & Jones, 2006, 2008) in regard to school size and school district size and student achievement were all conducted in Texas.

Summary of Results

Statistically significant results were present for the majority of the inferential analyses. For those analyses that were statistically significant, English Language Learners who were enrolled in Medium-size and in Large-size high schools had better reading and mathematics performance than did English Language Learners who were enrolled in Small-size high schools. For the two school years analyzed in this study, English Language Learners who were enrolled in Small-size high schools had lower average raw scores on the TAKS Reading and Mathematics tests than English Language Learners who were enrolled in Medium-size to Large-size high schools. Effect sizes for these statistically significant differences ranged from trivial to large. Results from this study were largely congruent with the extant literature regarding school size. English Language Learners performed better in Large-size high schools in comparison to their counterparts enrolled in Small-size high schools. Delineated in Table 5.1 is a summary of results for English Language Learner academic achievement on the TAKS Reading and Mathematics raw scores by school size for the 2008-2009 and the 2009-2010 school years.

Table 5.1

School Size with the Best Performance for English Language Learners' TAKS Reading and Mathematics Raw Scores by School Year

School Year	Reading	Mathematics
Study 1		
2008-2009	Medium-size to Large-size	Very Large-size
2009-2010	Large-size to Very Large-size	Large-size to Very Large-size
Study 2		
2008-2009	Large-size to Very Large-size	Large-size to Very Large-size
2009-2010	Large-size to Very Large-size	Large-size to Very Large-size
Study 3		
2008-2009	Medium-size to Very Large Size	Large-size to Very Large-size
2009-2010	Medium-size to Very Large Size	Medium-size to Very Large Size

Connection to Theoretical Framework

For this journal-ready dissertation's theoretical framework, the school connectedness and economies of scale theories were utilized. School connectedness is the attachment students experience toward their school as a result of the positive and respectful interactions they have with adults in their schools (Wilson, 2004). When students develop an attachment with their school, coupled with high academic standards, student academic achievement improves, along with increase in attendance and completion rates (Blum, 2005; Greeney & Slate, 2012). Essentially, the quality of the social relationships that exists within the school environment is described in school connectedness. Results from this study were not supportive of smaller-size schools

having more student connectedness than larger-size schools. Results from this study are not commensurate with researchers (e.g., Crosnoe, Johnson, & Elder, 2004; McNeeley, Nonnemaker, & Blum, 2002) who proposed school connectedness is strongest in smaller size schools than in larger size schools. Relevant research into school connectedness might have authors suggesting smaller class sizes, however, classroom culture matters more than class and school size (Blum, 2005). Large-size schools can provide a strong school connectedness if students are afforded an opportunity that allows teachers to build connectedness in an environment where instruction is meaningful and relevant to students, and students can take stake in their own education. Teachers build connectedness when they create a classroom environment that is structured, providing a healthy setting for students to learn and practice decision-making skills (Blum, 2005).

Results from this study are better supported by the economies of scale theory than by the school connectedness theory. Consolidation of schools to take advantage of this economies of scale is often proposed as an approach for increasing the quality of education and efficiency in rural school districts (Andrews, Duncombe, & Yinger, 2000). For all three studies, results were congruent with the economies of scale theory in that the larger the size of schools, the better the results were in reading and mathematics raw scores on state assessments. Furthermore, Large-size schools had higher achievement percentages on the TAKS Reading and Mathematics Met Standard than did smaller size schools. Greeney (2010) and Greeney and Slate (2012) asserted that economies of scale were supportive of large size schools, because large size schools promote efficiency and development of specialized curriculum.

Implications for Policy and Practice

In all three studies in this journal-ready dissertation, Small-size schools had the poorest results with regard to English Language Learner academic achievement on the TAKS Reading and Mathematics assessments. As such, educational leaders are encouraged to examine the student enrollment sizes of their high schools. If high schools deemed as Small-size are not meeting the needs of their English Language Learner population with regard to academic achievement on state assessments, then the possibility of school consolidation with neighboring districts would merit consideration. Considering the estimated future increase in English Language Learner population in U.S. public schools and in states such as Texas (Intercultural Development Research, 2015), administrators of Small-size schools with a high percentage of English Language Learners need to consider whether school consolidation would permit them to maximize resources and to increase the quality of education and efficiency in rural school districts. The No Child Left Behind Act of 2001, and the most recent comprehensive federal education policy, Every Student Succeeds Act (2015), holds all public schools accountable for ensuring English Language Learners learn English and achieve academic proficiency comparable to their English-speaking peers.

Recommendations for Future Research

For all three studies, statistically significant differences were evident in the TAKS Reading and Mathematics raw scores and achievement percentages on the TAKS Reading and Mathematics Met Standard. Given the importance of the results, researchers are encouraged to extend this study to the current State of Texas Assessments of Academic Readiness assessments. A second recommendation for future research is to

extend this study to states with state-mandated assessments. The extent to which the findings of this study would generalize to other groups of students is not known, consequently, expanding this study in consideration to students at-risk, English Language Learners who are not receiving formal language instruction, and to students who are enrolled in and receiving special education, may be warranted. Furthermore, a recommendation for future study is to repeat this study at lower grades.

Due to the fact that only quantitative data were analyzed in this study, researchers are encouraged to collect data examining the perceptions of educational leaders, educators, and students who are receiving English language services. Moreover, research should be conducted into the underlying factors involved in school size that may help explain the differences in English Language Learner achievement on state assessments. Finally, a mixed method research study is encouraged to obtain the views of teachers and school administrators regarding the appropriateness of state-mandated assessments in English for English Language Learners.

Conclusion

The purpose of this journal-ready dissertation was to determine the relationship of high school size with English Language Learner academic achievement on the Texas Assessment of Knowledge and Skills state assessment for English Language Learners who were enrolled in Texas traditional (i.e., Grades 9 through 12) high schools. Data were analyzed on English Language Learners for the 2008-2009 and the 2009-2010 school years. Six school size categories that aligned to the University Interscholastic League enrollment numbers were utilized. For both school years, statistically significant differences were present in the TAKS Reading and Mathematics raw scores of English

Language Learners, and in the achievement percentages on the TAKS Reading and Mathematics Met Standard. For the two school years analyzed in this study, English Language Learners who were enrolled in Small-size high schools had lower average raw scores on the TAKS Reading and Mathematics tests than English Language Learners who were enrolled in Medium-size to Large-size high schools. Furthermore, English Language Learners who were enrolled in Medium-size to Large-size high schools had higher achievement percentages on the TAKS Reading and Mathematics Met Standard than English Language Learners who were enrolled in Small-size schools.

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APPENDIX

APPENDIX

Sam Houston State University
A Member of The Texas State University System

Institutional Review Board
Office of Research and Sponsored Programs
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DATE:	June 24, 2016
TO:	Joseph Rodriguez [Faculty Sponsor: Dr. John Slate]
FROM:	Sam Houston State University (SHSU) IRB
PROJECT TITLE:	*High School Size and Differences in the Academic Achievement of English Language Learners: A Texas Statewide, Multiyear Investigation [T/D]*
PROTOCOL #:	2016-06-30309
SUBMISSION TYPE:	INITIAL REVIEW
ACTION:	DETERMINATION OF EXEMPT STATUS
DECISION DATE:	June 24, 2016
REVIEW CATEGORY:	Category 4—research involving existing, publicly available data usually has little, if any, associated risk, particularly if subject identifiers are removed from the data or specimens.

Thank you for your submission of Initial Review materials for this project. The Sam Houston State University (SHSU) IRB has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

We will retain a copy of this correspondence within our records.

*** What should investigators do when considering changes to an exempt study that could make it nonexempt?**

It is the PI's responsibility to consult with the IRB whenever questions arise about whether planned changes to an exempt study might make that study nonexempt human subjects research. In this case, please make available sufficient information to the IRB so it can make a correct determination.

If you have any questions, please contact the IRB Office at 936-294-4875 or irb@shsu.edu. Please include your project title and protocol number in all correspondence with this committee.

Sincerely,

Donna Desforges
IRB Chair, PHSC
PHSC-IRB

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Sam Houston State University IRB's records

VITA

Joseph L. Rodriguez

EDUCATIONAL HISTORY

Doctorate of Education- Educational Leadership, December 2016
Sam Houston State University, Huntsville, TX
Dissertation: High School Size and Differences in the Academic Achievement of English Language Learners: A Texas Statewide, Multiyear Investigation

Master of Education in Administration, EC-12, August 2012
Lamar University, Beaumont, TX

Bachelor of Health & Wellness Promotion, May 1994
Texas State University, San Marcos, TX

PROFESSIONAL EXPERIENCE

District ESL Coordinator, Spring ISD, 2015-2016
Assistant Principal, Huntsville High School, Huntsville, 2013- 2015
ESL Teacher, Biology, Conroe High School, Conroe, 2001-2013
ESL Teacher, Biology, Elsik High School, Alief, 2000-2001
Teacher, Science, Albright Middle School, Alief, 1994-2000

RECOGNITIONS

Staff Member of the Month, Albright Middle School, Alief, TX, April 1995
Staff Member of the Month, Albright Middle School, Alief, TX, April 1997
Nominated "Building Teacher of the Year," Albright Middle School, Alief, TX, 1997
Perfect Attendance Award, Albright Middle School, Alief, TX, 1995, 1997, 1999
District 14-5A Soccer Coach of the Year, 1995

SCHOLARLY RESEARCH ACTIVITY

Rodriguez, J., & Slate, J. R. (2015). Differences in postsecondary readiness for Texas students as a function of bilingual education service. *International Journal of Psychology Research, 9*(4), 345-360.

PRESENTATIONS

Rodriguez, J. (2015, October). *Differences in postsecondary readiness for Texas students as a function of bilingual education service.* Paper presented at the semi- annual conference of the Texas Council of Professors of Educational Administration, Austin, TX.

Rodriguez, J. (2015, November). *Understanding the acculturation experiences of Texas high school graduates who were English Language Learners*. Paper presented at the annual conference of the University Council for Educational Administration, San Diego, CA.

PROFESSIONAL AFFILIATIONS

Texas Association of Secondary School Principals
Association of Latino Administrators and Superintendents
University Council for Educational Administration