

SINGLE-GENDER SCHOOL SETTINGS AND STUDENT ACHIEVEMENT:
A STUDY OF ONE TEXAS GIRLS' ACADEMY

by

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Abstract

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The purpose of this study was to compare the academic success of female students selected to enter the single-gender school and female students' eligible but not selected to the single-gender school setting. Since single-gender settings are reported to narrow the academic achievement gap of underprivileged students, especially minority inner-city students, this population received additional review.

Proponents of single-gender education have argued that boys and girls have different learning styles and need to be educated separately for maximum academic success (Sax, 2010). Single-gender education advocates believe in an equal but separate educational system based on the idea that males and females are fundamentally different and thus have different needs (Sax, 2010; Spielhagen, 2011). Unfortunately, there is no direct evidence that single-gender settings improve outcomes for all students, since nearly all existing single-gender schools

are private schools where student backgrounds are quite different from those in most public schools (Billger, 2009). Assessing the advantages and disadvantages of single-gender classes and schools is not only a “complicated question” (Salomone, 2003, p. xi), but also a political one involving education policy makers, politicians, social reformers and parents and college administrators (Jackson, 2002; Salomone, 2006).

The student results provided meaningful implications within the field of single-gender education. In addition, implications within the focus of cultural capital were provided. These implications are presented in three sections, including research, theory, and practice.

Knowing that students from minority, low socioeconomic groups are falling farther behind the White, non-economically disadvantaged students, the results of this study indicate the need to continue to research this setting. Based upon this study, it seems prudent to look at the single-gender setting specifically as a way for this grouping to raise student achievement. Specifically, knowing that students from minority and economically disadvantaged/low socioeconomic backgrounds are particularly at risk of failing, this research is timely and valuable.

Table of Contents

Acknowledgements.....	iii
Abstract.....	v
List of Figures.....	x
List of Tables	xi
Chapter 1 Design of the Study	1
Statement of the Problem.....	3
Purpose of the Study.....	5
Research Questions.....	5
Orienting Theoretical Framework	6
Chapter 2 Review of Literature.....	10
Single Gender Education	11
The Benefits of Single-Gender Schools.....	14
Achievement Rates of Female Students in Math and Reading.....	18
Cultural Capital and Field Theories.....	24
Field Theory.....	27
Summary.....	31
Study Site	32
Methodology.....	35
The Researcher.....	36
Data Needs	38

Data Sources	39
Data Collection	40
Data Analysis	40
Chapter Summary	41
Reporting	42
Chapter 3 Methodology	43
Study Site	43
Data Needs	46
Data Sources	47
Data Collection	48
Data Analysis	49
Chapter Summary	55
Chapter 4 Data Analysis	57
School Setting and Achievement.....	58
Overall Test Scores and Setting Comparisons.....	59
Test Scores and Limited English Proficiency Comparisons.....	67
Achievement Scores and Race Comparisons.....	69
Differences in School Settings.....	76
Cultural Capital and School Settings.....	83
Other Realities	87
Chapter Summary	88

Chapter 5 Overview of the Study.....	90
Summary of Key Findings.....	92
Significance and Implications of the Study	96
Research.....	96
Theory.....	98
Practice.....	102
Limitations	105
Recommendations for Future Research.....	105
Discussion: Lessons Learned.....	107
References.....	109
Biographical Information.....	119

List of Figures

Figure 4.1 Descriptive by Campus Type	63
Figure 4.2 Descriptive by Campus Type, STAAR Test and Economic Status.....	64
Figure 4.3 TAKS Math and Reading Comparison.....	75
Figure 4.4 STAAR Math and Reading Comparison.....	76
Figure 4.5 Teachers' Years of Experience by Campus Type	80
Figure 4.6 Professional Staff by Location Type	83

List of Tables

Table 3.1 Student Assessment Testing School Years 2010-2013.....	49
Table 4.1 Test Scores for Both Locations Single-gender and Coed.....	59
Table 4.2 ANOVA of TAKS Math Scores Across Settings	60
Table 4.3 Campus Setting and Economic Status	62
Table 4.4 ANOVA of STAAR Reading Between Settings on Economic Status .	64
Table 4.5 ANOVA of TAKS Math Scores Between Settings Economic Status ..	65
Table 4.6 ANOVA of TAKS Math Scores Economic Status	66
Table 4.7 Campus Setting and LEP Status	69
Table 4.8 ANOVA of STAAR Math Scores Between Settings Based on Race...	70
Table 4.9 ANOVA of STAAR Reading Scores Between Settings Race.....	71
Table 4.10 ANOVA of TAKS Reading Scores Between Settings Race	72
Table 4.11 Single Gender School by Race	73
Table 4.12 Co Education School by Race	74
Table 4.13 School Setting Demographics and Student Offerings	78

Chapter 1

Design of the Study

Single-gender schooling is not a new concept, but it has gained prominence in the public school setting over the last decade (Hayes, Pahlke, & Bigler, 2011). Single-gender schooling refers to education in which males and females are schooled exclusively with students of their own gender, whether in a single-gender classroom or single-gender school (Mael, Smith, Alonso, Rogers, & Gibson, 2004). Although opinions flourish regarding the value of single-gender schooling, advocates of both sides promote their own school design (Cable & Spradlin, 2008). Nevertheless, there is limited research in the United States on “whether public single-gender education might be beneficial to males, females or a subset of either group” (Mael, et al., 2005, p. ix).

Until the passage of the Hutchinson Amendment in 2006, single-gender education in the public sector was against the law. With this amendment, a product of the No Child Left Behind (NCLB) Act of 2001, single-gender schooling became a viable option available to public schools (Anfara & Mertens, 2008), and there has been a resurgence in the United States of single-gender schools (Anfara & Mertens, 2008; Bigler & Signorella, 2011; McCreary, 2011; Shah & Conchar, 2009). The importance of this amendment to the No Child Left Behind Act cannot be understated. These revisions made to Title IX of the No Child Left Behind Act detail how single-gender schooling can legally be

provided. The *New York Times* labeled this new provision of law as “the most significant policy change” in gender education since the passage of Title IX in 1972 (ON EDUCATION/Schemo, 2006), which required gender equality for boys and girls in every educational program that receives federal funding (U.S. Department of Education, 2008). Gender specific programs are now a legal option for the public education sector.

Although there is resurgence in the interest of single-gender schooling, single-gender schools are almost nonexistent compared to the number of coeducational campuses in the United States. The National Association for Single-Sex Public Education (Sax, 2014) estimated that for the 2011-2012 school year, there were only 116 public single-gender campuses nationally (Sax, 2014). However, this was an increase from the 91 campuses identified in 2010. Leonard Sax, the Director of NASSPE, states on the National Association for Single-Sex Public Education web site that due to increasing litigation from opponents of single-gender schooling, the website, will no longer identify single-gender public schools to keep from facilitating the program of harassment; thus the most current information available is from the 2011-2012 school year (Sax, 2014).

There are many reasons why single-gender schools may be a viable alternative to coeducational schooling. The single-gender model is especially appealing to school administrators striving to increase scores of low-income and minority students (McCreary, 2011). Middle school administrators are

particularly concerned with the decline in mathematics and science scores of female students in this age grouping (Dee, 2007). Consequently, middle school has also been identified as the period where girls begin to shy away from math and science and allow boys to take over the classroom (Haag, 2000; Lee & Bryk, 1989).

Proponents of single-gender education have argued that boys and girls have different learning styles and need to be educated separately for maximum academic success (Sax, 2010). Single-gender education advocates believe in an equal but separate educational system based on the idea that males and females are fundamentally different and thus have different needs (Sax, 2010; Spielhagen, 2011). Unfortunately, there is no direct evidence that single-gender settings improve outcomes for all students, since nearly all existing single-gender schools are private schools where student backgrounds are quite different from those in most public schools (Billger, 2009). Assessing the advantages and disadvantages of single-gender classes and schools is not only a “complicated question” (Salomone, 2003, p. xi), but also a political one involving education policy makers, politicians, social reformers and parents and college administrators (Jackson, 2002; Salomone, 2006).

Statement of the Problem

Despite NCLB’s goal of academic success for all students, there is a great deal of variation in student achievement across school settings (Haag, 2000). In

some school settings, success is evidenced, while in other settings with similar student and community demographics, students struggle and fail to succeed (McCreary, 2011).

With the advent of NCLB, single-gendered public schools represent a legal, viable alternative. While limited research has shown that single-gender schools have the potential to increase academic achievement, particularly for underserved populations, additional study is necessary (McCreary, 2011; Sax, 2014). Additionally, there is a lack of research speculating the reasons for success of students in single-gender public schools (McCreary, 2011; Sax, 2014). In sum, “research findings are ambiguous concerning the effects of single-sex schools on girls' achievement. For many studies that did find gaps favoring girls in single-sex schools, once findings were adjusted for socioeconomic or ability variables, these differences diminished (Haag, 2000, p. 3).”

Cultural Capital Theory and Field Theory (Horvat, Weininger, & Lareau, 2003) would explain potential differences in achievement for students in multiple and single-gender schools in terms of increased school performance and socioeconomic payoffs for students in the single-gender setting. Horvat et al. (2003) argued that whether the school-setting makes a difference in students' achievement is contingent on the availability of other forms of capital and the patterns of the conversion and exchange of capital in particular educational fields or settings.

Purpose of the Study

The purpose of this study was to compare the academic success of female students selected to enter the single-gender school and female students' eligible but not selected to the single-gender school setting. Since single-gender settings are reported to narrow the academic achievement gap of underprivileged students (The National Center for Education Statistics, 2009), especially minority inner-city students, this population received additional review.

Research Questions

To carry out the purposes of this study, the research questions guiding this study were:

1. What is the relationship between school setting and student achievement? Specifically, is there a significant difference between achievement test scores in math and reading from 2010-2013:
 - a. Overall,
 - b. When disaggregated by student race,
 - c. When disaggregated by student socioeconomic status, and
 - d. When disaggregated by English proficiency?

H0 There is no significant statistical difference in the achievement scores of the two groups of students; those attending the single-gender setting and those attending the traditional coeducational setting.

2. What are the differences between single-gender and mixed-gender school settings regarding:
 - a. Teacher demographics (years in education, certifications, education level, age, race, gender, etc.),
 - b. Extra-curricular offerings/requirements (summer programming, activities),
 - c. School student populations (Special Education demographics, bused, etc.), and
 - d. Student requirements (uniforms, contract, etc.).
3. How useful are Cultural Capital and Field Theory in understanding student achievement and the mixed-education/single-gender school settings?
4. What other realities of academic success were revealed in this study?

Orienting Theoretical Framework

The demographics of American public education today reflect a student population that is increasingly poor, and both ethnically and culturally diverse (Aud, Fox, & KewalRamani, 2010). African American and Hispanic students are more likely to come from low-income families (Choy & Bobbitt, 2000), more likely to be at-risk for dropping out of school (Jalongo & Sobolak, 2011), and less likely to have college-educated parents (Jalongo & Sobolak, 2011). These

realities are related to the amount of Cultural Capital that one possesses or acquires (Bourdieu, 1977; Beasley-Murray, 1999). Developed in the early 1960s, Bourdieu's concept of Cultural Capital and Field Theory explains the disparities in the educational attainment of children from different social classes (Horvat et al., 2003).

Cultural Capital is what one knows, is familiar with, and feels comfortable with, based on life knowledge, experience or connections (Winkle-Wagner, 2010). Those who have Cultural Capital have unseen advantages, and "student achievement is influenced by the inequitable distribution of Cultural Capital" (Patterson, Niles, Carlson, & Kelley, 2008, p. 93). This study drew on Bourdieu's (1977) concepts of habitus, field or location, and different forms of capital, specifically Cultural Capital, in an attempt to understand how the environment, particularly the school environment, impacted students' achievement. Cultural Capital and Field Theory were also discussed within the educational context that illustrates the various challenges students from low-income backgrounds commonly experience in the school setting (Bernhardt, 2013). Achievement in the mixed-gender and single-gender school settings were explored through the lens of Cultural Capital and Field Theory to recognize the ways in which the single gender setting provides student's access to scholarly valued forms of Cultural Capital. To further illuminate the significance of providing students from low-income backgrounds with a strong network of academic and social

support, power, utility, and significance within a school context, Cultural Capital was the guiding theory.

When students enter school, they are immediately placed into a complex system of layers that will influence their academic journey. Students from lower socioeconomic groups have been shown to have a smaller vocabulary and lower reading levels (Jalongo & Sobolak, 2011). Students from minority and economically disadvantaged/low socioeconomic backgrounds are particularly at risk of failing to make proficient vocabulary gains (Jalongo & Sobolak, 2011). This educational hierarchy, where students are separated or identified based on language skills, separates students from one another, resulting in disadvantages to students from low-income populations (Webb, Schirato, & Danaher, 2002). However, economics cannot solely be relied on to explain the disparities in educational attainment among students from different social classes. Bourdieu (1977) suggests school success is better explained by the amount and type of Cultural Capital inherited from the environment, or field, than by measures of talent and achievement. Drawing on Bourdieu's (1986) work, Lareau and Weininger (2003, p. 579) developed a useful definition of Cultural Capital: "Any given "competence" functions as Cultural Capital if it enables appropriation "of the cultural heritage" of a society, but is unequally distributed among its members, thereby engendering the possibility of "exclusive advantages." From this perspective, culture is understood as a resource that confers both status and

power. Culture, then, can be thought of as “a form of capital with specific laws of accumulation, exchange, and exercise” (Swartz, 1997, p. 8).

Cultural Capital, the resources that a student draws on to negotiate the school setting, is lacking in lower socioeconomic students. The literature supporting single-gender environments suggests that the single-gender setting is a more successful setting for academic success, particularly when there is a gap in socioeconomic status, along with other cultural and environmental factors (Reay, 2004). It follows, then, that the single-gender school setting must alter the Cultural Capital of the students attending the school by setting different and higher expectations, changing the field. The single-gender school setting may level the playing field, giving poor minority students advantages just by the single-gender setting teaching students what is necessary to successfully navigate the unfamiliar academic setting. The result of the increase in Cultural Capital due to habitus and field is increased academic success. The historical perspective of education and the resurgence of single-gender schools makes one wonder the extent to which single-gender school settings foster relatively higher achievement for poor minority students and why? This question became the focus of this study.

Chapter 2

Review of Literature

Although more common and popular internationally in such areas as Australia, Belgium, South Africa, New Zealand, and the United Kingdom (Mills, 2004), for over a decade there has been a dramatic increase in single-gender public education in the United States. Proponents of single-gender education use the argument that boys and girls have different learning styles and need to be educated separately for maximum academic success (Sax, 2010). Unfortunately, there is no direct evidence that single-gender settings improve outcomes for all students since nearly all existing single-gender schools are private, and student backgrounds are quite different from those in many public schools (Bigler & Signorella, 2011; Billger, 2009).

The breadth of empirical studies based on gender differences is overwhelming. To this end, this literature review provides a review and interpretation of findings, both nationally and internationally. I define and critique key constructs, review research methodologies, and summarize pertinent findings. I look specifically at the achievement differences of students, those attending single-gender schools, and those attending the traditional coeducation schools. Literature related to studies dealing with minority, low socioeconomic, urban female students, particularly in the stereotypically male subjects of math and reading, was also reviewed. Topics to be covered include single-gender

education, achievement rates of female students in math and reading, and how the female single-gender school relates to minority and/or low socioeconomic female achievement rates. This review focuses on these constructs as well as the orienting theoretical frameworks of Bourdieu's cultural capital and field theories (Taylor, 2005).

Single Gender Education

Assessing the advantages and disadvantages of single-gender classes and schools is not only a "complicated question" (Salomone, 2003, p. xi) but a political one involving education policy makers, politicians, social reformers, and parents (Jackson, 2002). Most of the research focuses on peer or role model effects rather than single-gender schooling directly (Billger, 2009). Achievement correlated by gender, race, and income needs to be studied to access outcomes relative to other local students, as well as to students across districts and the nation (McCreary, 2011). The concern needs to focus on improving outcomes by gender in local schools so that outcomes do not come at the expenses of low income and minority students. Districts should not use federal dollars unless there is proof that what the dollars are used for works (McCreary, 2011).

Single-gender schooling is not a new concept, but it has gained prominence in the public school setting over the last decade (Hayes, Pahlke, & Bigler, 2011). Single-gender schooling refers to education in which males and females are schooled exclusively with students of their own gender, whether in a

single-gender classroom or single-gender school (Mael, et al., 2005). Although opinions flourish regarding the value of single-gender schooling, advocates of both sides promote their own school design, whether it is in favor of the single-gender or coeducational setting (Cable & Spradlin, 2008). Nevertheless, there is limited research in the United States on “whether public single-gender education might be beneficial to males, females or a subset of either group” (Mael, et al., 2005, p. ix).

Due to the historical development of public education in the United States, gender-specific schooling has not been as comprehensively analyzed in this country as it has internationally (Cable & Spradlin, 2008; Conger & Long, 2013; Long & Conger, 2013; McCreary, 2011). Since schooling by gender in the public school sector was fundamentally banned due to federal law, the majority of studies on this topic have been limited to parochial or private schools (Cable & Spradlin, 2008; McCreary, 2011). Since data drawn from parochial or private schools are not directly applicable to the public school setting, research is limited or biased (Mael, Smith, Alonso, Rogers, & Gibson, 2004; Riordan, 1994). The socioeconomic status of the students and parents and the specific structure of the private, single-gender setting is not an equal comparison for students of public coeducation schools (Cable & Spradlin, 2008). Riordan states that “a major problem with many studies has been a failure to control for *selection bias* and home background” (Riordan, 1994, p. 487). The mere fact that private, single-

gender schools are schools of choice means from the outset that no random assignment is possible, so comparisons to public single-gender schools start out biased (Bracey, 2006; Riordan, 1994). Furthermore, conclusions about the efficacy of single-gender schools in the U.S., based on generalizations from research done in other countries are not valid, due to inappropriate context (Mael, Smith, Alonso, Rogers, & Gibson, 2004). According to a commissioned review of single-gender literature, Moore (1993) asserted that the current research was inconclusive and should not be the basis for rejecting or promoting a particular educational approach, specifically when there is insufficient research on the topic. *The Educational Digest* reviewed 2,221 quantitative studies by the American Institutes for Research relating to gender; of those, only 40 were considered eligible for inclusion in the journal. The majority of studies were eliminated due to the research design's lack of control in admission practices and socioeconomic status of the students (Bracey, 2007). The fact that most single-gender schools are schools of choice means that the research standard of random assignment to treatment has been impossible thus far.

The U.S. has had a long standing tradition of public schools where students are educated together. However, Sadker and Sadker (1994), major opponents of the single-gender debate, stated that what is applauded in the single-gender setting is not the setting, but the educational practices. Most studies attribute any advantages for girls to the social-psychological effect of the learning

environments (Sadker & Sadker, 1994). Sadker and Sadker argued that instead of single-gender schools, we should simply reform coeducational schools to take advantage of the gender specific social-psychological needs of the specific gender. Balkin (2002) agreed, stating that given the fixed educational budgets, dollars should be spent on improving the quality of the general coeducational classrooms.

The Benefits of Single-Gender Schools

Rordian (1998) summarized the research on benefits of single-gender schools. He reported that the educational outcomes for white males seemed unaffected by whether they were schooled in a coeducational setting or a single-gender setting. He added that the academic and development outcomes of attending single-gender school versus coeducational school were statistically insignificant for middle class and advantaged students (Riordan, 1994).

There are several major reviews of research related to the question of whether single-gender schooling is preferable to coeducation for some or all students. Two major reviews are considered, one from the American Association of University Women (Wellesley College. Center for Research on Women, & American Association of University Women. Educational Foundation., 1995) and the other from the Office of Planning, Evaluation and Policy Development of the United States Department of Education (Mael, Smith, Alonso, Rogers, & Gibson, 2004). The results of both indicated that additional research is needed. One point

that Mael (1998) reported on is that it is necessary to separate effects attributable to school type from those attributable to differences in student bodies, regardless of the type of schooling. From another article “the crucial difficulties in evaluating studies on single-gender schooling vs. coeducation are the non-equivalent group comparisons” (Kessels & Hannover, 2008, p. 274).

The American Association of University Women issued a report that reviewed over 100 journal articles and essays of research on K-12 single-gender education spanning over 20 years (Wellesley College. Center for Research on Women, & American Association of University Women. Educational Foundation., 1995). According to the report, evidence for or against supporting gender specific schools was inconclusive. AAUW (2011) reviewed the research and decided that the qualities that exist in single-gender classes need to exist in any classroom to be the most effective. The results of the review produced points of disagreement and several profound unanswered questions: (1) there is no evidence that single-gender education in general works or is better than coeducation; (2) single-gender educational programs produce positive results for some students in some settings; and (3) the long-term impact of single-gender education on girls is unknown (Mael, Smith, Alonso, Rogers, & Gibson, 2004). The following is an excerpt from the report:

In the Executive Summary to the Department of Education the general implications of the review provide a stepping stone for future research through the

continuation of quality research on extant outcomes, the refinement of methodology, better statistical reporting, and the expansion of the theoretical domain. If heeded, these implications can improve the generalizations made about single-gender schooling and coeducation. (Mael, Smith, Alonso, Rogers, & Gibson, 2004, p. xviii).

The U.S. Department of Education report, for and against single-gender schools, stated that much of the debate is philosophical and is not based on true randomized experiments (Mael, Smith, Alonso, Rogers, & Gibson, 2004). Arguments that seem intuitive and obvious have been shown to contain untested or erroneous assumptions. Some statements are based on assumptions rather than empirical data and others make assumptions based on philosophical ideals. Setting specific standards for empirical research would keep the philosophical debate from confusing the empirical debate (Mael, Smith, Alonso, Rogers, & Gibson, 2004).

There is limited support for the view that single-gender schooling may be harmful, that students do not learn to deal with the opposite gender, or that coeducational schooling is more beneficial for students than by separating them and allowing them to grow without the attention of the opposite gender. “The research was undertaken at a mixed-gender inner-city comprehensive school located in the south-west of England. The school is moderate in size (approximately 500–550 pupils in years 7–11), with a mix of children from

mainly white, working-class and middle-class backgrounds. The school, referred to as 'Shady Acres', introduced single gender mathematics classes for its year seven intake at the start of the academic year in 1994" (Jackson, 2002, p. 40). The study suggested some support for the premise that single-gender schooling can be helpful, especially on outcomes related to academic achievement (Jackson, 2002). Generally, however, as in previous reviews, the results are ambivalent.

Using data from the National Educational Longitudinal Study of 1988, one longitudinal study dealing with the Catholic private single-gender schools explored the differences between single-gender and coeducational Catholic secondary school students in academic and social psychological outcomes were reviewed (LePore & Warren, 1996). The researcher wanted to know if differences favor young women specifically in single-gender schools and if student pre-enrollment differences account for apparent background effects (LePore & Warren, 1996). The results indicated that single-gender Catholic secondary schools were not especially favorable academic settings, and that any advantages of attending these schools benefitted boys, but not girls. However, differences in student achievement test scores were explained by pre-enrollment differences in measured background and prior achievement. The finding explained that recent changes in the demographic make-up of all Catholic high schools may account for the differences between findings and prior research (LePore & Warren, 1997).

Achievement Rates of Female Students in Math and Reading

Single-gender schooling has been reported to have positive benefits for females in traditional male-dominated subjects, like math (Salomone, 2006). Riordan (1994) agreed that girls in a single-gender environment demonstrate success in several ways, including mathematics, leadership, and the prevention of premarital pregnancy. Middle school administrators are especially concerned with the decline in mathematics and science scores of female students in this age grouping (Robelen, 2012). This is especially important, since middle school has been identified as the period where girls begin to shy away from math and science, and teachers often allow boys to take over the classroom (Haag, 2000; Meyer, 2012).

While sources have shown gaps in mathematics achievement of female students, specifically at the middle grades where girls show less self-confidence and assertiveness than boys do in math classes (Freeman, 2004), there is some evidence that single-gender schools can reverse this trend. According to Feniger (2010), female and male students alike perceive math and physics courses as *masculine* subjects. Moreover, Advanced Placement data and data from the National Assessment of Educational Progress show achievement gaps in the STEM fields of Science, Technology, Engineering and Mathematics for female students, especially science (College Board, 2014). Research has shown that in

single-gender settings, girls are more likely to choose a higher level of mathematics (Jackson, 2002).

In research in the private school settings, Mael (1998) and Hagg (2000) concluded that girls in single-gender settings expressed more positive attitudes towards math and physics than in coeducation settings. Another study found that girls are disadvantaged and inhibited in typical coeducation setting where boys control the classroom culture (Hoffman, Badgett, & Parker, 2008). The argument that single-gender schools diminish the masculine stereotypical belief associated with certain math courses promotes the need for single-gender campuses (Haag, 2000). Lee and Bryk (1988) compared private and coeducational schools, and found that when students were matched by several background variables, race and age, girls from single-gender campuses were less affected by stereotyping and had higher achievement in science. Casting some doubt on the claim, Marsh (1992) analyzed the same data as Lee and Bryk, but found no attributable advantage for the same gender setting.

Conversely, data from a longitudinal study of 37 secondary and private schools from the New Zealand Ministry of Education national database indicated that any advantage for math courses in same-gender schools were not significant (Harker, 2000). In a more recent study, Marsh et al. (2008) found that equally able students had lower academic self-concepts (ASCs) when attending schools where the average ability levels of classmates is high. They also found that

students showed higher ASCs when attending schools where the school-average ability is low, indicating that student ability grouping has more to do with achievement than gender.

In line with Marsh, a large-scale study with over 20,000 Israeli Jewish high school students suggested that female students from single-gender settings did not achieve higher in advanced math, physics, and biology courses than female students at the coeducational schools (Feniger, 2010). The results of the logistic regression analysis suggested that girls at all-female state religious schools did no better academically than girls at the coeducational state school in advanced math, physics and biology courses. The findings indicated that the all-female setting had a higher participation in computer science courses, although this was attributed to differing curricular policies rather than the all-female setting (Feniger, 2010).

Minority and/or Low Socioeconomic Female Achievement Rates

Much of the recent research focuses on the evidence showing that single-gender schools promote a “subculture that allows minority youth to focus more on academics and succeed more” (Mael et al., 2004, p. iii), rather than if they were in a coeducational setting. It has been noted of single-gender school settings that “research needs to focus on schools with relatively more minority students and in schools with a high rate of poverty” (Cable & Spradlin, 2008, p. 10). With this in

mind, this review of literature considers the effects of single-gender education with respect to racial, demographic, and disciplinary perspective.

The demographics of American public education today reflect a population that is increasingly poor, and both ethnically and culturally diverse (Aud, Fox, & Kewal-Ramani, 2010). Research confirms that children of poverty do not develop the same level of verbal mastery as their classmates, due to limited exposure to language in the home (Sax, 2007). The press to create alternative grouping of students, perhaps in the form of single-gender schools, is a result of the persistent achievement gap between students of various socioeconomic backgrounds, genders and /or ethnic backgrounds (Cable & Spradlin, 2008).

Research has suggested that the single-gender setting affords minority inner-city students the greatest promise academically (Cable & Spradlin, 2008). Grouping of students by gender is seen as a way to offer girls an environment free of male domination (Hoffman, 2008). In one U.S.-based study, disadvantaged students, especially girls, benefitted most, possibly because of the interpersonal support opportunities (Hoffman, 2008). According to same public school-based mixed-methods study, girls who were grouped by gender engaged in more academic risk-taking (Hoffman, 2008).

Females as a group enter school outscoring males, but exit school scoring lower than males. Girls outscore boys on achievement tests until the middle school years when scores of females begin to decline. The increasing gender gap

has led many schools to investigate the possibility of a return to the gender segregated schools and classes (Sadker & Sadker, 1994). The single-gender model is especially appealing to school administrators striving to increase scores of low-income and minority students (McCreary, 2011).

An extensive review of research relating the value of single-gender schools versus coeducation was commissioned by the United States Department of Education to clarify the question (Mael, 1998). More than 2,000 empirical studies examined the effectiveness of single-gender schools (Bracey, 2006). Findings from the commissioned report again indicated that research in the United States on the question of whether public single-gender education might be beneficial to females (particularly disadvantaged) has been limited. For many outcomes, there is no evidence of either benefit or harm.

There is a significant achievement gap between students based on socioeconomic classification (Rex, 2009). Compounding the concern, low socioeconomic minority students experience an even greater achievement gap disparity (Meyer, 2012). The *achievement gap* refers to differences in standardized achievement test scores between ethnic and socioeconomic student subgroups (Mael, Smith, Alonso, Rogers, & Gibson, 2004). In a report by the National Educational Research Foundation based on data from high schools in England, some achievement results were positive for single-gender campuses for students with low achievement levels (Salomone, 2003). Using multilevel

analysis, Malacova (2007) found that girls attending a single-gender English campus achieved higher progress on exit level exams compared to students in a comparison co-educational campus. Nonetheless, this finding is promising for public school administrators from urban areas with large populations of low performing students searching for ways to close the achievement gap. Although Billger (2009) found that African-American girls experience unique gains in the single-gender school setting, again, the results were based on private single-gender schools. However, in Riordans' 1990 longitudinal study involving 58,270 Catholic high school students, results confirmed that Caucasian girls, along with African American and Latino male and female students, achieved more academically in single-gender settings than in coeducational settings.

There are several issues related to the impact of socioeconomic status on student achievement (Mael, Smith, Alonso, Rogers, & Gibson, 2004). Particularly, females, racial minorities, and the economically disadvantaged were more likely to be positively impacted through single-gender schooling. Riordan's research, although based on private single-gender settings, contended that the lower socioeconomic students benefited the most. Although, according to Marsh (1990) and Haag (2000), since private and parochial schools admit only high-achieving pupils or self-select by expelling students who perform poorly academically or behaviorally, studies from single-gender private or parochial schools cannot be applied to public schools.

In addition, low income parents traditionally send their student to the closest neighborhood school, regardless of the opportunities available at the school (Clark, 2009). Students then progress to the local community junior college or trade school. College education, the most important factor in affecting upward class mobility (Robelen, 2012), is geared towards those who possess the cultural capital to navigate the four-year colleges and universities. According to Winkle and Wagner (2010), if appropriately implemented, “cultural capital holds the promise of providing an excellent theoretical source for research, particularly research that centers on topics related to class issues, social stratification or attempts to understand the perpetuation of equality more generally” (p. 3). Bourdieu scrutinized the way that economics and schooling intersect in perpetuating unequal social conditions (Reay, 2004). Bourdieu suggested that there is something consistent with the lifestyle of people in different class strata, which then determines life’s chances. Thus, students and parents missing the cultural capital lack the resources necessary to navigate entry into the more prestigious four-year institutions (Bechtold, 2008).

Cultural Capital and Field Theories

The concept of cultural capital, developed by the French sociologist Bourdieu, explains the anomaly of the tradition of mixed-gender schools when single-gender schools are more supportive for students who experience a gap in socioeconomic status in terms of cultural capital. In the early 1960s, he

developed the concept of cultural capital to explain the disparities in the educational attainment of children from different social classes (Horvat, Weininger, & Lareau, 2003). Cultural capital refers to non-financial assets: knowledge, life experience, or connections that an individual may have because of their life course. Those who have cultural capital can learn in the traditional educational setting. Those who do not possess it have problems learning. For example, the child whose parent who requires him/her to watch the evening news or educational shows would have more useful capital in the academic setting than a child whose main TV diet is sitcoms and reality shows.

Another key point of the education system is the fundamental goal of moving low socioeconomic students through high school graduation and into post-secondary institutions. According to Bok (2010), based on Bourdieu's cultural capital theory, moving students from one area to another is contingent on them being able to imagine and articulate their aspirations to higher education. For students to develop the capacity to aspire beyond their current level of cultural capital, their network of influence must include experience navigating particular fields and pathways. Education, both K-12 and post-secondary, has norms of negotiating the unfamiliar pathways (Bok, 2010). Learning the social practices, what people are doing, how they are thinking, and how they are acting, gives students the opportunity to move past their current circumstances (Blackmore, 2010).

Cultural capital is what one knows, is familiar with, and feels comfortable with, based on life knowledge, experience and connections (Bourdieu, 1977). Those who have cultural capital are said to have unseen advantages, even in terms of academic achievement, given that “student achievement is influenced by the inequitable distribution of cultural capital” (Patterson et al., 2008, p. 93). Historically, women’s schools, especially private schools, were viewed as a symbol of economic status (Balkin, 2002), a form of cultural capital. Cultural capital is made up of knowledge, skills, taste, lifestyle, and qualifications. These can be seen in appearance, demeanor, carriage, posture, taste, and language or social capital--the resources linked to the possession of a network of relationships (Taylor, 2005).

Bourdieu’s notions of capital help explain how class advantages are mobilized in and through education (Blackmore, 2010). Change occurs in and through practice that students see demonstrated in everyday activities (Blackmore, 2010), such as the way teachers expect students to respond to questions and the way students are expected to talk and write. Even the way educators expect students to behave in the hallways and lunchrooms can conflict, based on the type of cultural capital the students have. The working class has a different set of habits, just as teachers have a certain set of habits which most likely are very different for students from a low socioeconomic background.

One foundation of cultural capital is that exclusive advantages or disadvantages may be created based on the students' common environment. Students must learn the rules and learn which practices to adopt to maximize the valued capital, based on their teachers' cultural capital (Blackmore, 2010). According to Dewey (1916) and later Bourdieu (1991), conscious and unconscious social practices produce a disposition to act in a particular way, not necessarily with a predetermined destiny; education must help students determine the most gainful destiny (Blackmore, 2010).

Field Theory

According to Bourdieu's theory of cultural capital, habitus and field provide a fundamental theoretical framework, which focuses on the complex relationship between socio-cultural backgrounds of parents and students and the real life world experiences that inform students' and parents' dispositions toward school and school work (Bok, 2010; Bourdieu, 1977). *Habitus* is defined as an open system of dispositions that is constantly subjected to experiences, and therefore constantly affected by them in a way that either reinforces or modifies its structures (Bourdieu, 1977). Cultural capital is relative, and only possesses value to the extent to which it is legitimized within the larger field.

Furthermore, consistent with this interpretation, our focus is on the culture of power within a given context, the classroom. Classroom-valued cultural capital predominately reflects the values of the teacher, because of the status and

power in the classroom community; but students do contribute as well, especially within small student groups (Wang & Ching, 2003). For many students, becoming a member of the academic community is like learning a second culture. Students must learn rules and nuances for behaving, for communicating, and even for thinking. We must recognize how the social, linguistic, and cultural networks interweave in the academic setting. Education has its own linguistic patterns learned by specific manners that encompass the different forms of educational cultural capital. Understanding the effects on educational practice is timely and critical. Bourdieu's ideas are useful for understanding the role of education in social reproduction (Taylor, 2005).

These positions are objectively defined in their existence and in the determinations they impose upon their occupants, agents or institutions, by their present and potential situation in the structure of the distribution of species of power (or capital) whose possession commands access to the specific profits that are at stake, as well as by their objective relation to other positions" (Bourdieu & Wacquant, 1992, p. 92).

The notion of Bourdieu's *habitus* (or *field*) is relevant now, due to the changing state of education and educational research resulting from the restructuring of education and the impact of economics (Blackmore, 2010). Bourdieu describes the *field* as a set of objectives, historical relations between positions, anchored in certain forms of power (Bourdieu, 1977). Fields can be k-

12 schools or post-secondary institutions, but “each field has its own set of discourses and styles of languages that determine what is valued, what questions can be asked and what ideas can be thought” (Taylor, 2005, p. 166). Therefore, each field has a pre-established language that must be learned by those who do not possess the language of the pre-established field. These fields can be preserved or changed based on the players. Positions within the field are related to the amounts and types of capitals possessed by the participants and by the desire to acquire the capital (Taylor, 2005).

For example, in the field of education, the rules of access are exams. Educators who use words unfamiliar to a students’ field will cause misunderstanding and confusion. This can be thought of as using a foreign language or surviving in an unfamiliar setting. Field theory can be thought of as a way to diagram people’s preferences, their actions and their social practices. Every field is limited by society’s certain set of practices. This involves the actions used when together to communicate. There are some actions that create a better position within the given field, and other actions that go against the rules of the field. School settings have fields; students and parents have fields; and educators have fields. These fields are based on their life experiences.

All of this leads to cultural capital and how it is perceived. Being able to utilize procedural practices expected by the classroom culture is an important aspect of students’ cultural capital situated in the classroom context. Grasping

procedural practice knowledge and norms influences students' ability to effectively participate in classroom activities (Bok, 2010). Building students' cultural capital enhances their ability to engage in these practices. Without effectively engaging in the activities of the classroom, school success will be difficult, if not impossible, to attain.

Bourdieu's main claims can be explained this way: society is characterized by repression; and there is, diffused within the social space, a cultural capital, comparable to economic capital, transmitted by inheritance and invested to be cultivated; and that the true nature of the education system functions to discriminate in favor of those who are the inheritors of cultural capital (Apple & Wexler, 1978). Success and failure in school is awarded to those who have the cultural capital valued by the education system. Educators have a form of cultural capital different than their low socio economic students. In addition, the taught curriculum upon which success is based is written and graded by those with this different cultural capital. Students lacking the cultural capital valued by the education system are destined to fail. Since cultural capital is determined by the majority population in the school environment, and most educators are white females from the middle class, poor minority students do not possess the cultural currency necessary to negotiate the school setting.

Summary

With the overwhelming breadth of empirical studies conducted on single-gender schools, there are still unanswered questions. This literature review provided an appraisal and interpretation of findings, both nationally and internationally. I defined and critiqued key constructs, reviewed research methodologies, and summarized pertinent findings. I looked specifically at the achievement differences of students, those attending single-gender schools, and those attending the traditional coeducation schools. I reviewed literature dealing with minority, low socioeconomic, and urban female students, particularly in the stereotypically male subject of math. Topics covered included single-gender schools, achievement rates of female students in math, and how the female single-gender schooling affects minority and/or low socioeconomic female achievement rates. This review focused on these constructs as well as the orienting theoretical frameworks of Bourdieu's cultural capital, habitus and field theories (Taylor, 2005).

This study compared the achievement of female students attending two different school models, the single-gender school setting and the traditional coeducational setting to query the strength and direction of the correlation between school setting and student achievement. Variables were controlled by using a unique group of students matched in ability, race, socioeconomic status, and English proficiency. The sample was made up of students selected as eligible

to attend the single-gender girl's school. Although students were eligible based on rigorous standards, such as current grade average, passing all state mandated tests, high attendance rate, and two teacher recommendations, they also had to undergo and pass a committee interview and be committed to attend a four-year college or university upon graduation from high school. Once deemed eligible, all students' names were placed in a lottery pool. Random selection from the pool determined which students attended the single-gender campus; those not selected attended the coeducation campus. Those selected to the lottery, but not selected to attend the single-gender campus, were the comparison group.

Study Site

The campuses for the study were from a large urban school district with nearly 84,000 students, 5,000 teachers, and a diverse student population (Texas Education Agency, 2014). Twenty-seven percent of the students were classified as being bilingual or as English as a Second Language learner and 28% of students were classified as being Limited English Proficient (LEP) (Texas Education Agency, 2014). Of the 84,000 students, 75% were considered economically disadvantaged (Texas Education Agency, 2014). The comparison schools were from the same large urban district with the same demographics. The performance results of the study sites were collected from the Texas Education Agency website and the district's student information system. The district has

been rated as Academically Acceptable for the last eight years (Texas Education Agency, 2014).

The single-gender school opened in the fall of 2010 as the first single-gender school of the district. The single-gender school was designed to meet the unique needs of young women by providing an outstanding college preparatory curriculum, focusing on math, science and technology. The Texas Education Agency rated the campus *Exemplary* after its first year (Texas Education Agency, 2014).

The stated mission of the single-gender girls' school is to develop the full potential of girls by fostering an educational environment that encourages critical thinking, inspires confidence, and nurtures both the intellectual and social development necessary to be successful in the global community. Students who enroll at the single-gender school anticipate rigorous instruction with an emphasis on math, science, and technology, field-based exploration, and extensive leadership training. These experiences, combined with mentorship, job shadowing, and internship opportunities provide college preparation and career readiness.

Selection to the admission pool is rigorous, and involves multiple steps. The application process is intended to help the staff get to know the candidate for admission to the single-gender school. In addition to the application, applicants must also submit their most current Texas Assessment of Knowledge and Skills

(TAKS) and/or State of Texas Assessments of Academic Readiness (STAAR) scores and most current academic report card with fall and spring semester grades and attendance records. Applicants must have two completed teacher recommendation forms, submitted in an envelope with the teacher's signature across the seal. At least one recommendation must be from the current math, science, or English teacher. The second recommendation may come from an elective teacher and/or a teacher from the previous school year.

Mandatory student criteria were also measured during the eligibility process. Applicants must have met state requirements for advancement to the next grade level, must desire and be committed to attend a four-year college or university, and cannot have chronic attendance or school discipline problems prior to or upon admission to the study site. Applicants must attend an interview with a parent, guardian and/or primary caregiver, and finally, must attend an orientation session with parent, guardian, and/or primary caregiver.

Eligibility to the single-gender school site pool was also based on a parent profile. Parents, guardian, and/or the primary caregiver of students applying for admission eligibility had to be committed to ensure that their student will seek higher education at a four-year college or university and pledge to be supportive of their student's academic responsibilities, leadership activities, and health and wellness. Furthermore, they had to be willing to participate in various parental

initiatives on the campus, and pledge to be committed to attend required meetings, including those required prior to admission.

Texas Assessment of Knowledge and Skills (TAKS) and State of Texas Assessments of Academic Readiness (STAAR) math and reading scores were used as the measure for comparison of academic achievement. The test formats are relatively the same compared to the TAKS test in third through eighth grade.

Data Needs

Data identified as necessary to complete the study included student achievement in math and reading across the school years under review. Standardized achievement scores for grades six through eight of female students eligible to attend and students selected to attend the single-gender-school were used. In addition, campus demographics and staff demographics were used. This data came from campus website information and from district and campus Academic Excellence Indicator System (AEIS) reports.

Methodology

This study compared the achievement of female students attending two different school models, the single-gender school and the traditional coeducational setting. Race, socioeconomic status, and English proficiency have all been shown to impact student achievement (Patterson et al., 2008). In this study, these factors were controlled for by using students already selected as eligible to be placed in the pool to attend a single-gender school, in a large

southern urban public school district. Student selection was based upon eligibility strength and lottery selection. Mandatory student criteria are also measured during the eligibility process. Applicants must have met state requirements for advancement to the next grade level, must desire and be committed to attend a four-year college or university, and cannot have chronic attendance or school discipline problems prior to or upon admission to the single-gender school. Based on the criteria, students judged eligible to attend the study site are placed into a pool for a random lottery. Those selected to the lottery, but not selected to attend the single-gender academy, were the comparison group.

The Researcher

Being the oldest of five girls plays an integral part in this dissertation topic. The education of poor females is both personal and professional. In my family, hard work was valued more than education. My father, an extremely hard worker, dropped out of school at the age of 14 to work full time in the construction business. My mother, a child of a poor young widow, barely graduated from high school. My maternal grandmother became a widow while pregnant with her third child. Since my grandmother was focused on providing the necessities of food, shelter and care to her three young children, schooling was not a major concern. Because of their life experiences, neither of my parents valued education, nor encouraged my desire of attending college.

Because of the family dynamics, both parents working to support a large family of seven, I learned to handle adult responsibilities as a child. As the oldest child, I served the role of babysitter, housekeeper, cook, yard caretaker, and tutor. I learned a strong work ethic from my parents, but did not have the Cultural Capital that my best friend, the daughter of a dentist, had. I remember vividly not understanding terminology used by my teachers and classmates. Embarrassed, I would try to remember the word that I did not understand or know so that I could ask my parents about it in the evening.

A particularly memorable experience occurred during my middle school years. I remember excitedly telling my parents what I had learned in class that day. My father told me that what I said was incorrect. I turned to the passage in the textbook to show my father that I was right and was told that book learning was not important and that the book was wrong. I realized at an early age that my parents valued physical, menial work far more than any academic effort. I received positive reinforcement at home for physical work and at school for my academic effort.

I loved my teachers and wanted to be like them. I would listen carefully and then try to emulate their speech and their actions. I wanted to have a career where I would not have to take a shower as soon as I came in from the field. I wanted to work inside rather than outside in the elements as both of my parents did. I wanted to dress in nice clothes and smell nice like my teachers did. I

realized that what I wanted was to be a professional. When I asked my parents about going to college after graduating from high school, I was told that it was a waste of time and money; all I needed to do was get married. I learned then to separate my two worlds.

Putting myself through college and becoming a science teacher was the result of trial and error. Since I was a first-generation college student, I did not know what to expect. College was different from high school, and since I was paying my own way, work was more important than school. I dropped out after a year and a half. With the dream of a college degree still alive, I made the decision to finish my degree after the birth of my second son. I wanted my sons to value education and wanted to be the role model for them. Teaching middle school science became my passion. Instilling the desire for all to learn science and enjoy the subject became my mission. Convincing parents, especially mothers, that science was not too hard for their daughters became my goal. I wanted to eradicate the idea that science was for boys. Because of this background, the education of poor female students is both personal and professional.

Data Needs

Data identified as necessary to complete the study included student achievement scores in reading and mathematics across the school years under review. Standardized achievement scores for grades six through nine of female students eligible to attend and students selected to attend the single-gender school

were needed. In addition, school demographics including teacher numbers and teacher demographics, education level of the teachers, their age, race, gender, and class sizes were collected and summarized. Furthermore, requirements for both campus setting, including extracurricular activities, summer programming activities, school student populations i.e. (special education demographics, bused etc.) student requirements such as uniforms and application process and contracts were organized and summarized to display in graphical form the specific characteristics by setting.

Data Sources

Administrative data from the participating district served as the data sources for the study. Specifically, administrative data including Texas Assessment of Knowledge and Skills (TAKS) and State of Texas Assessments of Academic Readiness (STAAR) scores for the school years 2010-2011, 2011-2012 and 2012-2013, and demographic data for students who were eligible for the selection pool, those attending a single-gender school, and those attending co-educational schools were used.

Student demographics were retrieved from the district student information system that corresponds to the data collected by the state. Students were identified by race as either, Black/African American, White, Hispanic/Latino, Asian, or two or more races. Due to the small number of students identified as Asian or two or more races, only the first three races had data that was testable.

Teacher and campus demographics relating to the number of professional staff, race of the teaching staff and experience of the teaching staff came from the campus and district AEIS report.

Data Collection

After approval from both institutions was final, female student achievement on the standardized TAKS and STAAR tests was disaggregated from the district Texas Education Agency (TEA) Academic Excellence Indicator System (AEIS) Report for the school years. Students' race, socioeconomic status and English proficiency were identified, based on data reported to the TEA by the district.

Data Analysis

Texas Assessment of Knowledge and Skills (TAKS) and State of Texas Assessments of Academic Readiness (STAAR) scores were used as the measure for comparison of academic achievement. The test formats are relatively the same compared to the TAKS test in third through eighth grade. Descriptive statistics, including means, medians, modes, and standard deviations were computed to examine the student demographic information including students' grade level, race, economic status and English proficiency.

To summarize the research goals of this study, student achievement is the overarching desire of all educators. Determining if Cultural Capital due to setting was a factor was investigated as well as other factors that may lead to increased

student achievement. Since there is a federal mandate to leave no child behind, the need to identify factors that increase student achievement, especially in the minorities and low socioeconomic/economically disadvantaged students, the aspiration of this researcher was to use this homogenous group of students in a large urban southern public school district to disaggregate as much data as possible, to identify common factors that lead to increased student achievement.

Chapter Summary

This chapter presented context and justification to compare the academic success of female students selected to enter the single-gender school and female students eligible but not selected to the single-gender school setting. It provided an historical examination of Bourdieu's (1977) Cultural Capital theory, with particular emphasis upon the knowledge, experience and/or connection one has due to one's life course that enables one to succeed more than someone with different life experiences and/or connections. The chapter detailed the Statement of the Problem by supporting the need for U.S. based studies in the public school setting and single gender campuses. It explained the benefit of studying the public single-gender campus with a homogeneous comparison group of students in the normal coeducational setting, with emphasis upon the impact of educational achievement benefits. It presented research questions that guided the study, and justified the appropriateness of the quantitative methodology for the specific research problem and the approach to assessing and interpreting the data. The

chapter summarized the Cultural Capital theory as the lens of urban city minority students and their educational achievement. It explained and justified elements of the proposed method, including identification of participants and study sites. It also detailed the procedures for data collection and analysis. The chapter concluded with a statement of the study's potential implications for research, theory, and practice.

Reporting

This dissertation is divided into five chapters. This first chapter provides a brief introduction regarding single-gender schools, the rationale for the study, the justification for using a quantitative research design, statement of the problem, and the research questions. Chapter Two will present a comprehensive review of the literature. The third chapter will describe the research methods in detail including how students were identified, the types of data collected, how data was analyzed, the validation strategies used to increase the reliability of the study, potential ethical issues, and the role and background of the researcher. Chapter Four will present and highlight the results of the TAKS/STAAR scores, along with statistical analysis. The last chapter will discuss the results of the study, the implications for theory development, practice, public policy, future research, the strengths and limitations of the study, conclusions, and a section on lessons learned.

Chapter 3

Methodology

This study compared the achievement of female students attending two different school models, the single-gender school setting and the traditional coeducational setting to query the strength and direction of the correlation between school setting and student achievement. Variables were controlled by using a unique group of students matched in ability, race, socioeconomic status, and English proficiency. The sample was made up of students selected as eligible to attend the single-gender girl's school. Although students were eligible based on rigorous standards, such as current grade average, passing all state mandated tests, high attendance rate, and two teacher recommendations, they also had to undergo and pass a committee interview and be committed to attend a four-year college or university upon graduation from high school. Once deemed eligible, all students' names were placed in a lottery pool. Random selection from the pool determined which students attended the single-gender campus; those not selected attended the coeducation campus. Those selected to the lottery, but not selected to attend the single-gender campus, were the comparison group.

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as being bilingual or as English as a Second Language learner and 28% of students were classified as being Limited English Proficient (LEP) (Texas Education Agency, 2014). Of the 84,000 students, 75% were considered economically disadvantaged (Texas Education Agency, 2014). The comparison schools were from the same large urban district with the same demographics. The performance results of the study sites were collected from the Texas Education Agency website and the district's student information system. The district has been rated as Academically Acceptable for the last eight years (Texas Education Agency, 2014).

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The stated mission of the single-gender girls' school is to develop the full potential of girls by fostering an educational environment that encourages critical thinking, inspires confidence, and nurtures both the intellectual and social development necessary to be successful in the global community. Students who enroll at the single-gender school anticipate rigorous instruction with an emphasis on math, science, and technology, field-based exploration, and extensive

leadership training. These experiences, combined with mentorship, job shadowing, and internship opportunities provide college preparation and career readiness.

Selection to the admission pool is rigorous, and involves multiple steps. The application process is intended to help the staff get to know the candidate for admission to the single-gender school. In addition to the application, applicants must also submit their most current Texas Assessment of Knowledge and Skills (TAKS) and/or State of Texas Assessments of Academic Readiness (STAAR) scores and most current academic report card with fall and spring semester grades and attendance records. Applicants must have two completed teacher recommendation forms, submitted in an envelope with the teacher's signature across the seal. At least one recommendation must be from the current math, science, or English teacher. The second recommendation may come from an elective teacher and/or a teacher from the previous school year.

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Texas Assessment of Knowledge and Skills (TAKS) and State of Texas Assessments of Academic Readiness (STAAR) math and reading scores were used as the measure for comparison of academic achievement. The test formats are relatively the same compared to the TAKS test in third through eighth grade.

Data Needs

Data identified as necessary to complete the study included student achievement in math and reading across the school years under review. Standardized achievement scores for grades six through eight of female students eligible to attend and students selected to attend the single-gender-school were used. In addition, campus demographics and staff demographics were used. This data came from campus website information and from district and campus Academic Excellence Indicator System (AEIS) reports.

Data Sources

Administrative data from the participating district served as the data sources for the study. Specifically, administrative data including Texas Assessment of Knowledge and Skills (TAKS) and State of Texas Assessments of Academic Readiness (STAAR) scores for the school years 2010-2011, 2011-2012 and 2012-2013, and demographic data for students who were eligible for the selection pool, those attending a single-gender school, and those attending co-educational schools was used.

The 76th Texas Legislature mandated that the Texas Education Agency develop an assessment for annual administration beginning with the 2002-2003 school year. Pearson Educational Measurement, under close supervision of the Texas Education Agency, designed the TAKS to assess student achievement in reading, mathematics, writing, science and social studies concepts required by the Texas education standards. The standardized TAKS test took the place of the Texas Assessment of Academic Skills (TAAS), which was implemented in 1990.

The State of Texas Assessments of Academic Readiness (STAAR) are a series of state-mandated standardized tests currently used in Texas public primary and secondary schools to assess students' achievements and knowledge learned in the grade level, implemented in the 2011-2012 school year. It tests specific content standards from the curriculum identified in the Texas Essential

Knowledge and Skills. The test was developed by Pearson Education every school year, along with the close supervision of the Texas Education Agency.

In spring 2007, the testing format changed when the Texas Assessment of Knowledge and Skills (TAKS) assessment was repealed by Texas Senate Bill 1031. The bill called for secondary schools (for grades 9-11) to take end of course assessments every time a student was at the end of taking a course, instead of taking general core subject tests (Texas Education Agency, 2013). The grade six through eight STAAR tests in reading and mathematics, by law, must be linked from grade to grade to performance expectations for the English III and Algebra II end-of-course assessments.

Data Collection

The UT Arlington Institutional Review Board (IRB) Chair, or designee, reviewed the above referenced study and found that it qualified for exemption under the federal guidelines for the protection of human subjects as referenced at Title 45CFR Part 46.101(b)(4). Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. Authorization to begin the research was approved January 29, 2014. In addition, the participating school district requires

an External Research Application to be approved prior to data collection. Both institutions' approval was granted.

Categorical variables were used to identify the students and the single-gender school setting and the coeducation school setting. The dependent variable, TAKS/STAAR scale score came from the district online student information system, and the AEIS reports. Students' identities were converted to a case number to preserve confidentiality. In addition, race, socioeconomic status, and LEP status were assigned a number to use during analysis.

Data Analysis

The single-gender school students were compared at each grade level with the coeducation school comparison group on the Texas Assessment of Knowledge and Skills (TAKS) and State of Texas Assessments of Academic Readiness (STAAR) scores. Three years of data was collected and compared across the two groups for each year (see Table 3.1).

Table 3.1 Student Assessment Testing School Years 2010-2013

2010-2011	2011-2012	2012-2013
6 th -7 th graders	7 th -8 th graders	8 th graders
TAKS Reading	STAAR Reading	STAAR Reading
TAKS Math	STAAR Math	STAAR Math

Race, socioeconomic status, English proficiency and mobility have all been shown to impact student achievement (Patterson et al., 2008). These factors were controlled by using students selected as eligible for the selection pool as the comparison group. The dependent variable was the scores of female students in the coeducation setting and those in the single-gender educational setting. Both groups of students attended coeducation feeder schools. They then attended the single-gender campus only or the coeducational campus only for the 2010-2013 school years.

Statistical strategies. Several statistical analyses were performed to respond to the research questions posed. Descriptive statistics, including means and standard deviations were computed to examine the student demographic information including students' grade level, race, economic status and English proficiency. Gathered data was coded and sorted according to the relevant categories, using an Excel spreadsheet. Data from the Excel spreadsheet was uploaded into the IBM Statistical Package for the Social Sciences (SPSS), Version 22 (2014) for the descriptive statistics to be calculated. The data was graphed to observe trends and patterns within the data. Table 3.2 details the study variables.

Table 3.2 Variables

Variable	Description	Measure
School Setting	Refers to the school setting; single-gender or coeducation	It is a characteristic that was measured on a nominal scale: 0 = single-gender, 1 = coeducation
Grade	Grade level is defined by the skills and knowledge established by the state as required for a grade level; 6 th , 7 th , 8 th , 9 th grade.	It is a numerical value that defines the placement in the school setting; is measured as an ordinal scale.
Race	A TEA classification assigned to each student based on racial traits: African-American, White, Hispanic/Latino; Asian; Two or more races.	0 = Black/African-American; 1 = White; 2 = Hispanic/Latino; 3 = Asian; 4 = Two or more races
Limited English Proficient (LEP)	A student whose primary language is other than English and whose English language skills are such that the student has difficulty performing ordinary class work in English.	It measures a student's English language proficiency. LEP is measured as a nominal scale. 0= not identified as LEP; 1 = identified as LEP
Students Socio-economic Status	A student is considered economically disadvantaged if the student receives free or reduced lunch. It is determined by the parent/guardian's income and the number of dependents residing in the home.	It measures the socioeconomic status of the household in which the student resides. It is measured as a nominal scale. 0 = not identified ED; 1 = identified as ED.

Table 3.2 continued

TAKS-STAAR	Texas Assessment of Knowledge and Skills (TAKS) and State of Texas Assessments of Academic Readiness (STAAR) scores were used as the instrument to measure academic achievement.	Descriptive statistics, including means, medians, modes, and standard deviations were computed to examine the student demographic information
Teacher: Race, gender and professional background	Years in education, education level, age, race, sex, etc.)	Descriptive statistics, including means, medians, modes, and standard deviations were computed to examine the teacher demographic information.
Campus specific offerings and requirements	Extra-curricular offerings/requirements (summer programming, activities), School student populations i.e., (Special Education demographics, bused, etc.), and Student requirements (uniforms, contract, etc.).	Analysis of campus differences were identified in graphical form to show similarities and differences.

The data came from the district AEIS report in the form of a scale score. Students were identified as Black/African American, White, Hispanic/Latino, Asian or two or more races, and then as economically disadvantaged or not, and their LEP status was indicated, again from the district AEIS report. Data was then identified as belonging to a student selected or not selected to attend the single-gender school.

The mean and the standard deviation of each test and each grouping of students were compared, based on setting. Then an ANOVA was used to determine if there was a significant difference between the achievement test scores of the girls from the single-gender study site and the achievement test scores of the girls from the comparison coeducation setting. Table 3.3 presents the research questions that guided the study and the statistical methodology used to answer each research question.

Table 3.3 Research Questions and Methodology

Research Questions	Methodology
<p>1. What was the relationship between school setting and student achievement? Specifically, was there a significant difference between achievement test scores in math and reading from 2010-2013, overall?</p>	<p>A descriptive statistical analysis was used to organize, summarize and display the characteristics of the participants of the study. An ANOVA was conducted to compare achievement scores of girls in the single-gender setting with girls in the coeducational setting in math and reading achievement.</p>
<p>When disaggregated by student race;</p>	<p>An ANOVA was used to determine the effect of race upon achievement in math and reading for both settings.</p>
<p>When disaggregated by student socioeconomic status;</p>	<p>An ANOVA was used to determine the effect of socioeconomic status upon achievement in math and reading for both settings.</p>

Table 3.3 Continued

When disaggregated by English proficiency.	An ANOVA was used to determine the effect of English proficiency upon achievement in math and reading for both settings.
2. What were the differences between single-gender and mixed-gender school settings regarding:	Descriptive statistical analysis was used to organize, summarize and display the characteristics of the school settings.
Teacher demographics (years in education, education level, age, race, sex, etc.),	Descriptive statistical analysis was used to organize, summarize and display the characteristics of the teacher demographics.
Extra-curricular offerings/requirements (summer programming, activities),	Descriptive statistical analysis was used to organize, summarize and display the characteristics of extra-curricular offerings/requirements (summer programming, activities)
School student populations, and	Descriptive statistical analysis was used to organize, summarize and display the characteristics school demographics.
Student requirements (uniforms, contract, etc.).	Descriptive analysis was used to organize, summarize and display the characteristics of the school requirements.

Table 3.3 Continued

3. How useful were Cultural Capital and Field Theory in understanding student achievement and the co-education/single-gender school setting?	This research question was answered by reflection upon study finding.
4. What other realities of academic success were revealed in this study?	This research question was answered by reflection upon study finding.

The state achievement assessment tests were changed from TAKS to STAAR over the three-year span of data (2010-2013). While STAAR includes a similar set of tests given to the same groups of students, there are significant differences. One of the biggest differences between the TAKS and the STARR is that the STAAR tests focus on one school years' worth of information. The TAKS test, by contrast, was intended to be cumulative, with questions covering several years of instruction. Although, the testing format changed, the students did not; the students compared moved from grade level to grade level together; thus, the comparison of achievement scores remained valid.

Chapter Summary

To summarize the research goals of this study, student achievement is the overarching desire of all educators. To address this research goal, a quantitative,

ex post facto research study was conducted to investigate the impact of setting between two groups of students, those attending the single gender setting to those attending the coeducation setting. The girls came from a large urban public school district. A comparison of student performance, achievement in Math and Reading, was made to determine if variations occurred in the data between the two settings. Using state achievement scores and campus data, this study also compared years of teacher service, race of teachers, campus requirements, and attendance rates relating to the two school environments.

This chapter presented a design of the study, a description of the sample, a description of the projected methodology, and a description of the analysis of data. The results of the data analysis were used to examine the impact of setting on a group of students, those attending the single-gender campus setting and those attending the coeducational campus setting.

Chapter 4

Data Analysis

Despite NCLB's goal of academic success for all students, there is a great deal of variation in student achievement across school settings (Haag, 2000). In some school settings, success is evidenced, while in other settings with similar student and community demographics, students struggle and fail to succeed (Carter, 2000; McCreary, 2011).

The purpose of this study was to examine girls' achievement results in math and reading between two settings. The two settings were a large urban single-gender school and large urban coeducation schools. The girls were from a homogeneous pool, those drawn by the lottery who attended the urban single-gender school and those not drawn by the lottery who attended the urban coeducation schools. This chapter presents descriptive and statistical analyses of demographic and variable data. Findings are reported according to the study's research questions:

The Statistical Package for the Social Sciences 22.0 (2014) was used to conduct all data analyses. Descriptive statistics and one-way ANOVAs were employed to compare groups. Alpha levels of .05 were set for all analyses. The sample included 286 girls from the single-gender school and 130 girls from the coeducation schools.

School Setting and Achievement

The first research question was what is the relationship between school setting and student achievement? Specifically, is there a significant difference between achievement test scores in math and reading from 2010-2013?

Additionally, when disaggregated by student socioeconomic status, when disaggregated by English proficiency, and when disaggregated by race?

Null hypothesis 1.a. was: H_0 There is no significant statistical difference in the achievement scores of the two groups of students; those attending the single-gender setting and those attending the traditional coeducational setting.

Null hypothesis 1.b. was: H_0 There is no significant statistical difference in the achievement scores of the two groups of students; those attending the single-gender setting and those attending the traditional coeducational setting, when disaggregated by student socioeconomic status.

Null hypothesis 1.c. was: H_0 There is no significant statistical difference in the achievement scores of the two groups of students; those attending the single-gender setting and those attending the traditional coeducational setting when disaggregated by English proficiency.

Null hypothesis 1.d. was: H_0 There is no significant statistical difference in the achievement scores of the two groups of students; those attending the single-gender setting and those attending the traditional coeducational setting when disaggregated by race.

Overall Test Scores and Setting Comparisons

A total of 416 students participated in the study from 2010-2013. The totals by location ranged from a high at the single-gender school of 286 students tested to a high at the coeducation locations of 130 students participating in the achievement tests. To test for statistically significant group differences, a one-way analysis of variance (ANOVA) was employed to examine the effect of school setting on math and reading achievement scores for each school setting. One ANOVA was employed to examine the effect of school setting on math and reading achievement scores. Additionally, descriptive statistics were run to understand variability of the scores for both groups of girls. In every tested area, TAKS Math, STAAR Math, TAKS Reading, and STAAR Reading, the mean was higher for the single-gender setting (see Table 4.1).

Table 4.1 Test Scores for Both Locations Single-gender and Coed

Test	Setting	N	Mean	SD
TAKS Math Raw Score	SG	236	*35.33	8.63
TAKS Math Raw Score	CoEd	110	33.24	8.79
STAAR Math Raw Score	SG	252	*36.14	9.33
STAAR Math Raw Score	CoEd	129	34.9	10.00
TAKS Read Raw Score	SG	258	*36.69	6.45
TAKS Read Raw Score	CoEd	121	35.42	7.12
STAAR Read Raw Score	SG	185	*35.58	6.73
STAAR Read Raw Score	CoEd	123	34.88	7.15

* = highest mean

Although all single-gender mean scores were higher in every tested area overall, only the TAKS Math overall raw score showed a significant difference between the girls' scores at the single-gender setting and the coeducation settings.

A one-way ANOVA was used to test for differences among the TAKS Math scores (see Table 4.2).

Table 4.2 ANOVA of TAKS Math Scores Across Settings

	Sum of Squares	df	Mean Squares	F	Sig.
Between Groups	327.511	1	327.511	4.342	0.038
Within Groups	25946.928	344	75.427		
Total	26274.439	345			

There was a significant effect of TAKS Math raw score on the single-gender girls achievement scores at the $p < .05$ level [$F(1, 344) = 4.34, p = .038$].

Null hypothesis for Research Question 1.a was: H_0 There is no significant statistical differences in the achievement scores of the two groups of students-- those attending the single-gender setting and those attending the traditional coeducational setting. According to the data analyzed, there was a significant difference between achievement test scores in Math at the $p < .05$ level [$F(1, 344) = 4.34, p = .038$] from 2010-2013. Thus the null hypothesis 1.a is rejected since the single-gender girls showed a significant difference in TAKS Math achievement at the $p < .05$ level where $p = .038$.

Setting and Economic Disadvantage Comparisons

Means were computed to summarize the data for the Math and Reading achievement scores of girls from the two school settings, focusing on economic status. Of the 258 students in the study, the majority in each group were identified as economically disadvantaged. The students identified as being not economically disadvantaged had higher mean scores in all tests taken in both settings. Although the not economically disadvantaged coeducation STAAR Reading score was marginally higher than the single-gender mean for that test, it was not a significant difference (see Table 4.3).

Table 4.3 Campus Setting and Economic Status

Campus Setting	Test	Economic status	N	Mean	SD
SG	TAKS Math Raw Score	Not Econ Dis	86	*37.16	7.94
SG	TAKS Math Raw Score	Econ Dis	150	34.29	8.86
CoEd	TAKS Math Raw Score	Not Econ Dis	30	36.83	6.49
CoEd	TAKS Math Raw Score	Econ Dis	80	31.90	9.20
SG	STAAR Math Raw Score	Not Econ Dis	94	*37.32	9.28
SG	STAAR Math Raw Score	Econ Dis	158	35.44	9.32
CoEd	STAAR Math Raw Score	Not Econ Dis	39	37.28	9.17
CoEd	STAAR Math Raw Score	Econ Dis	90	33.87	10.22
SG	TAKS Read Raw Score	Not Econ Dis	98	*38.51	5.77
SG	TAKS Read Raw Score	Econ Dis	160	35.57	6.60
CoEd	TAKS Read Raw Score	Not Econ Dis	39	38.15	5.61
CoEd	TAKS Read Raw Score	Econ Dis	82	34.12	7.42
SG	STAAR Read Raw Score	Not Econ Dis	62	38.10	5.64
SG	STAAR Read Raw Score	Econ Dis	123	34.32	6.90
CoEd	STAAR Read Raw Score	Not Econ Dis	39	*38.33	4.75
CoEd	STAAR Read Raw Score	Econ Dis	84	33.27	7.52

* = highest mean

Furthermore, economically disadvantaged students performed better in both TAKS Math and Reading tests taken at the single-gender campus. Figure 4.1 is a visual representation of the mean TAKS Math and Reading achievement

test scores for economically disadvantaged students when compared by campus setting.

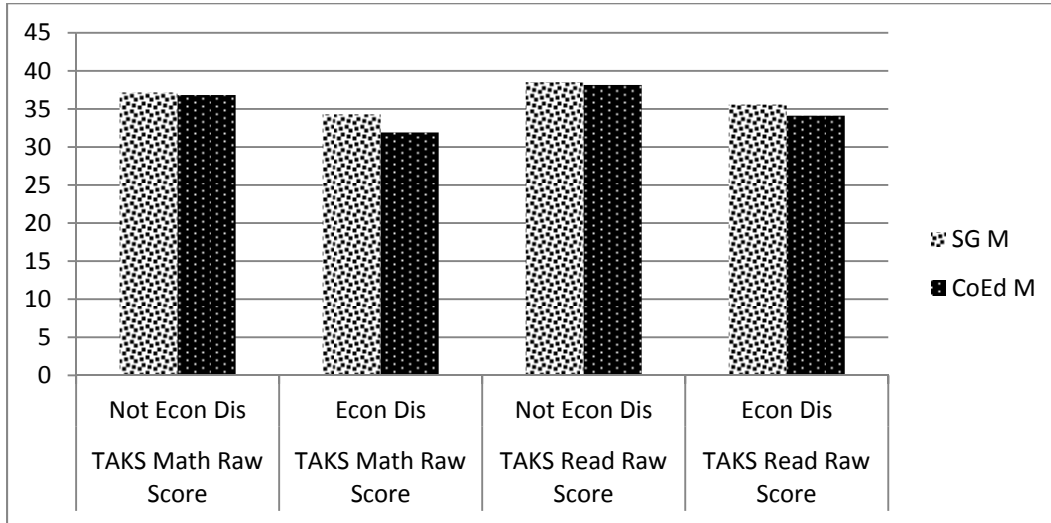


Figure 4.1 Descriptive by Campus Type

Moreover, economically disadvantaged students performed better in both STAAR Math and Reading tests taken at the single-gender campus. Figure 4.2 is a visual representation of the mean STAAR Math and Reading achievement test scores for economically disadvantaged students when compared by campus setting; the single-gender setting, and the coeducation setting.

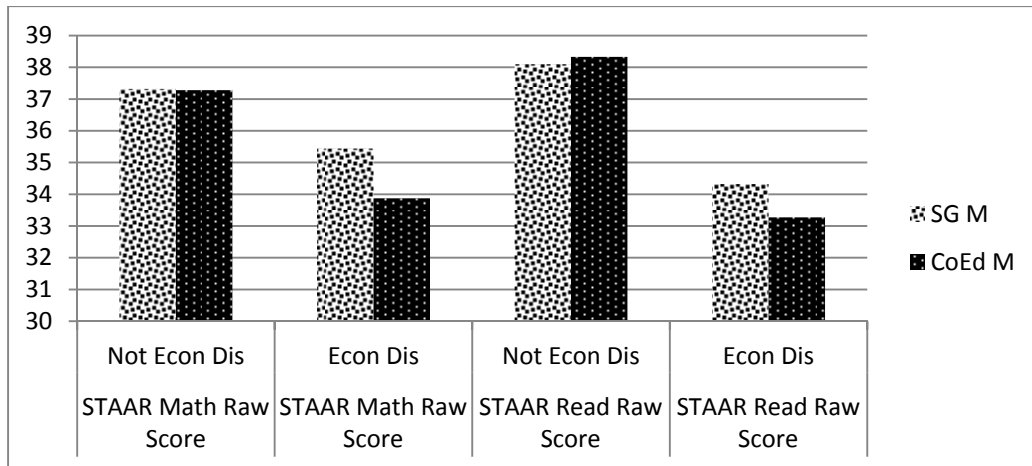


Figure 4.2 Descriptive by Campus Type, STAAR Test and Economic Status

A one way ANOVA was computed to detect significant group differences between STAAR Reading achievement scores of the girls from both settings identified by economic status (see Table 4.4).

Table 4.4 ANOVA of STAAR Reading Between Settings on Economic Status

		Sum of Squares	df	Mean Squares	F	Sig.
SG	Between Groups	588.898	1	588.589	13.902	0.000
	Within Groups	7752.054	183	42.361		
	Total	8340.952	184			
CoEd	Between Groups	681.802	1	681.802	14.855	0.000
	Within Groups	5553.369	121	45.896		
	Total	6235.171	122			

There was a significant effect for STAAR Reading raw score at both settings for the girls identified as economically not disadvantaged. For the

STAAR Reading raw scores, the data shows a significant difference between girls attending the single-gender school at the $p < .01$ level [$F(1, 183) = 13.90, p < .001$]. Additionally, the STAAR Reading raw score of the girls classified as economically not disadvantaged at the coeducation setting had significant effect in the achievement scores at the $p < .01$ level [$F(1, 121) = 14.86, p < .001$]. This indicates that both settings had a positive correlation for students identified as not being economically disadvantaged.

There was also significant effect of TAKS Math raw score on the economically not disadvantaged girls at both settings (see Table 4.5).

Table 4.5 ANOVA of TAKS Math Scores Between Settings Economic Status

		Sum of Squares	df	Mean Squares	F	Sig.
SG	Between Groups	452.161	1	452.161	6.203	0.013
	Within Groups	17056.394	234	72.891		
	Total	17508.555	235			
CoEd	Between Groups	531.006	1	531.006	7.253	0.008
	Within Groups	7907.367	108	73.216		
	Total	8438.373	109			

The TAKS Math raw score on the economically not disadvantaged single-gender girls achievement scores was at the $p < .05$ level [$F(1, 234) = 6.20, p = .013$], whereas at the coeducation setting, the girls' achievement scores on the TAKS Math test was at the $p < .01$ level [$F(1, 108) = 7.250, p = .008$].

Summarizing, students from both settings classified as not being economically

disadvantaged showed a significant effect on achievement scores for TAKS Math, so setting had no significant effect for students in TAKS Math identified as economically not disadvantaged. Students identified as not being economically disadvantaged, performed better at both setting than students identified as being economically disadvantaged.

Continuing the trend, a significant effect was found for the TAKS Reading raw score of the economically not disadvantaged girls at both settings (see Table 4.6).

Table 4.6 ANOVA of TAKS Math Scores Economic Status

Setting		Sum of Squares	df	Mean Squares	F	Sig.
SG	Between Groups	525.836	1	525.836	13.237	0
	Within Groups	10169.734	256	39.726		
	Total	10695.57	257			
CoEd	Between Groups	426.647	1	429.647	9.04	0.003
	Within Groups	5655.857	119	47.528		
	Total	6082.504	120			

The TAKS Reading raw score of the economically not disadvantaged single-gender girls achievement scores was at the $p < .01$ level [$F(1, 256) = 13.24$, $p < .001$], whereas, the coeducation girls achievement scores was at the $p < .01$ level [$F(1, 119) = 9.04$, $p = .003$]. Again, students from both settings, classified as not being economically disadvantaged, showed a significant effect on the achievement scores for TAKS Reading. Students identified as not being

economically disadvantaged, performed better at both settings than students identified as being economically disadvantaged.

The null hypothesis for Research Question 1.b was: H_0 There is no significant statistical difference in the achievement scores of the two groups of students; those attending the single-gender setting and those attending the traditional coeducational setting, when disaggregated by student socioeconomic status. According to the data analyzed, there was a significant difference between achievement test scores in Math and Reading from 2010-2013 based on students economic status. Students identified as not economically disadvantages out performed economically disadvantaged girls at both settings. Thus the null hypothesis 1.b is rejected.

Test Scores and Limited English Proficiency Comparisons

In the single-gender school setting, only six students were identified as having a negative language proficiency status (LEP), while up to 250 students were identified language proficient. Although in the STAAR Math and STAAR Reading scores the LEP students showed a higher mean average, with the limited number of LEP students, the data is not statistically relevant (Gall, Gall, & Borg, 2007, p. 145).

A one way ANOVA was computed to detect possible group differences between achievement scores of the girls from the single-gender school settings identified by student language proficiency status. Although the mean scores were

higher in TAKS Math and TAKS Reading for the students identified as language proficient, the STAAR Math and STAAR Reading raw scores showed no significant difference.

A total of 256 students participated in the different tests from 2010-2013 from the coeducation school settings. Only six students were identified as having a negative language proficiency status (LEP) while 250 students were identified language proficient. Although in the STAAR Math and STAAR Reading scores the LEP students showed a higher mean average, with the limited number of LEP students, the data is not statistically relevant (Gall, Gall, & Borg, 2007, p. 145).

A total of 129 students participated in the different tests from 2010-2013 from the coeducation school settings. Only five students were identified as having a negative language proficiency status (LEP) while 124 students were identified as language proficient. With the limited number of LEP students, the data is not statistically relevant (Gall, Gall, & Borg, 2007, p. 145). The test showed no significance for any of the areas (see Table 4.7).

Null hypothesis 1.c was: H_0 There is no significant statistical difference in the achievement scores of the two groups of students; those attending the single-gender setting and those attending the traditional coeducational setting when disaggregated by English proficiency. Due to the small number of students identified as LEP, this group of students had data that was not testable. Therefore, null hypothesis 1.c is reported as untested (see Table 4.7).

Table 4.7 Campus Setting and LEP Status

Campus Setting	Test	Language Proficiency	N
SG	TAKS Math Raw Score	Not Lep	229
SG	TAKS Math Raw Score	Lep	6
CoEd	TAKS Math Raw Score	Not Lep	106
CoEd	TAKS Math Raw Score	Lep	4
SG	STAAR Math Raw Score	Not Lep	244
SG	STAAR Math Raw Score	Lep	6
CoEd	STAAR Math Raw Score	Not Lep	124
CoEd	STAAR Math Raw Score	Lep	5
SG	TAKS Read Raw Score	Not Lep	250
SG	TAKS Read Raw Score	Lep	6
CoEd	TAKS Read Raw Score	Not Lep	116
CoEd	TAKS Read Raw Score	Lep	5
SG	STAAR Read Raw Score	Not Lep	178
SG	STAAR Read Raw Score	Lep	5
CoEd	STAAR Read Raw Score	Not Lep	119
CoEd	STAAR Read Raw Score	Lep	4

Achievement Scores and Race Comparisons

To test for statistically significant group differences, an ANOVA was employed to examine the effect of school setting on math and reading

achievement scores specifically based on students identified race. An ANOVA was employed to examine the variable of race on math and reading achievement scores at the single-gender school settings. The alpha level was set at .05 for each ANOVA. There was a significant effect of race at the single-gender school setting on the STAAR Math raw scores based on race (see Table 4.8).

Table 4.8 ANOVA of STAAR Math Scores Between Settings Based on Race

Race		Sum of Squares	df	Mean Squares	F	Sig.
SG White	Between Groups	1222.231	4	305.56	3.659	0.006
	Within Groups	20626.626	247	83.509		
	Total	21848.857	251			
CoEd White	Between Groups	861.715	4	215.43	2.236	0.069
	Within Groups	11947.975	124	96.355		
	Total	12809.69	128			

There was a significant effect of race at the single-gender school setting on the STAAR Math raw scores based on race at the $p < .01$ level [$F(4, 247) = 3.66, p = .006$]. There was also a significant effect of race at the single-gender school setting on the STAAR Reading raw scores (see Table 4.9).

Table 4.9 ANOVA of STAAR Reading Scores Between Settings Race

Race		Sum of Squares	df	Mean Squares	F	Sig.
SG White	Between Groups	488.9	4	122.23	2.802	0.027
	Within Groups	20626.626	247	83.509		
	Total	21115.526	251			
CoEd White	Between Groups	590.635	4	147.66	3.087	0.019
	Within Groups	5844.536	118	47.835		
	Total	6435.171	122			

There was a significant effect of race at both school settings on the STAAR Reading raw scores for students identified as White. There was significance at the $p < .05$ level [$F(4, 247) = 2.80, p = .027$] for White students at the single-gender campus, while White students at the coeducation setting had significant effect of race on the STAAR Reading raw scores at the $p < .05$ level [$F(4, 118) = 3.09, p = .019$]. This indicates that on the STAAR Reading test, White students performed significantly better than other races tested at both settings.

An ANOVA was employed to examine the variable of race on Math and Reading achievement scores at the coeducation school settings. The alpha level was set at .05 for each ANOVA (see Table 4.10).

Table 4.10 ANOVA of TAKS Reading Scores Between Settings Race

Race		Sum of Squares	df	Mean Squares	F	Sig.
SG White	Between Groups	292.483	4	73.121	1.778	0.134
	Within Groups	10403.087	253	41.119		
	Total	10695.57	257			
CoEd White	Between Groups	703.841	3	234.61	5.101	0.002
	Within Groups	5381.663	117	45.997		
	Total	6085.504	120			

There was a significant effect of race at the coeducation school setting on the TAKS Reading raw scores at the $p < .01$ level [$F(3, 117) = 5.10, p = .002$]. This indicates that White students at the coeducation setting performed higher on the TAKS Reading test at the coeducation setting than at the single-gender setting.

White students had a significant effect for both the STAAR Math test and the STAAR Reading test. A total of 129 students participated in the different tests from 2010-2013 from the coeducation school settings. Students identified as White had a higher mean score than any other subgroup in every test taken, not using data for students with less than five in a group (Gall, Gall, & Borg, 2007, p. 145).

Descriptive statistics were computed to summarize the data for the Math and Reading achievement scores of girls from the single-gender school setting

when disaggregated by the students' race. A total of 258 students participated in the different tests from 2010-2013 from the single-gender school setting.

Students identified as White had a higher mean score than any other subgroup in every test taken (see Table 4.11 and 4.12).

Table 4.11 Single Gender School by Race

Test	Race	N	Mean	SD
TAKS Math Raw Score	Blk/AA	74	35.46	9.3
	White	22	*36.91	6.76
	His/Lat	133	34.99	8.46
	Asian	3	31.33	13
	2 or More Races	4	38.75	9.46
STAAR Math Raw Score	Blk/AA	71	33.76	9.27
	White	25	*41.32	8.93
	His/Lat	148	36.46	9.12
	Asian	4	31.25	6.02
	2 or More Races	4	39.25	11.3
TAKS Read Raw Score	Blk/AA	79	37.34	5.16
	White	27	*38.63	7.4
	His/Lat	145	35.84	6.87
	Asian	3	40.33	4.16
	2 or More Races	4	38.5	4.93
STAAR Read Raw Score	Blk/AA	38	35.47	6.77
	White	20	*40.15	5.88
	His/Lat	121	34.83	6.69
	Asian	3	36.67	5.86
	2 or More Races	3	35.67	5.13

* = highest mean

Table 4.12 Co Education School by Race

Test	Race	N	Mean	SD
TAKS Math Raw Score	Blk/AA	20	32.55	8.03
	White	21	*37.67	5.89
	His/Lat	65	31.80	9.38
	Asian	1	39.00	.
	2 or More Races	3	36.33	11.6
STAAR Math Raw Score	Blk/AA	22	31.27	9.03
	White	25	*39.44	7.42
	His/Lat	77	34.58	10.3
	Asian	1	38.00	
	2 or More Races	4	31.75	16.5
TAKS Read Raw Score	Blk/AA	20	35.30	6.23
	White	24	*40.08	4.41
	His/Lat	73	33.86	7.40
	Asian	0		
	2 or More Races	4	36.50	9.15
STAAR Read Raw Score	Blk/AA	20	32.3	5.18
	White	22	*38.95	5.84
	His/Lat	76	34.21	7.64
	Asian	1	42.00	
	2 or More Races	4	36.25	3.86

* = highest mean

Additionally, Black/African-American and Hispanic/Latino students performed relatively better in both TAKS Math and Reading tests taken at the single-gender campus. Figure 4.3 is a visual representation of the mean TAKS Math and Reading achievement test scores for Black/African-American and

Hispanic/Latino students when compared by campus setting, the single-gender setting, and the coeducation setting.

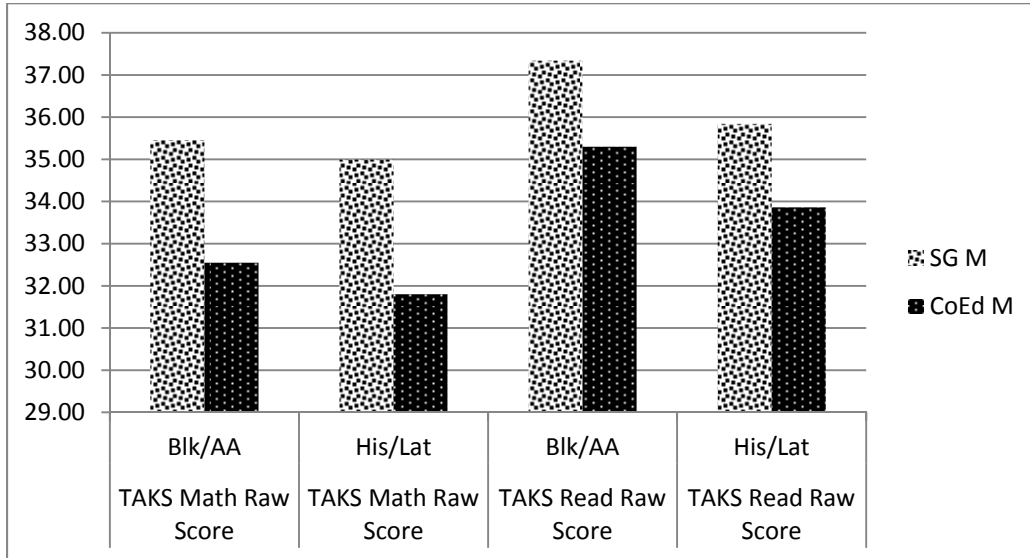


Figure 4.3 TAKS Math and Reading Comparison

Again, Black/African-American and Hispanic/Latino students performed better in both STAAR Math and Reading tests taken at the single-gender campus. Figure 4.4 is a visual representation of the mean STAAR Math and Reading achievement test scores for Black/African-American and Hispanic/Latino students when compared by campus setting, the single-gender setting, and the coeducation setting.

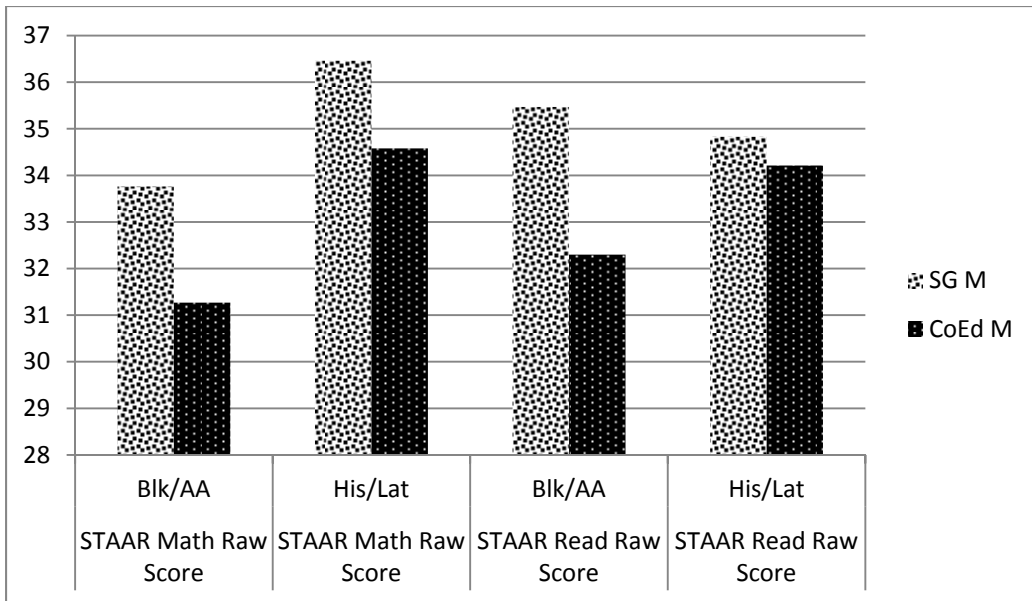


Figure 4.4 STAAR Math and Reading Comparison

Null hypothesis 1.d. was: H_0 There is no significant statistical difference in the achievement scores of the two groups of students; those attending the single-gender setting and those attending the traditional coeducational setting when disaggregated by race. Both Black/African-American and Hispanic/Latino students had a significant effect on the STAAR Math and STAAR Reading test, thus null hypothesis 1.d. is rejected.

Differences in School Settings

The second research question was: What are the differences between single-gender and mixed-gender school settings regarding: teacher demographics (years in education, certifications, education level, age, race, gender, etc.), extra-curricular offerings/requirements (summer programming, activities), school

student populations (Special Education demographics, bused, etc.), and student requirements (uniforms, contract, etc.). The null hypothesis for research question two was: There is no significant difference between the two groups of students; those attending the single-gender setting and those attending the traditional coeducational setting regarding:

- a. Teacher demographics (years in education, certifications, education level, age, race, gender, etc.),
- b. Extra-curricular offerings/requirements (summer programming, activities),
- c. School student populations (Special Education demographics, bused, etc.), and
- d. Student requirements (uniforms, contract, etc.).

The data to answer this research question came from the district Texas Education Agency (TEA) Academic Excellence Indicator System (AEIS) Report and from the campus websites.

In reviewing the data regarding teacher demographics, it is notable that 75% of the teachers at the single-gender campus were beginning teachers or teachers with less than 5 years' experience. Close to 60% of the teachers' level of experience at the coeducation campus setting was more than six years' experience with the largest percentage having 11-20 years' experience. The single-gender campus teachers also showed an average years' teaching experience of only 3.5

years, compared to the coeducation campus teachers with an average of over 10 years' experience (see Table 4.13).

Table 4.13 School Setting Demographics and Student Offerings

Teacher /school demographics:	Single-gender setting	Coeducational settings
Beginning Teacher	15.0%	6.3%
1-5 years' experience	60.0%	34.5%
6-10 years' experience	25.0%	21.6%
11-20 years' experience	0.0%	23.4%
Over 20 years' experience	0.0%	14.2%
Average years' experience	3.5	10.1
Average years' experience with the district	2.4	8.0
Professional Staff:		
Teachers	87.0%	51.8%
Professional Support	8.7%	19.2%
Campus Administrators	4.3%	4.1%
Educational Aides	0.0%	7.9%
Teachers by Race:		
African American	20.0%	22.8%
Hispanic	10.0%	19.9%
White	65.0%	54.4%
Teachers by Gender:		
Males	20.0%	27.1%
Females	80.0%	72.9%
Student Support:		
Extra-curricular offerings for students	yes	yes
School application required for students	yes	no
Summer programs for students	yes	yes

Table 4.13 continued

Activities for students	yes	yes
Special Education students	0%	0.5%
Bused	Yes	Yes
School uniforms/dress code	uniforms	dress code
School contracts	yes	no
Student Attendance	98.1%	94.4%
Class size:		
math class size	9.4	19.2
reading class size	12.7	18.3

The staffing ratio for teachers at the single-gender campus was much higher at 87.0% compared to the 51.8% at the coeducation campus settings. Conversely, the coeducation campuses had almost double the number professional support as part of their staff, whereas the single-gender campus had none. This indicates that the single-gender campus had a greater percentage of certified staff compared to the coeducation settings. The ratio of campus administrators between campus settings was consistent (see Figure 4.5).

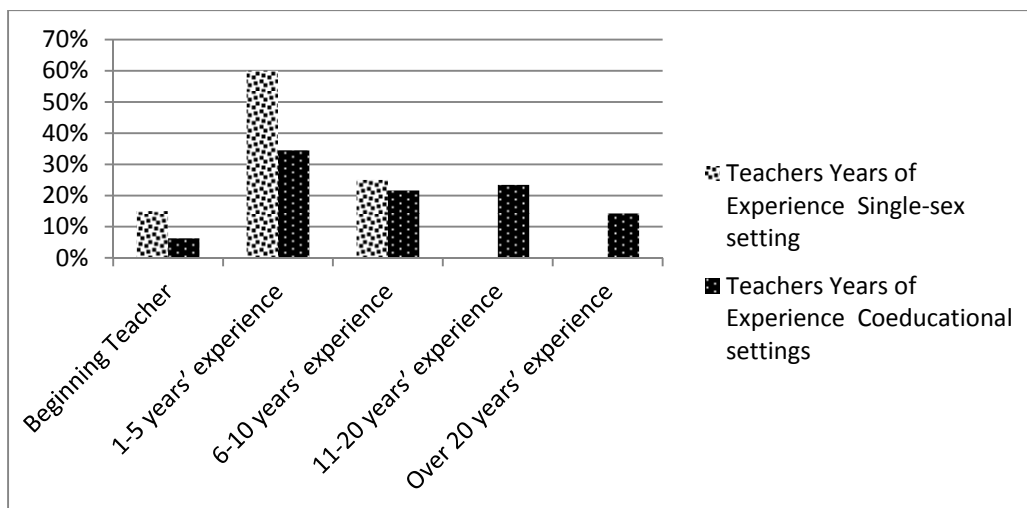


Figure 4.5 Teachers' Years of Experience by Campus Type

Teachers' identified by race and gender were compared between campuses. Both settings had an average of around 20% of African American teachers, although the percentage of Hispanic teachers was twice the percentage at the coeducation setting. The single-gender setting did have more White teachers than the coeducation campuses, however only by a margin of about 10%. The campus ratio of male to female teachers was fairly consistent between settings (see Table 4.13).

Student support opportunities were an additional area appraised. Both campuses offer similar extra-curricular offerings for students, such as University Interscholastic League (UIL) events, Student Council activities, Choir competitions, extra tutoring and different types of field trips. Since both campus

settings are part of the same large urban school district, the student support opportunities are district supported and recommended (see Table 4.13).

Students must live within the district boundaries to attend one of the campuses, and must live in the campus boundary. Students from outside the district boundaries must apply to attend any of the district campuses. All students must apply to attend a school that is outside of their home campus boundary and admittance is allotted up to campus capacity. However, students that want to attend the single-gender campus must apply and go through a selection process. The selection process includes a contract between student, parent and campus, where all parties must consent to support the student to achieve and the student must commit to go to college (see Table 4.13).

The district requires all campuses to have a dress code, and students are expected to adhere to the dress code any time they are on campus or at a campus-sponsored event. In addition, teachers have a standard of dress to which they must adhere. The single-gender setting goes beyond the regular dress code for students and requires the students to wear a specific uniform (see Table 4.13).

Student attendance is much higher at the single-gender campus (98.1%) than at the coeducation campus setting (94.4%). The attendance data of students at the single-gender setting indicated a positive change between the two settings. That means on average, a student in the single-gender setting is in class for seven more days than a student at the coeducation setting. In addition, class sizes are

disproportional as well. At the single-gender campus, where there is a significant difference in math achievement, the average math class size is nine students, whereas at the coeducation setting, the class size is a little more than double that at 19 students on average. Reviewing data from Table 4.1, although all single-gender mean scores were higher in every tested area, only the TAKS Math raw score showed a significant difference. There was a significant effect of TAKS Math raw score on the single-gender girls achievement scores at the $p < .05$ level [$F(1, 344) = 4.34, p = .038$]. This corresponds directly to the results of a large scale international study of eighth-grade math achievement and class size. In the international study, the United States was unique in that reduction of math classes from 19-29 students to 18 or below increased the students' math achievement by "32 points in absolute terms" (Pong & Pallas, 2001, p. 269). The reading class ratios are not so disparate, although the single-gender campus has a third of the students per reading class as the coeducation campus setting (see Table 4.13).

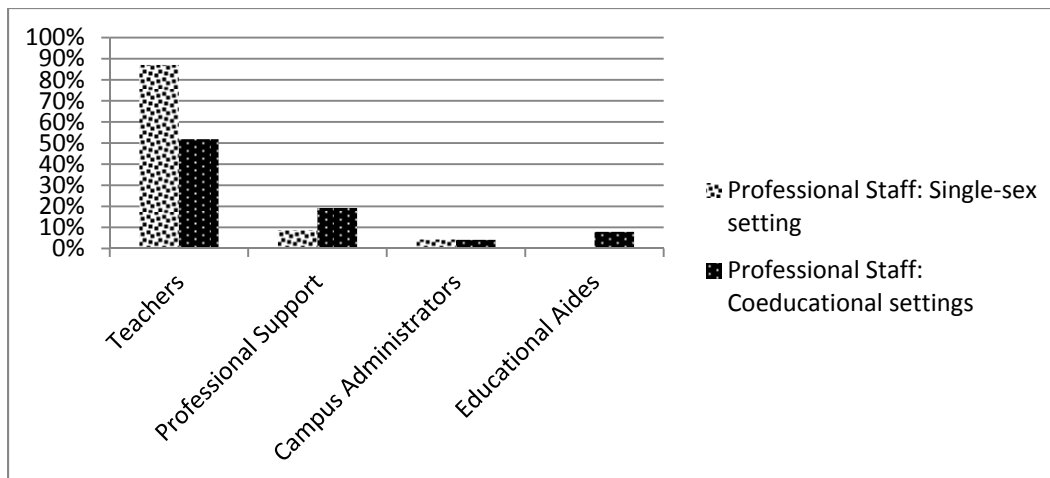


Figure 4.6 Professional Staff by Location Type

Based on the information gleaned from the campus demographics, the single-gender campus also has a smaller teacher to student ratio, with 87% of campus personnel serving as teachers, compared to only 52% of the personnel at the coeducation campus settings. With the extra personnel the single-gender campus, single-gender students receive more instruction from certified personnel than at the coeducation campus. Even though it would seem that the coeducation campus settings have more professional support, when you compare the data, 9% at the single-gender campus and double that at the coeducation campus settings with 19%, this is at the expense of certified teachers (see Figure 4.6).

Cultural Capital and School Settings

The third research question was: How useful are cultural capital and field theory in understanding student achievement and the mixed-education/single-gender school settings?

Developed in the early 1960s, Bourdieu's concepts of cultural capital and field theory have been used to explain the disparities in the educational attainment of children from different social classes (Horvat et al., 2003). Cultural capital is what one knows, is familiar with, and feels comfortable with, based on life knowledge, experience or connections (Winkle-Wagner, 2010). Those who have cultural capital have unseen advantages, and "student achievement is influenced by the inequitable distribution of Cultural Capital" (Patterson, Niles, Carlson, & Kelley, 2008, p. 93). The primary purpose of this study was to investigate differences in student achievement based on setting and to generate a better understanding of the various dimensions of cultural capital and field theory and how the school setting might influence students' access to these forms of capital. This study drew on Bourdieu's (1977) concepts of habitus, field or location, and different forms of capital, specifically cultural capital, in an attempt to understand how the environment impacted students' achievement.

After reviewing the data from both school settings, the economically disadvantaged students from the single-gender setting had higher mean scores for every test taken when compared to those of the students at the coeducation school setting. Additionally, when factored by race, even though the single-gender White students had the highest average mean, when compared to the coeducation campus setting, the Black/African American and Hispanic students mean scores were higher at the single-gender campus as well.

This study drew on Bourdieu's (1977) concepts of habitus, field, or location, and different forms of capital, specifically cultural capital, in an attempt to understand how the environment impacts students' achievement. The demographics of American public education today reflect a student population that is increasingly poor, and both ethnically and culturally diverse (Aud, Fox, & Kewal-Ramani, 2010). African American and Hispanic students are more likely to come from low-income families (Choy, 2000), more likely to be at-risk for dropping out of school (Jalongo & Sobolak, 2011), and less likely to have college-educated parents (Jalongo & Sobolak, 2011).

Cultural capital is what one knows and is familiar with. More than for girls in coeducational settings in this district, I believe the data indicate that the single-gender campus built cultural capital with the students by requiring them to be involved in their academic success. Not only did the student have to sign a contract, so did the primary caregiver. In addition, having both the student and the parent fill out and sign the contract, the campus permitted the student and parent to be partners with the campus, giving them access to this unfamiliar field. Not only were parents participating as partners in their student's education, they were shown that their input and involvement was valued. By requiring the parent to participate with the student in campus activities, the campus empowered the student and parent to navigate the educational environment, broadening their field and building cultural capital in both the student and the parents.

Furthermore, requiring the girls at the single-gender campus to wear uniforms, the campus created an environment of high expectations. The students are given a uniform with a special emblem that signifies they attend the single-gender campus. Although, a large scale quantitative study concluded that there is “little evidence that uniforms improve achievement in schools” (Yeung, 2009, p. 872), I believe it is possible that the unique uniforms produced an aura of prestige for the students and provided an environment where there was less distinction between the *haves and the have nots*. This created an equal playing field for the students, and made them feel that they were all on the same team.

High expectations were also confirmed by the extremely high attendance rate at the single-gender campus. Since studies show that there is a “statistically significant relationship between student attendance and student achievement” (Roby, 2004, p. 12), the higher rate of attendance at the single-gender campus may be due to the students’ field or habitus. With campus teachers and staff holding the parents and students to the contract terms, including high attendance rates, cultural capital that is valuable in the school setting is being modeled and sculpted. The campus is holding the entire team responsible for the students’ achievement, and that means that students need to be in class to learn. Not only were the students being shown how to navigate the educational environment, they were being shown how to have pride in belonging to a group and holding the entire group accountable.

Other Realities

The fourth research question was: What other realities of academic success were revealed in this study? In addition to positive outcomes for all races and all socioeconomic classes at the single-gender campus, there was also a positive impact of the single-gender school setting on academic achievement. Given that students were randomly selected from a homogeneous pool and taught the same curriculum, we can conclude that the single-gender setting had a positive impact upon student achievement.

This is a school of choice, and parents/students selected to apply to the single-gender school. This fact alone creates a unique group of students, who want to improve their educational trajectory. Overall, there was more effect in Math than in Reading. This may be because the focus of the single-gender setting is on math, science and technology.

To summarize, the purpose of this study was to examine girls' achievement results in Math and Reading between two settings. The initial area of analysis in the study was achievement scores in Math and Reading between the single-gender setting and the coeducation setting. The comparison indicated a positive influence for low socioeconomic students and for Black/African-American and Hispanic/Latino students at the single-gender setting. White

students and students not classified as economically disadvantaged performed higher at both settings.

Although the number of LEP students overall was limited, there were more LEP students at the single-gender setting than at the coeducation settings. Given the small number of LEP students from both settings, the only comment that can be made is that the small number of LEP students in the single-gender setting did have a higher mean in three of the four tested areas with a smaller standard deviation. This indicates that there is less variability between the scores (Gall, Gall, & Borg, 2007).

Given that the group of students under investigation came from a homogeneous pool, and that the selection process was rigorous, the overall conclusion is that the single-gender setting makes a positive, significant difference in the educational achievement scores for all students, especially the low socioeconomic minority students. The composition of the campus setting does matter to that population of society, thus the single-gender setting can be postulated to help close the achievement gap.

Chapter Summary

The current chapter consisted of a presentation of the data organized around the four research questions. The data was presented in several different formats. First the data was presented in a table format with the significance

indicated and identified. Additionally, the data more suited to be showcased visually was showcased in graphs.

In Chapter Five, there will be an overview and summary of this study, conclusions, significance, as well as more detailed discussion of the findings and results. It will also include implications and limitations of the study with recommendations for possible future research and discussion.

Chapter 5

Summary of the Study, Conclusions, Limitations, Future Research and Discussion

This chapter summarizes the culmination of a research study designed to evaluate the achievement of students at two different school settings. The first section of this chapter includes an overview of the study. The second section of this chapter discusses and summarizes the results of the study. The next section of this chapter includes the implications, limitations, and applications of this study with recommendations for future research. The final section provides a discussion of the study and reflection now that the work is completed.

Overview of the Study

Single-gender education is deeply rooted in the Fourteenth Amendment and the equal protection clause. New federal regulation developed from the No Child Left Behind Act of 2001 allowed the public school system to legally offer gender specific campuses to their students. Prior to the new regulations in 2006, there were few public schools offering the single-gender setting as an option (National Association For Single-Sex Pubic Education, 2011). Since the new regulations, the number of districts offering the single-gender campus option has grown.

A review of the literature has shown a great divide in opinion regarding single-gender education in the public school system. Parental choice of school

setting for their student results in differences in opinion, not only based on fact, but based on emotion. Some proponents of single-gender education fear that the different learning styles of all students are not addressed in the traditional coeducation public school setting, thus the need for single-gender settings. Others want the ability to place their child in a single-gender setting comparable to private schools single-gender settings. Opponents of the single-gender model, such as the American Association of University Women, the American Civil Liberties Union, and the National Organization for Women argue that any new law supporting single-gender education would undermine the provisions of the Education Amendments of 1972 (Title IX) and should not be permitted.

The overarching problem explored in this study was despite NCLB's goal of academic success for all students, there is a great deal of variation in student achievement across school settings (Haag, 2000). In some school settings, success is evidenced, while in other settings with similar student and community demographics, students struggle and fail to succeed (Carter, 2000; McCreary, 2011). The purpose of this study was to examine girls' achievement results between two settings, single-gender and coeducation. Middle school administrators as well as district leadership are looking at every avenue to find ways to increase mandated test scores (Dee, 2007). With this single-gender option now available, the question begged to be answered relates to whether the

single-gender campus setting is a more effective learning environment that results in a difference in achievement scores based on setting.

Summary of Key Findings

The findings of this study were indicative of a successful public single-gender program, one that was successful in closing the achievement gap for low socioeconomic, minority students. Various conclusions were drawn from the findings of this research study.

School setting and achievement. According to the analysis, there was a significant difference between achievement test scores in math and reading from 2010-2013. The results of descriptive tests found that for each tested area, the single-gender campus had a higher mean than the coeducation campus. Although all single-gender mean scores were higher in every tested area, only the TAKS Math raw score showed a significant difference at the $p < .05$ level [$F(1, 344) = 4.34, p = .038$].

Socioeconomic Status, LEP Status and Race. Differences were identified when disaggregated by student race and student socioeconomic status. White, not economically disadvantaged students, had higher mean achievement scores in all tests studied at both settings. With the small sample size of the LEP students, the data were not statistically relevant (Gall, Gall, & Borg, 2007, p. 145).

Staffing ratios and class sizes were found to be diverse between the two campus settings. After appraising the data regarding teacher demographics, it is

worth noting that the majority of teachers at the single-gender campus were beginning teachers or teachers with less than five years' experience. Compared to the coeducation campus, where the majority of teachers' have 11-20 years' experience, this represents a noteworthy aspect. The single-gender campus teachers revealed a 3.5 average years' teaching experience compared to the coeducation campus teachers with over 10 years' average experience.

While investigating the amount of professional staff support, it became apparent that the single-gender setting had more certified support than the coeducation campus. Although the coeducation campus did supplement the teaching staff with more professional support, such as teacher aides, with twice as many support positions compared by setting, teaching staff by gender and race was consistent across the two settings.

There were a few differences regarding the extra-curricular offerings/requirements (summer programming, activities), school student populations (Special Education demographics, bused, etc.), and student requirements (uniforms, contract, etc.) between the two settings. Both settings offered extra-curricular offerings similar in nature. Both settings came from the same large urban public school district where extra-curricular opportunities are overseen and monitored. One major difference between the school settings was that the single-gender campus required a rigorous application process, whereas the coeducation campus setting had only the boundary requirements. Summer

programs and student activities for the students were again based on the district governed mandates and were similar in nature.

Another difference was that the single-gender setting had no special education students, which was due to the required portion of the application process where all students must have passed all state mandated tests to apply for the single-gender campus. Furthermore, the student dress code at the single-gender setting goes above the districts dress code by requiring the girls to wear uniforms with the campus insignia embossed on specific campus vests, shirts, sweaters, and dresses. This sets a much higher standard than the common dress code at the coeducation setting, which only requires students to keep their shirts tucked into their pants or skirts and to not have any type of advertisement for alcohol or tobacco on their clothing. Conversely, teachers at both settings have the same standard dress code, based on the district's "Threads of Success" program, which requires teachers and staff to look professional at all times.

Bourdieu's cultural capital and field theories. Accepting that a field/school is a hierarchically structured domain of interaction where players/students engage in practice, it appears that the setting had a positive effect on student achievement at the single-gender setting. The students who were studied came from the same homogeneous pool and participated in the same rigorous application process, which indicates that the achievement scores should not have been significantly different. Knowing that minority, low socioeconomic

students did have a relatively greater level of achievement at the single-gender setting, their cultural capital increased, which leads to the view that their field of education increased as well.

Other realities of academic success. Bourdieu appreciated that cultural capital is not constituted solely by high culture. He pointed out, for example, that students inherit cultural capital in the form of critical thinking skills, writing skills, linguistic skills, and scientific skills (Bourdieu, 1977). For minority, low socioeconomic students, the single-gender setting had a significant effect on the STAAR Reading test, which is based on critical thinking skills, writing skills and linguistic skills.

Conclusions. In conclusion, the literature review of the prior history, research and theory related to single-gender education was lacking. This study is a valuable addition to the body of research regarding single-gender education in the public school sector. Earlier in this study, I explained that the history of single-gender education in the American public education sector was quite limited. In addition, the research related to this subject was often inconclusive or contradictory. Therefore, the most applicable resource to gauge the impact of setting was to compare students from as homogeneous pool as possible. With the rigorous application process employed by the two settings reviewed, this study manifested a positive relationship between minority, low socioeconomic students and positive academic achievement.

This study found that low, socioeconomic, minority students made greater achievement gains in the single-gender setting than White, not economically disadvantaged students. White students outperformed students in both math and reading achievement scores in both settings. This aligns with previous research that shows that “low income black children showed the greatest gender gap in achievement and the most improvement once placed in single-gender schools” (McCreary, 2011, p. 467).

Significance and Implications of the Study

Studies of U.S. public school single-gender and mixed-gender school settings using homogenous student groups are lacking. In addition to filling this methodological gap in the literature, every study should impact or influence research, theory, and practice. This study does as well in the following ways.

Studies of U.S. public school single-gender and mixed-gender school settings using homogenous student groups are lacking. In addition to filling this methodological gap in the literature, every study should impact or influence research, theory, and practice. This study does as well in the following ways.

Research

School leaders across the nation who are looking for answers are finding that the scholarly, peer reviewed research available is based on either private and or religious schools or on schools based outside of the United States. Although some studies indicate that students in single-gender settings show academic gains

when compared to students in traditional coeducation settings, the overwhelming majority of United States comparisons are between private or religious schools and coeducational public schools (Mael, Smith, Alonso, Rogers, & Gibson, 2004).

As recent as January of 2012, reports being published in U.S. periodicals marketed to public school leaders indicate that single-gender schools benefit some girls, but are not inherently beneficial for boys, are based on a study from the Republic of Trinidad and Tobago (Zubrzycki, 2012). Even the research done by the U.S. Department of Education, based largely on foreign studies, indicated that the findings were inconclusive. According to the 2008 U.S. government report on single-gender schools, additional studies in U.S. public single-gender schools are needed to better understand the differences between single-gender schools and coed schools and their impact on student performance and outcomes (Department of Education, 2008). Since most students in the United States must opt into a single-gender school, research is not conclusive as to benefits of public single-gender schooling.

Since the research has shown that “low income black children showed the greatest gender gap in achievement and the most improvement once placed in single-gender schools” (McCreary, 2011, p. 467), the question of whether the single-gender environment led to the improvements, rather “than other factors, remains disputed” (McCreary, 2011, p. 467). By comparing students from the homogeneous pool, setting alone was the tested variable.

With the resurgence in the interest of single-gender schooling, and recognizing that research studies dealing with real data, rather than just anecdotal information, this study adds solid empirical research findings to the question of single-gender schools and their viability. This research looked at public school settings in a large urban setting, unlike most studies that are based on private schools or schools outside of the United States. This research study adds to the field of knowledge of public single-gender school setting in the United States. Based on the research by the Department of Educations, there is limited research in the United States on “whether public single-gender education might be beneficial to males, females or a subset of either group” (U.S. Department of Education, 2005, p. ix). This study adds to the body of knowledge.

Knowing that students from minority, low socioeconomic groups are falling farther behind the White, non-economically disadvantaged students, the results of this study indicate the need to continue to research this setting. Based upon this study, it seems prudent to look at the single-gender setting specifically as a way for this grouping to raise student achievement. Specifically, knowing that students from minority and economically disadvantaged/low socioeconomic backgrounds are particularly at risk of failing, this research is timely and valuable.

Theory

The theory of Cultural Capital states that economic obstacles are not sufficient to explain disparities in the academic achievement of students from

different socioeconomic situations (Bourdieu, 1977). Advantages or disadvantages may be created by the environment. I used Bourdieu's Theory of Cultural Capital to base the collection and analysis of data to either support or refute the hypothesis of the single-gender setting versus the coeducational setting and the impact on students' academic achievement.

One foundation of Cultural Capital and Field Theory is that exclusive advantages or disadvantages may be created based on the environment (Reay, 2004). Do the advantages of a single-gender setting or field result in better test scores? Does the setting/field add Cultural Capital to the selected students due to the selection and inclusion of the study site? The findings from this study add insights into the usefulness of the theory of Cultural Capital and Field Theory for understanding the advantages or disadvantages of single-gender settings on students' academic achievement.

The present study used Bourdieu's cultural capital and field theories in a new context. Specifically, it provided a unique and helpful lens through which to view the effect of the single-gender educational setting. According to Bourdieu's theory, you can choose to depict your status and distance yourself from lower groups. By placing minority, low socioeconomic students at the single-gender setting, where the setting mimicked the *private school setting*, and students were distanced from students whose parents were not as focused on their students' education, their field was changed. They are learning how to behave in the

unknown world of academia, how to speak the language, study skills and how to emulate positive actions that they see as common in the single-gender setting. Thus, they were gaining the attributes needed to continue success in the field of academia and gaining entrance to another culture or building cultural capital.

The usefulness of cultural capital and field theory in understanding student achievement and the mixed-education/single-gender school settings was another underlying theme of the study. Given the significant achievement outcomes of this research study, it follows that the single-gender school setting must alter the cultural capital of the minority, low socioeconomic students attending the school by setting different and higher expectations, changing the field. Parental support for the program was crucial from the start. Since Federal regulations require that the single-gender setting opportunity be completely voluntary, they had to have buy-in from the very beginning. This gave parents a voice in their students' education. Inviting parents into the building built capital in the parent. The expectation that the student would be in class was teaching accountability to the student and parent. The single-gender school setting must level the playing field, giving equally poor minority students advantages just by the single-gender setting teaching students what is necessary to successfully navigate the unfamiliar academic setting. The results of this study find that the single-gender setting increased academic success for minority, low socioeconomic students.

These findings suggest additional motivation for supporting the public single-gender model. Generally, comparing one model against the other creates the idea that one model is better than the other. Public education needs to focus on developing reform measures that foster growth in the students who minimize or eliminate the achievement gap. Achievement scores are the basis of school accountability in the current state. If low socioeconomic, minority students perform better in this type of setting, it seems reasonable that large, urban, districts with high minority populations look to this type of setting as a way to close the achievement gap. I believe the lottery selection is a viable part of the success of these students. Having both student and parent fill out the rigorous, required application, and go through the interview process, is a paradigm shift. Parents are made aware that their involvement is valued and carries the responsibility of being part of the team to ensure that the student graduates high school and attends a four-year institution of higher education. Again, with the application process, student and family are being shown that education is a gift, something to be cherished and valued, not a right or a necessary evil that has to be gotten through. This is where the shift comes. Both student and parent learn to value the education and the environment as a way to change the future, one student at a time.

Practice

Why the single-gender setting works in some cases and not in others is a question educators are striving to explain and understand (Anfara & Mertens, 2008). With the large discrepancy in the achievement rates of Texas's largest growing populations, African American and Hispanic students, continuing research concerning the single-gender setting and these populations was necessary and timely (Texas Education Agency, 2011). The Federal Government places three stipulations on public school districts that choose to implement single-gender schools. Sections 5131(a) (23) and 5131(c) of No Child Left Behind (NCLB) of 2001 spell out the legalization of single-gender education in public schools based on the following stipulations. The regulations cover (a) the rationale of need for a single-gender offering, (b) a co-education alternative to the single-gender option, and (c) a biennial review to determine effectiveness of the single-gender setting (Mael, Alonso, Gibson, Rogers, & Smith, 2005). Not only are single-gender schools now legal, the creation of public single-gender schools was encouraged with incentives available for school districts that implement single-gender schools (Anfara & Mertens, 2008; McCreary, 2011).

Since making single-gender education available to the masses was supported by legislators (Cable & Spradlin, 2008), school districts are pushing forward with single-gender schools. Even though single-gender schools have continued to open in the U.S., proponents and detractors are struggling to find

reliable U.S. based research on the benefits of the different school options. Although there are some small-scale studies and anecdotal information, solid empirical research was lacking. Parochial, private and international studies are being generalized to schools and students in the public school sector of the United States. As Rosemary Salomone stated in her book, “Anyone familiar with education research methods would agree that all the conditions for a valid, reliable, and useful comparative study simply do not exist” (Salomone, 2003, p. 9). This study provides such a comparison. Additionally, researchers have a variety of methodological concerns centering on selection bias. The student populations of single-gender schools are voluntary, so the basis of comparison to coeducation is flawed. Are the students who choose to attend single-gender schools more motivated or academically inclined? Do their families hold higher aspirations for their students’ success? Are the differences due to gender or the background differences? “There is no definitive way to tell whether any differences in outcomes are the direct result of gender organization or merely the effect of background differences between student populations” (Salomone, 2003, p. 9). This study provided evidence of academic achievement among young women attending a single-gender school.

The student results provided meaningful implications within the field of single-gender education. In addition, implications within the focus of cultural

capital were provided. These implications are presented in three sections, including research, theory, and practice.

This study's participants' came from a large urban public school setting with over 75% of the students classified as being economically disadvantaged. The majority of the minority, low economically disadvantaged students attend schools that are low performing. School districts need to look at transitioning their low performing campuses of minority low socioeconomically students to see if the single-gender setting can change the mindset of the community. Most families want their students to be successful, but lacking the cultural capital, generation after generation continues to follow the same path as the generation before them. Education is the key to change; we need to focus on our students who need us most. Additional implications of the study are that it may force a reexamination of how public education views the single-gender setting. Even if a campus is coeducation, the possibility of placing minority and low socioeconomic students in single-gender specific classrooms for math and reading may be a viable alternative to an entire single-gender campus.

Placing these schools in the most needed settings would allow the capital to accumulate, the local residents could become part of the solution as they work with the school to identify problems, share ideas, and identify solutions to problems which benefit the entire community. The evaluation of the local community as being either a desirable or undesirable place for students to go to

school could change one school at a time. Education becomes seen as a privilege and a way to break the cycle of poverty.

Limitations

There were some limitations in this study that need to be addressed. The number of LEP students was too small to indicate any effect. This is a large group of students in the district being studied and would have been relevant information. Additionally, with the state changing tests in the years of study from TAKS to STAAR and End of Course (EOC) formats, the scores were difficult to compare.

In addition, student standards were more rigorous at the single-gender setting. Requiring both parent and student to commit in person and write that they were committed to academic success may be factors that are missing in the coeducation setting. Having both parent and student pledging in word and by signature that the student will attend college following graduation may represent another underlying factor to consider.

Recommendations for Future Research

With the positive outcomes seen from the current study, researchers should follow the single-gender students until they graduate, and then follow up with how many of the students do go to college, if they receive academic scholarships, which types of higher education campuses they attend, and then if

they go on to graduate from college. In addition, research should consider the fields into which the students go and how long it takes them to complete a four-year degree. Furthermore, I recommend investigation into the types of results which are seen in the other core areas such as science and social studies/history. Research should also enquire into to the arts, choir and band, to determine if so much emphasis is placed on core subjects that the fine arts are neglected. These are all questions that come to mind as a result of the current study.

I would also recommend that the same type study be completed at a single-gender boys' campus to see if the results are as favorable. This same larger urban district has now opened a single-gender boys' campus. It would be interesting to see the outcomes of those students. In addition, if placing minority, low socioeconomic students in single-gender specific classrooms for math and reading is implemented as an alternative to an entire single-gender campus, those results would need to be analyzed as well.

Additionally, since the number of LEP students were too limited to include in this study, additional research focusing on the specific needs of LEP students' needs to be studied. Twenty-seven percent of the students from the district under review are classified as being bilingual or as English as a Second Language learner and 28% of students are classified as being Limited English Proficient (LEP). Considering that the largest growing minority is the

Hispanic/Latino race, this group needs additional support that a single-gender campus may offer (Texas Education Agency, 2014).

Discussion: Lessons Learned

In sum, the findings of this study demonstrated the viability of the public single-gender education model in closing the achievement gap in the low socioeconomic minority students. These factors were manifested in descriptive statistics. Even though overall the White, not economically disadvantaged students had the highest mean scores of every test taken, it is the second layer that shows the rest of the story. When students are held to high expectations, signing a contract, expected attendance, the wearing of uniforms, setting a goal of not only getting into a four year institution, but attending, these students outperformed students just like them, being taught the same curriculum at the coeducation school.

This has been an amazing journey for me. I realize that all my life I have been working on building my cultural capital. First by emulating my teachers in their speech patterns and action to trying to please them, I was changing my mindset. I am proof that there is significance in providing students from low-income backgrounds with a strong network of academic and social support, power, utility, and significance within a school context. I did not have the opportunity to attend a single-gender setting, but I listened to my teachers and did

exactly what they expected; I needed their approval and I emulated them until I became them. Then, by going against my family's wishes and pursuing a college degree, I was adding to my cultural capital and changing my field. I learned how to exist in two worlds, the world of my parents and the world of academia. I know that education is the defining factor to changing history. Education levels the playing field.

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