AN INVESTIGATION OF THE IMPACT OF SINGLE-SEX CLASSROOMS ON SELF-ESTEEM IN MIDDLE SCHOOL GIRLS

by

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ABSTRACT

LAURA CATHEY HART. An Investigation of the impact of single-sex classrooms on self-esteem in middle school girls. (Under the direction of DR. JEANNEINE JONES).

Overall, research on the effectiveness of single-gender education is inconclusive. However, research does indicate that some benefits beyond academic achievement may be possible. This is particularly true for middle-school girls, who often struggle with social interactions related to adolescence, including self-esteem and anxiety stemming from the pressures of social conformity. When considering this problem from the theoretical perspective of egalitarian-liberal feminism, single-gender education emerges as possible solution to these problems.

This study investigated the potential benefits of participation in a single-gender classroom on 6th grade females over a three year period. A total of 109 participants were involved. Girls in single-gender classrooms were compared to those in mixed-gender classrooms on variables of *self-esteem*, *academic attitudes*, and *student satisfaction*. Interviews and open-ended participant responses provided feedback on the participants' experiences. Statistical significance was observed on *student satisfaction* and qualitative data produced themes indicating a high degree of participant satisfaction with the single-gender program. Results clearly showed that the single-gender participants viewed their experiences positively overall, and that participation in single-gender programs can produce higher levels of *student satisfaction* (as it was defined in this study).

DEDICATION

"Were it not for the way you taught me to look at the world, to see the life at play in everything, I would have to be lonely forever."

— Ted Kooser, *Delights & Shadows*

"Let my girls be Hermiones, rather than Pansy Parkinsons."

— J.K. Rowling

"You may not control all the events that happen to you, but you can decide not to be reduced by them. Try to be a rainbow in someone else's cloud. Do not complain. Make every effort to change things you do not like. If you cannot make a change, change the way you have been thinking. You might find a new solution."

— Maya Angelou, *Letter to My Daughter*

To Savannah: You are a constant joy to me in all things. I have great faith in you and your future. Always remember to laugh every day.

To Tyler: Your positive attitude and smile make my day. Thank you for remembering to ask me, "How's the dissertation going?" now and then. I am very proud of the caring young man you are turning out to be.

To Patrick: Your sense of humor gives us all a boost when we need it most. I know you will be wildly successful in whatever you choose to do. Thanks to The Great Me.

I love you all.

"… the best part of me was always you."

— The Script, *Breakeven*

"It had long since come to my attention that people of accomplishment rarely sat back and let things happen to them. They went out and happened to things."

— Leonardo da Vinci

To Walter: As you frequently reminded me, time was marching on whether I finished my degree or not. Thankfully, I had you to support me as I soldiered on. I am lucky to have you. I love you, too.

"What's the good of news if you haven't a sister to share it?"

— Jenny DeVries

To Robin: Thanks. For everything.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

Over the last thirty years, the field of education has seen a surfeit of teaching strategies flooding our classrooms. From Thinking Maps to Montessori Schools to Problem Based Learning, educators now have a wide array of options by which to teach students in meaningful ways. Despite all the research and new strategies, however, startling gaps exist between some student learning groups: Children of middle-to-high income families still outperform children living in poverty; African American and Hispanic students regularly underperform on tests of achievement compared to their white counterparts (Ladsen-Billings, 2006; U. S. Department of Education, National Center of Educational Statistics, "Findings in Brief, Reading and Math 2011," 2011b). The nationwide dropout rate, while improved in the last twenty years, hovers around 8% (U. S. Department of Education, National Center of Educational Statistics, "The Condition of Education," 2011a), and as a nation we are building almost as many prisons each year as schools (Bureau of Justice Statistics, 2008; U. S. Department of Education, National Center of Educational Statistics, "Number of educational institutions, by level and control of institution: Selected years, 1980-81 through 2009-10," 2011c). Clearly, while education in America has made many strides, there is a substantive lack of progress among some very important groups.

Brain-Based Research Leverages Gender Differences

In an effort to address these achievement issues, educational researchers and scientists have begun to look more closely at the human brain and how it works to

process and store information. From this research, the idea that gender plays a pivotal role in how we think and learn has re-emerged (Gurian, Stevens, & Daniels, 2009a; Gurian, Stevens, Henley, & Trueman, 2010; Sax, 2005a; 2005b; 2007; 2010). This is not a new idea: as early as the 1920s, Thomas Briggs, a Professor of Education at Columbia University, wrote "There is some denial of the statement that in early adolescence boys and girls advance more satisfactorily if segregated in certain subjects; [sic] but on the whole the evidence tends to prove it" (Briggs, 1920, p. 17). Recent research into gender-based learning differences as reported by Sax (2005b; 2007; 2010) and others has reenergized the issue. Is it possible that both girls and boys learn *better* with members of their own sex? If single gender learning advantages do exist, at what age are they most effective? And, if advancement in certain subjects is possible through single gender learning, as Briggs (1920) suggested, what are those subjects or areas of possible improvement?

From the numerous books, articles, and research projects on gender-based learning differences that have been published in the last three decades, there now exists evidence showing that the brains of males and females are intrinsically different from birth, and in compelling ways—not one better than the other, just different. Furthermore, this evidence is now compiled and referenced together in texts and articles, so we can begin to see how differences in gender compare across cultures and ethnicities, specifically in how we learn. This work may potentially be an important breakthrough for educators. In historically single-gender schools (e.g., all-boys or all-girls preparatory or parochial schools), an observer may see differences in curriculum or instruction; however, these differences may not always be the result of systematic, deliberate,

planned instructional or curricular choices geared toward a student's gender. There is now scientific research that analyzes how boys and girls learn and process information differently; furthermore, learning strategies based on this research have been developed and are shown to be successful (Gurian, Stevens, & Daniels, 2009b; Gurian et al., 2010; James, 2007, 2009; Jensen, 2005). For example, Gurian, Stevens, and King (2008) describe how females tend to process more sensory data, seeing, hearing, and using their sense of smell better than boys of the same age during childhood and early adolescence; this may help explain why girls "include more sensory detail in their writing and conversation … use more color in their artwork … [and] use more sensory words to make their point than boys do" (p. 9). Information like this could be helpful to language arts teachers struggling to teach writing skills to students of both sexes. For educators, an increased awareness of these kinds of differences may provide additional leverage for teachers in meeting the needs of all students. The outcomes from research thus far seem to warrant further study into the realm of gender-based learning.

Is Single Sex Schooling the Answer?

Single-sex learning has generated controversy among the school community. Public schools were unable to consider single-sex schooling as an option until 2001, when the No Child Left Behind (NCLB) legislation relaxed federal regulations on gender and public school classroom assignments (Chadwell, 2009). NCLB made it possible for systems to offer single-sex classes as a choice for students and parents (Chadwell, 2009). As the number of single-sex public classrooms has increased, so have the number of detractors. While organizations such as the National Association of Single-Sex Public Education (NASSPE) vigorously advocate for the adoption of strategies geared toward

single-gender learning, organizations such as the American Civil Liberties Union (ACLU) work tirelessly against them (Holthouse, 2010; Lankes, 2010). The American Association of University Women (whose 1991 report *Shortchanging Girls, Shortchanging America* spawned much of the debate) sides with the ACLU, building on the doctrine established in *Brown v. Board of Education* that "separate but equal is inherently unequal."

However, overall, research on single-gender teaching and learning is inconclusive. Bracey (2006) on behalf of the Education Policy Research Unit (EPRU) for Arizona State University concluded that "it is hard to be particularly confident about what can be learned from the available data … most areas have some contradictory findings, and even those that don't are not wholly consistent" (EPRU, 2006, p. 37). This is in keeping with the findings of a meta-analysis completed by Mael, Alonso, Gibson, Rogers, and Smith (2005) on behalf of the U. S. Department of Education (DOE) titled, *Single Sex Versus Coeducational Schooling: A Systematic Review.* This comprehensive examination of single-gender classrooms versus coeducational classrooms provided researchers with a similar conclusion: There is a distinct lack of evidence on both sides of the issue. Mael et al. (2005) noted that much of the single-gender research is based on private Catholic high schools, which does not provide a clear comparison to public education. In 2008, Cable and Spradlin, on behalf of the Indiana University Center for Evaluation and Education Policy (CEEP), issued an Education Policy Brief titled *Single Sex Education in the 21st Century.* The brief produced evidence on both sides of the issue: "When acknowledging some encouraging results on behalf of single-sex classrooms, it is equally imperative to acknowledge the difficulty in sifting through all the data to

conclude that positive outcomes are the direct result of single sex schooling" (p. 7). Cable and Spradlin's recommendations do include specific professional development geared toward training teachers in single-gender learning strategies, noting some benefits are a possible outcome. Part of the problem is the difficulty in producing true empirical research regarding single-sex education (Bigler & Signorella, 2011).

Despite the overall lack of consensus on single-sex education, the research available suggests that there may be some benefits, even if these benefits are not yet wholly endorsed by all researchers. Smith (2010) reported that 5th grade students in single-sex classrooms perceived the experience positively, and the majority of students (both male and female) believed their grades had improved at least in part due to lack of distractions from the opposite sex. Pettit (2012) reported that for teachers, perceived benefits of single-sex classrooms included a more comfortable and less distracting learning environment for all students and an increased awareness and use of specific gender-based learning strategies to meet student needs. However, teachers in this study declined to rate single-sex classrooms as more effective than mixed-gender classrooms.

Adolescents and Self-Esteem

In a discussion regarding the social aspects of schooling, the concept of self-esteem inevitably emerges as part of the conversation. How is self-esteem defined and developed? One of the most commonly discussed definitions of self-esteem in the research literature is Rosenberg's 1965 definition, often cited by educators and researchers as an acceptable understanding of the concept, broadly explained as a "positive or negative attitude toward … the self" (p. 30). Another definition, offered by Reasoner (2010) while writing for The National Association for Self-Esteem (NASE),

defines the term as "the experience of being capable of meeting life's challenges and being worthy of happiness" (NASE website, "What is Self-Esteem?" para. 7). Leary and Baumeister (2000) define self-esteem as "a person's appraisal of his or her value" (p. 2). Based on these definitions, self-esteem, then, seems to be directly tied to self-worth and self-competence, how we perceive our performance in the reality of daily living in comparison to others around us.

While the research on single-gender teaching is inconclusive overall, the possibilities are promising regarding the emotional and psychological development of adolescent girls, particularly in the area of self-esteem. Much has been reported in the media on the "boy crisis," with males underperforming academically in comparison to their female counterparts (Tyre, 2006); however, many teachers of both sexes would argue that girls have their share of difficulties as well. While overall girls tend to perform better academically than boys, girls often suffer from low self-esteem and anxiety stemming from the pressures of social conformity (Booth, Sheehan, & Earley, 2007; Orenstein, 1994; Pomerantz & Saxon, 2002). Several ground-breaking key studies in the 1990s helped to frame this concern more clearly for parents and educators.

The American Association of University Women's (AAUW) 1991 landmark study (*Shortchanging Girls, Shortchanging America*) of male and female high school students put this issue at the forefront of educational reform. The executive summary of the study's results notes that "Girls begin first grade with comparable skills and ambition to boys, but by the time girls finish high school, most have suffered a disproportionate loss of confidence in their academic abilities" (AAUW, 1994, p. 4-5). The study surveyed roughly 3,000 children ages 9-15, approximately 2,400 girls and 600 boys between

grades 4 and 10. The results showed that girls around age 8 to 9 are confident in their abilities with 60% of elementary-age girls reporting that they feel good about themselves. By the time girls are halfway through high school, that figure has dropped to 29%, with the sharpest decline occurring in the middle school years. In contrast, the numbers for high school boys remained 17 percentage points higher: 67% of elementary boys reported they felt good about themselves, and the percentage only dropped to 46% of boys who felt this way in high school.

These findings are supported by other researchers in the field of adolescent development, with some providing a foundation so strong that these works still inform research studies today. Orenstein's 1994 work *Schoolgirls: Young Women, Self-Esteem and the Confidence Gap* builds on the AAUW study through a series of case studies in which Orenstein tracked a group of middle school girls for one school year. Her findings support the conclusion that early adolescent girls do struggle with self-confidence and self-esteem issues, which in turn can lead to depression, drug abuse and even suicide in extreme cases. Pipher (1994) came to a similar realization in her popular work *Reviving Ophelia*, written after reflection on her experiences as a psychologist working with adolescent females. Sax (2005a; 2010) reported that females with low self-esteem often end up engaging in sexual activity and drug use more often than girls who feel confident in their own abilities. However, Phillips (1998), in her work *The Girl Report: What We Need to Know About Growing Up Female*, noted that the issue is more complex than just low self-esteem. Borrowing from the work of Pastor, McCormick and Fike's 1996 study of urban girls across cultural groups, Phillips found that social practices, environment, race, and culture all play a role in how adolescent girls develop their self-concept. This

idea is reinforced by other researchers who have noted that white and Latina females have lower levels of self-esteem than African American females (Phinney & Chavira, 1992; Simmons, 2002), although Ohye and Daniel (1999) noted a lack of research in this area. Eccles, Barber, Jozefowicz, Malenchuk, and Vida (1999) determined that changes in adolescence provide risk for both males and females, but that risk manifests itself differently for each gender. In girls, Eccles et al. (1999) noted that adolescence does tend to bring an increase in symptoms of low self-esteem and depression, but that there is a wide range of variability within the female ratings, indicating these results could be due to a variety of factors. It is quite possible that differences in self-esteem levels between males and females could account for differences in learning as well.

Difficulties in Transition to Middle School

The transition from elementary school to middle school creates additional pressures for adolescent females. Booth, Sheehan, and Earley (2007) reported that middle school girls are more negatively impacted by the middle school environment than either middle school boys or girls who attend a K-8 school. They found that middle school girls described lower levels of self-esteem and more negative attitudes in their own social interactions with peers than boys or K-8 students. Emil (1993) also observed that the problems with girls and self-esteem issues seem to begin in middle school. Grills-Taquechel, Norton, and Ollendick (2010) completed a longitudinal study of factors predicting anxiety levels during the transition to middle school; they reported changes in the types of "anxious symptoms experienced by girls and boys of middle school age … [with] increased differences emerging, particularly in the area of girls' social concerns" (p. 507). They recommend examining these gender differences more closely in future

studies. Smith (1999) reported that teachers in middle school tend to believe that single-gender learning has benefits beyond academic performance, including improvements in self-esteem and discipline for both male and female students. Wills, Kilpatrick, and Hutton (2006) investigated single-gender classrooms in Australia that were housed within a coeducational primary school (with students in grades 3-4). Their findings indicated that the students in the girls-only class were perceived by teachers and parents as having increased confidence in their abilities and that their overall social skills and interactions with others had improved. Streitmatter (1999) compared perceptions of girls in single-gender settings in both private and public schools, noting that while the participants in the study included both middle and high school girls, the middle school girls were "the most enthusiastic about the experiences in the girls-only setting, both during and after the program" (p. 96). She concluded that:

> Being in classes with only girls holds benefits for them [i.e., girls]. This study found that they encountered fewer distractions to learning, they had all the teacher's attention, and they did not need to make a space in a different culture. The culture was theirs, a place they understood and did not need to fear (p. 87).

For adolescent girls, single-gender learning could be one way to improve self-esteem, because it provides a learning environment that allows girls opportunities to excel under conditions they may not have in a coeducational classroom. Shmurak's (1998) longitudinal study of high school girls at private girls' schools and coeducational high schools with similar socioeconomic demographics reported few differences between the two groups overall on the measured outcomes, but noted that repeatedly the girls from the girls' schools said that "they were enabled, by the absence of boys, to speak out and to be themselves" (p. 173). As a former teacher at a girls' school, Shmurak notes that

anecdotal evidence among alumnae commonly documents that attending a single-gender school helped them "develop the self-confidence that has carried them through the challenges of adulthood" (p. 174), although she acknowledges that this may be a difficult concept to capture empirically.

Despite the inconclusive results reported in the research literature, the number of single-gender classrooms in the United States continues to climb. In 2002 there were approximately a dozen public schools offering single-gender classrooms; the tally for the 2011-12 school year was 506 schools, an over 4000% percent increase (NASSPE website, "Schools," n.d.). These numbers seem to indicate that many educators perceive real benefits to single-gender learning. A program shown to positively impact the self-esteem of female adolescents could have lasting benefits beyond that of academic achievement. As the literature would indicate, the most commonly known school structure of mixing boys and girls together in coeducational classrooms may not always be the best scenario for adolescents. Females in particular may find that their levels of self-esteem are improved from the choice of a single-gender classroom.

Purpose of the Study

A recent search of the ProQuest Dissertations and Theses database with the terms "single-sex" and "single-gender" in the title showed that in the last two years, 45 dissertations have been conducted and submitted to ProQuest on these topics. Of the 45, 41 of the dissertations investigated student achievement as at least one comparison variable, and in many dissertations, achievement was the only variable investigated. Obviously any strategy that can be shown to definitively increase student achievement is worthy of investigation, and given the inconclusive nature of the current research on

single-gender learning, it comes as no surprise that many recent dissertations have focused on this connection.

However, while much current research on single-gender teaching and learning focuses on student achievement outcomes, investigating the possible social and personal benefits of single-gender learning would seem to be an equally worthy endeavor. The magnitude of the middle school experience for students can be overwhelming, especially considering the occurrence of low self-esteem levels for middle school females. Given the possibility that boys and girls at this age encounter consequential learning differences simply because of their gender, examining the potential of teaching middle school girls in a segregated setting is an important undertaking. While overall females tend to perform better academically than males (Tyre, 2006), research seems to indicate that females struggle with other, more personal, more intimate issues (Orenstein, 1994; Pipher, 1994; Salomone, 2003; Sax, 2010). It is an investigation of these kinds of concerns that the researcher was most interested in pursuing further within the context of single-gender education. Therefore, while the researcher fully acknowledges the importance of academic achievement data in considering the effectiveness of any teaching strategy, investigating academic achievement in the context of single-gender learning is not the focus of this study.

The purpose of this study is to examine all-girls classrooms in 6th grade where gender-specific learning strategies are used and compare levels of self-esteem, academic attitudes, and school satisfaction with girls in mixed-gender 6th grade classrooms. The study will also examine student descriptions of the single-gender experience and use teacher descriptions of the single-gender learning environment as secondary sources.

The following questions will guide this research:

R_1: To what extent is gender-based teaching associated with self-esteem, academic attitude, and student satisfaction for 6th grade girls?

R_2: How do 6th grade girls in single-gender classrooms perceive their school social experiences?

R_3: How do 6th grade girls describe the experience of being taught in an all-female grouped classroom versus a mixed gender classroom?

This study will assess the extent to which 6th grade females in single-gender classrooms where teachers use gender-based learning strategies have higher levels of self-esteem, academic attitudes, and student satisfaction than the same-gender peers who are in traditional mixed-gender classes. The study also contributes to the current body of knowledge available by determining how 6th grade females describe their own experiences of being in a classroom where specific strategies tailored to their gender are used. This study can further help to clarify the current body of research regarding the perceived effectiveness of single-gender teaching and learning, particularly for middle school girls in regard to possible benefits beyond academic achievement. Finally, since much of the current research literature investigated single-gender schools as a whole (usually private or parochial settings), this study can contribute to the knowledge base by exploring the effectiveness of a single-gender program within a public school setting.

Delimitations

This study will include all 6th grade females at West Middle School[1] from 2010-2013 assigned to the Trailblazers Team[2] and the teachers on the Trailblazers team from

[1] A pseudonym was used for school name.
[2] A pseudonym was used for team name.

2010-2013. Any other students or teachers would be excluded from the study. Because the student-participants are public school students assigned by the principal and because of the federal regulations regarding single-gender as a choice, random selection of participants is not possible. These participants were selected because the program itself was already in place and access to the program and its participants had already been granted to the researcher. The study will be delimited to examination of the extent to which these student-participants' self-esteem, academic attitudes, and student satisfaction levels differ between girls enrolled in the single-gender versus the mixed-gender classroom, and the descriptions of how the students in the single-gender classrooms regard their experiences with single-gender teaching and learning. Self-esteem, academic attitudes, and student satisfaction will be measured quantitatively on a Likert-type scale comprised of two instruments: a survey developed by the single-gender advisory group at West Middle School and the Rosenberg Self-Esteem Scale. Qualitatively, student descriptions of their experiences will be obtained through open-ended survey questions and student interviews and then compared with teacher interviews of their perceptions regarding the students' single-gender experiences. The results of the proposed study will be generalizable to 6th grade female students enrolled in single-gender classrooms following a similar school schedule and with similar demographics to the students at West Middle School.

Limitations and Assumptions

There are several limitations and assumptions noted with the study. The study only investigates the perceptions of 6th grade females assigned to single-gender classrooms over a three-year period at one school site; it may be that perceptions of these

students would not be applicable to older or younger female students or to female students from other schools. Despite this possibility, the students on this team, per the principal, are considered "regular" students. The vast majority of students do not fall under the umbrella of the Exceptional Children (EC) program; only one student over the three year period has received IDEA/504 special needs services and none are classified as academically gifted. Some students do qualify to receive English as a Second Language (ESL) services, but the extent of services varies among these students. In addition, the school in question is geographically located in a rural/suburban area. The school serves a population of about 750 students (school website homepage, n.d.). The student body is about 30% minority, with 20% being African-American and the rest primarily Latino. Fifty-five percent of the students were listed as "economically disadvantaged" on the end-of-year state assessments for 2010-11. The results may not apply to an urban population or more ethnically mixed population.

Another limitation of the study is that while efforts were made to verify teacher fidelity to teaching gender-based instructional strategies in an overall broad sense, teacher instruction was not verified on a daily basis. Within this context, however, there is evidence to indicate high levels of teacher fidelity to using gender-based instructional strategies. The idea to investigate and pilot single-gender learning initiated with the teachers themselves, and therefore teacher buy-in regarding these concepts was strong. The teachers made checklists to self-monitor how often they used certain gender-based learning strategies (these checklists were also used for reporting and data purposes at the school site), and the checklists indicated that gender-based learning strategies were being used on a consistent basis. Teachers regularly met to discuss the positives and negatives

of their efforts and to share ideas. The principal also confirmed that via personal observations and interactions with the teachers and their students, she believed that fidelity to the concepts of gender-based teaching and learning were being maintained (personal communication, June 4, 2012). Therefore, the assumption is that the 6th grade teachers on this particular team have a strong commitment to using single-gender teaching strategies in their classrooms on a regular basis.

Finally, one of the two data collection instruments used by the teachers was developed by the teachers themselves; while steps were taken to ensure the content validity of the survey, the instrument developed by the single-gender advisory team at the school site has not been psychometrically evaluated prior to this study. In the first year of program implementation in the classroom, the advisory group developed their own questions that they wanted students to respond to regarding the single-gender initiative. Consequently, for 2010-11 we only have the survey results for students responding to team-developed survey items. In 2011-12, after the researcher received committee and IRB approval, it was suggested to the teachers and principal that they might wish to add an additional level of validity and reliability to their survey instrument by appending it to include the Rosenberg Self-Esteem Scale questions (Rosenberg, 1965). Morris Rosenberg was one of the world's leading researchers on the constructs of self-concept and self-esteem until his death in 1972 (University of Maryland, Department of Sociology, "Rosenberg Self-Esteem Scale", n.d.). Much of Rosenberg's work explored how social institutions like schools worked to impact self-esteem (University of Maryland, Department of Sociology, "Rosenberg Self-Esteem Scale", n.d.). The Rosenberg Scale is well-documented as reliable and valid (Erol & Orth, 2011) and would provide additional

data for both the school personnel and the researcher. The original teacher-developed survey items were not altered although two items were deleted after Year One (see Chapter 3). An assumption of this study is that all the participants will understand the questions being asked of them and answer in truthful ways on both the surveys and/or the interviews.

Definitions

1. Single-gender / single-sex classroom: A classroom where students are grouped according to gender. The terms are used interchangeably in the research literature and in this study.
2. Self-esteem: "A positive or negative attitude toward … the self" (Rosenberg, 1965, p. 30).
3. Gender-based teaching strategies: Teaching strategies developed specifically for either boys or girls based on brain research linked to gender.
4. Regular middle school classroom: According to Hough (1997) on behalf of the Association for Middle Level Education, this is typically characterized as a coeducational classroom in a school with a defined grade range of 6-8, although there are some regular middle schools with 5-8 and 7-8 grade spans. Learners who attend these schools range roughly between 10 and 14 years of age.
5. Early Adolescence: the period of life from 10-14 years of age (Van Hoose, Strahan, & L'Esperance, 2001).
6. "Classic" Liberal Feminism: Also known as "traditional" feminism; this philosophy holds that men and women should be treated exactly the same in all circumstances.

Any segregation (including self-imposed segregation) of the sexes is discriminatory (Allen, 2013; Baehr, 2012). Classic feminists are against single-gender education.

7. Egalitarian Liberal/"Difference" Feminism: This philosophy holds that differences exist between males and females and that those differences should be recognized and celebrated. Females should have the power to make whatever choices they wish regarding their education (Allen, 2013; Baehr, 2012). "Difference" feminists advocate for the option of single-gender education.
8. Pragmatist paradigm (methodology): A research method that blends the positivist paradigm (quantitative) and constructivist paradigm (qualitative) to produce a mixed method research approach.
9. Concurrent Transformative research design: A model of research design that "uses an explicit advocacy lens (e.g., feminist perspectives, critical theory) which is reflected in the purpose statement, research questions, and implications for action and change" (Hanson, Creswell, Plano-Clark, Petska, & Creswell, 2005, p. 229).

Summary

Chapter One introduced the study, outlined the purpose for and significance of the study, and presented the research questions to be investigated:

R_1: To what extent is gender-based teaching associated with self-esteem, academic attitude, and student satisfaction for 6^{th} grade girls?

R_2: How do 6^{th} grade girls in single-gender classrooms perceive their school social experiences?

R_3: How do 6^{th} grade girls describe the experience of being taught in an all-female grouped classroom versus a mixed gender classroom?

Chapter Two follows with an extensive review of the available and appropriate literature in this area and presents a conceptual theoretical framework. Chapter Three details the methodology used in the study, including detailed descriptions of instruments used, statistical analysis, and participant description and selection. Chapter Four delineates the analysis of and presentation of data, and situates it in the current literature, and Chapter Five presents a discussion of the findings within the context of the literature review, conceptual framework, and conclusions drawn regarding this study. Recommendations for further research in this area are also provided.

CHAPTER 2: LITERATURE REVIEW

Before embarking in an investigation on the subject of single-sex schooling, it is necessary to explore a theoretical framework through which to view the debate on whether or not there are any benefits to single-sex education. Since single-sex schooling, by its definition, is intended to leverage perceived differences between boys and girls, feminist theory emerges as one way to view this research.

A Feminist Theoretical Framework

Since becoming a dominant force in the 1960s and 1970s, feminism has evolved over time to include a variety of tenets. As the cultural landscape has changed, so has feminist theory; indeed, according to Dillabough (2006) an increase in globalization and awareness of diversity has "meant that the theoretical reach of education feminism(s) is both wider and more powerful than in previous theoretical periods" (p. 50). The wide range of feminist theoretical perspectives has led to a distinct lack of cohesiveness in the feminist movement in regard to goals and objectives. Orenstein, in her book *Flux: Women on Sex, Work, Kids, Love, and Life in a Half-Changed World* (2000), captures the dilemma perfectly: "Today's young women feel redeemed by possibility. Feminism has been passed down to them as an ethic of personal potential …. But talk a little longer, cut a little deeper, and these same confident women express something else too—an anxiety about the consequences of their new freedom" (Orenstein, 2000, pp. 16-17). In regard to the perceived benefits of single-sex education, there is a notable split between feminist

groups (Salomone, 2004). “Classic” liberal feminists, sometimes called “traditional” liberal feminists, tend to be against single-sex schooling, on the premise that anything that separates males from females is inherently unequal, and that single-sex education increases and perpetuates gender stereotyping (Bigler & Eliot, 2011; Patterson, 2012). Groups like the American Association of University Women (AAUW), the National Organization of Women (NOW), and the National Coalition for Women and Girls in Education are firmly in this camp, calling for a consistent and repeated end to single-sex schooling (Bigler & Eliot, 2011; “Feminists Will Be Feminists,” 1998; Holthouse, 2010; Lankes, 2010; National Coalition for Women and Girls in Education, 2012). On the other side, “equality” feminists (Dillabough, 2006), also known as “difference” feminists (Salomone, 2004) or “egalitarian liberal” feminists (Allen, 2013), tend to support the premise of single-sex schooling as a way of empowering females to have the personal autonomy to determine their own schooling choices. More recent feminist theory has explored gender equity and diversity equity among underrepresented populations (lesbians, minorities), but in regard to single-sex schooling, two of the prevailing forms of feminist theory in the current literature base center around classic liberal feminism versus egalitarian liberal/”difference” feminism (Dillabough, 2006).

Egalitarian liberal/”difference” feminism features an orientation toward empowerment of females, versus classic liberal feminism which features empowerment from a restriction, usually some male-dominated feature of society (Baehr, 2012). Freedom is viewed as personal autonomy; differences among the sexes should be acknowledged and celebrated. Empowerment of females to make choices and socially accept the validity of those choices (whatever they may be) is part of this philosophy

(Miller, 1982). As Kenway and Willis (1990) put it, "liberal feminism [i.e., classic feminism] paint[s] a rather insipid picture of girls and women, capturing mainly the oppressive aspects of their lives and consciousness and doing so in an extremely simplistic fashion" (p. 242). Egalitarian liberal/"difference" feminism, with its focus on "girl power," is a more positive, more attractive approach for many feminists (Kenway & Willis, 1990). It allows for "valuing attributes, whether inherent or socialized, that may appear more common among females than males" (Salomone, 2004, p. 92).

A key contributor to this theoretical perspective was Carol Gilligan, whose 1982 work *In a Different Voice* is regarded by many as "groundbreaking" (Salomone, 2004, p. 82; Taylor & Rosselli, 1997). Gilligan (1982) maintained that women have a different moral orientation than men—not better, just different; that women have an innate orientation toward relationship-building and attachment while men have an innate orientation toward separateness and individual achievement. Some feminists embraced Gilligan's work as a much-needed acknowledgement of the legitimacy of traditional women's colleges and as part of the theoretical "empowerment" framework needed to publicly justify single-sex schools (Gurian, 2002; Lee, Marks, & Byrd, 1994; Marshall & Young, 2006; Orenstein, 2000; Taylor & Rosselli, 1997). By embracing the unique needs of females and providing them an environment tailored specifically for them, advocates argue that single-sex education can fulfill a need for many girls (Gurian, Stevens, & Daniels, 2009a; Hutchinson & Mikulski, 2012; Patterson, 2012; Protheroe, 2009; Sax, 2005a; 2005b). For this study, the theory of egalitarian liberal/"difference" feminism will be used to frame the discussion of single-sex classrooms.

Figure 1 serves to illustrate the key differences between the two feminist perspectives.

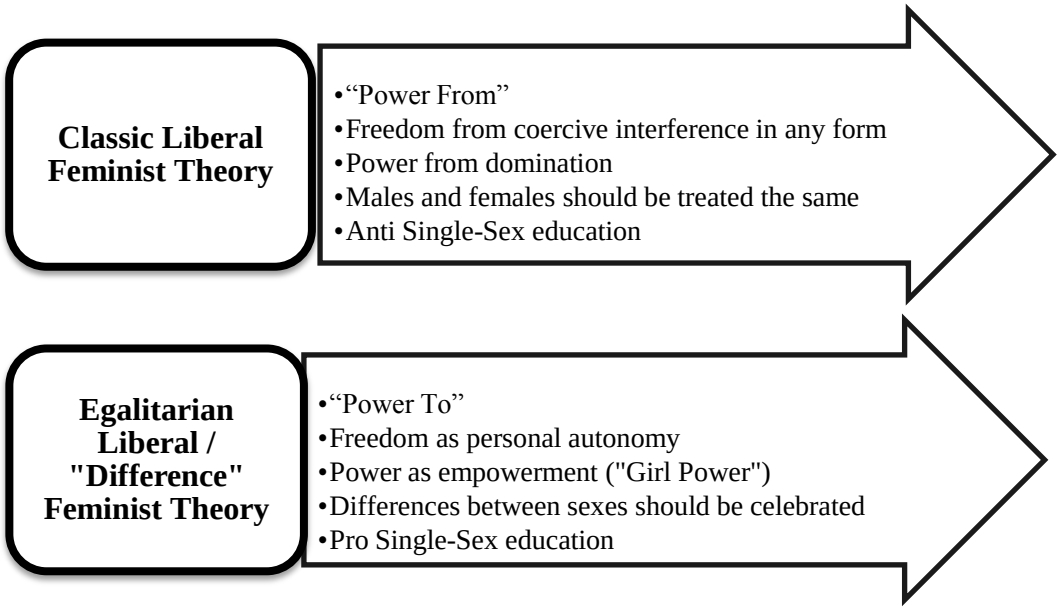

Figure 1. Summary of key differences in Classic Liberal vs. Egalitarian Liberal/"Difference" feminist theory. Adapted from "Feminist perspectives on power," by A. Allen, 2013, in E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Spring 2013 ed.) and "Liberal Feminism," by A. R. Baehr, 2012, in E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Fall 2012 ed.).

The Nature of Adolescence and Self-Esteem

Anyone over the age of 13 can attest to the psychological, social, and physical difficulties associated with the time period known as "adolescence." Since the beginnings of recorded history, philosophers, psychologists, parents, and teachers have endeavored to unlock the puzzle of this developmentally dynamic period of human life. Aristotle described adolescent youth in this way:

> The young are in character prone to desire and ready to carry any desire they may form into action …. They are changeful too and fickle in their desires, which are as transitory as they are vehement …. They are passionate, irascible, and apt to be carried away by their impulses …. They are charitable rather than the reverse, as they have never yet been witnesses of many

> villainies; and they are trustful too, as they have not yet been often deceived …. They have high aspirations; for they have not yet been humiliated by the experience of life, but are unacquainted with the limiting force of circumstances …. If the young commit a fault it is always on the side of excess and exaggeration, for they carry everything too far, whether it be their love or hatred or anything else. (Aristotle, trans. 1886, pp. 165-166).

Clearly, adolescence is an unsettled and chaotic time for many young people. Emotionally, the transition into adolescence is a turbulent one; as physical and cognitive changes occur, many early adolescents react to their surroundings in unexpected ways. The American Academy of Child and Adolescent Psychiatry (2011) gives this partial list of descriptive behaviors for early adolescents:

- Struggle with a sense of identity
- Feeling awkward or strange about one's self and one's body
- Focus on the self, alternating between high expectations and poor self-esteem
- Interests and clothing style influenced by peer group
- Moodiness
- Improved ability to use speech to express one's self
- Mostly interested in the present, with limited thoughts of the future
- Intellectual interests expand and gain in importance
- Frequently changing relationships
- Rule and limit testing
- Capacity for abstract thought
- Development of ideas and selection of role models (*Facts for Families*, No. 57, December 2011)

Other researchers note that the onset of early adolescence also can result in heightened social concerns for children. Concerns about fitting in with peers, making mistakes in front of peers, succeeding in school, and having an ideal body type are increased during early adolescence and continue throughout the teen years (Bokhorst, Westenberg, Oosterlaan, & Heyne, 2008; Knauss, Paxton, & Alsaker, 2007; Peterson & Roscoe, 1991). Given the varying nature of adolescence, it is not surprising to note that an adolescent's self-image and identity is mutable as well. Adolescents' perceptions about their own personal qualities and their judgments about their own self-value as human beings are interconnected; consequently, children tend to behave in ways that mirror their self-perceptions (Byrne, 2002; Harter, 2006; Valentine, DuBois, & Cooper, 2004). Those who see themselves as "good students" may be more likely to pay attention in class or complete homework, while those who see themselves as "poor students" may be more likely to misbehave or fail to study. Collectively, these experiences, then, contribute to an adolescent's sense of *self-concept*.

Development of Self-Esteem in Adolescence

Self-concept is defined by McDevitt and Ormrod (2010) as the answer to the question, "how good am I as a person?" particularly in comparison to others. Marsh's (1990) review of self-concept research to that point argues that the construct is multi-faceted and hierarchical, noting that self-concept is derived from our understanding of ourselves in a variety of comparisons (i.e., our "family" self; our "friend" self; our "work" self, etc.). The construct of *self-concept* lays the groundwork for the development of the construct of *self-esteem*, which, as Markowitz (2012) points out, is "problematic for researchers because it is complex, stable, and hard to measure" (p. 11).

Rice and Dolgin (2005) define self-esteem as term related to self-concept "that refers to how one feels about oneself" (p. 165). Rosenberg (1965) developed a definition of self-esteem, broadly explained as a "positive or negative attitude toward … the self" (p. 30). Reasoner (2010) while writing for The National Association for Self-Esteem (NASE), defines the term as "the experience of being capable of meeting life's challenges and being worthy of happiness" (NASE website, "What is Self-Esteem?" para. 7). Leary and Baumeister (2000) define self-esteem as "a person's appraisal of his or her value" (p. 2). As this reasoning goes, people with higher self-esteem like themselves and people with lower self-esteem do not. This value that we place on ourselves as individuals in the form of self-esteem can impact a wide range of psychological constructs, in particular self-motivation and self-efficacy (Bandura, 1982).

This point is explored further by Cast and Burke (2002) in their proposed self-esteem theory. Cast and Burke theorized that self-esteem as an outcome is both worth-based and efficacy-based, and is viewed in a variety of contexts for each individual. A desire to increase self-esteem may be partial motivation for why humans move in and out of relationships: we seek relationships that provide positive self-verification (Cast & Burke, 2002). In this way, our self-esteem levels are directly and indirectly impacted by those around us, in particular the nature and quality of those interactions. Reasoner (2010) also makes a distinction that the "worthiness component of self-esteem is often misunderstood as simply feeling good about oneself, when it actually is tied to whether or not a person lives up to certain fundamental human values" (para. 8). Reasoner goes on to point out that the perception of the reality of living is fundamental to healthy self-esteem:

"a sense of personal worth without competence is just as limiting as competence without worthiness" (2010, para. 9).

Early adolescents base their self-perceptions on their previous experiences and performances (Levin, 2009). Thus, "success breeds success" (McDevitt and Ormrod, 2010, p. 446; see also Kenway & Willis, 1990). While an individual's sense of self-esteem eventually stabilizes in adulthood, self-esteem can be altered and heavily influenced during adolescence (Levin, 2009; Harter, 2006), in part due to developmental brain changes occurring during this time. As primary caregivers, parents have enormous influence on a child's development of their own self-concept and self-esteem (Harter, 1987, 2006). As children move into early adolescence and spend more time away from parents and with peers, however, the influence of the peer group increases (Baron, Bell, Corson, Kostina-Ritchey, & Frederick, 2011; Harter, 2006; Rodkin & Ryan, 2012; Van Hoose, Strahan, & L'Esperance, 2005). Often, characteristics previously regarded as positive, such as academic achievement and compliance to authority, are regarded negatively by adolescent peer groups (Ryan & Shim, 2012). Given that self-esteem is so heavily shaped by adolescent experiences and specifically by peer interactions, it would seem that efforts made to increase adolescent self-esteem through focused social interactions may have higher levels of success.

Gender Differences in Adolescent Brain Development

McDevitt and Ormrod (2010) define the period between ages 10-14 as "early adolescence" (p. 22); physically, children during this time experience the onset of puberty usually accompanied by a growth spurt (Van Hoose, Strahan, & L'Esperance, 2001). Cognitively, according to Jensen (2005), the brain is "under major construction during

adolescence" (p. 30). Some parts of the brain almost double in size (Jensen, 2005) and the process of myelination combined with synaptic "pruning" means that the adolescent brain begins to develop the capacity for long-term planning and interpreting information in new ways (McDevitt & Ormrod, 2010; Rice & Dolgin, 2005). As the brain matures, differences manifest themselves in regard to gender. According to Jensen (2005), five differences related to gender and brain development are:

1. Mean and median size varies, even when adjusted for body size.
2. Developmental schedules vary.
3. Differences exist in cross-hemispheric connections.
4. Functional emotional processing differs.
5. Differences exist in language areas of the brain (p. 114).

James (2009) also notes specific differences in male and female brain development: the left side of the brain devoted to language develops first in girls, and the right side of the brain devoted to spatial skills develops first in boys. This difference may serve to explain why females typically have an advantage in verbal skills and processing (Gurian, Stevens & King, 2008; James 2007, 2009). James (2009) notes differences in the amygdala (associated with emotions) and the hippocampus (associated with memory), citing a longitudinal study by Giedd, Castellanos, Rajapakse, Vaituzis, & Raporport (1997). Their results indicated that "as children developed, the hippocampus increased more in females and the amygdala increased significantly more in males" (James, 2009, p. 13). These differences manifest themselves at an early age (Giedd, Blumenthal, Jeffries, Castellanos, Liu, Zijdenbos, et al., 1999). Kotulak (2006) noted that growth hormone is made in the brain's memory center "at rates up to twice as high in females as

in males" (p.1). Gurian, Stevens, and King (2008) state that the cerebral cortex, the part of brain that controls thinking and speaking, matures earlier in the female brain and females have more connections between neurons in their cerebral cortex. Implications for this research could mean that adolescent girls have an easier time recalling memories than boys of the same age, a skill that would prove helpful in remembering vocabulary words or details of what they had read (Gurian, Stevens, & King, 2008; Sax, 2005b). Jensen (2005) reports that females "can recall words better, can label objects quicker, and have better verbal memory and better verbal fluency" (p. 114) than boys. Gurian, Stevens, and King (2008) believe that this increased verbal ability helps females access the "needed verbal resources" (p. 5) to navigate school work more effectively.

However, despite these brain-based advantages which may yield academic benefits, many adolescent females still experience difficulties with the social interactions inherent in school. The transition from elementary school to middle school is when many of these social difficulties begin to emerge, and this time period is widely regarded as one of the most difficult academic transitions many children will make, due in large part to the changing nature of adolescent development (Hernandez, 2000; 2001; Powell, 2011; Rice & Dolgin, 2005; Van Hoose, Strahan, & L'Esperance, 2005). To guide this transition, The Association for Middle Level Education (AMLE; formerly known as the National Middle School Association) published a series of guidelines for educators to use in building effective middle school environments. At the top of this list of characteristics is to be "developmentally responsive" to the requirements of middle schoolers (AMLE, 2010) and their special, unique needs. In regard to the construct of self-esteem, while some researchers have found gender differences in self-esteem studies to be insignificant

(Erol & Orth, 2011), most research indicates that girls often have a more difficult transition to middle school than boys due in large part to self-esteem problems (Grills-Taquechel, Norton, & Ollendick, 2010; Gurian, 2002; Harter, 2006; Orenstein, 1994; Sax, 2010). The nature of middle school itself may lend to this difficulty, in that most middle schools begin with grade 6, forcing children to make adjustments to a new school, new peers, and new teachers at the same time they are also facing major developmental changes (Booth, Sheehan, & Earley, 2007).

Gender Differences and the Transition to Middle School

The Association for Middle Level Education currently uses ages 10-15 when defining the middle school child for its mission statement (AMLE website, "About AMLE", n.d.). The U. S. Department of Education through the National Center for Education Statistics (NCES) reported in 2000 that the nomer *middle grades* includes some grades from 5 through 8, but that "the most common configuration is grades 6 through 8" (U. S. Department of Education, National Center for Education Statistics, 2000, p. iii). In 2010-11, there were 16, 341 reported middle schools in the United States (U. S. Department of Education, National Center for Education Statistics, 2012b). The middle school movement itself was born out of the philosophy that prior to this movement, there was a "volatile mismatch between [current school] organization … and the intellectual and emotional needs of adolescents" (National Middle School Association's *Turning Points,* 1989, p. 8, as quoted by Powell, 2011; see also Hough, 1997). As Powell (2011) points out, the philosophy is "grounded in two areas—our undertaking of the unique nature of young adolescents and how we choose to respond to their needs" (p. 17).

Specific gender differences in other areas relating to self-esteem have also emerged from early adolescent development research. Many adolescents demonstrate an increase in gender specific interests at this age (Harter, 2006; Ruble, Martin, & Berenbaum, 2006); however, girls in particular tend to have "less interest and confidence in subject areas that are traditionally masculine—for instance, mathematics, science, and sports" (McDevitt & Ormrod, 2010, p. 454). Reporting of gender differences in tested math and science areas has indicated that girls fall behind boys beginning around grade 6 (Meyer, 2008). The drop in self-esteem for females may be related to the tendency for girls to underestimate their own abilities (Harter, 2006; Sax, 2005b, 2010). Girls also express higher levels of dissatisfaction with body appearance than boys, another factor which contributes to variability in female self-esteem levels (Delfabbro, Winefield, Anderson, Hammarstrom, & Winefield, 2011). Ferrerio, Seonae, and Senra (2012) concluded that "girls outnumber boys in depressive symptoms, disordered eating, and the co-occurrence of both disturbances" (p. 618-619), a finding that echoes earlier work by Sax (2005b, 2010). The extent to which these phenomena occur across ethnic and cultural lines is inconclusive but evidence is building; Adams, Kuhn, and Roberts (2006) found the drop in self-esteem for middle-school aged females was consistent for Hispanic and white females but not for African-American females, a finding consistent with Simmons (2002). More research in this area is needed.

Given the documented difficulties facing adolescent girls transitioning to middle school, exploring the option of single-sex education would seem to be a viable possibility. This possibility becomes even more powerful when the egalitarian liberal/"difference" feminist perspective is used to consider the question: empowerment

of females by allowing them choices and options in their own education is a key tenet of this theoretical framework (Kenway & Willis, 1990). The debate on whether or not single-sex education is both appropriate and effective is fierce. Salomone (2004) stated that, "next to the funding of school athletics, single-sex education is probably the most divisive issue in the modern-day quest for gender equality in education" (pp. 63-64). Bigler and Signorella (2011) also note that despite its rising popularity, single-sex education "remains controversial" (p. 659).

The Option of Single-Sex Education

Educational institutions that cater to females have long been a piece of the American education system, but historically single-sex institutions have been found primarily in the private sector (Cable & Spradlin, 2008). In the 1970s when federal Title IX regulations were put into effect, experimentation with single-sex schools in the public sector was not a viable option (Cable & Spradlin, 2008; Bracey, 2006). However, this changed in 2001 with the passage of the federal No Child Left Behind (NCLB) legislation. Under the umbrella of school choice, NCLB relaxed regulations regarding parent choice and same-sex schools, allowing public educational entities to create same-sex classrooms and school sites (Cable & Spradlin, 2008; Madigan, 2009; Salomone, 2003). As a result, the single-sex education movement is gaining momentum, thanks in large part to the school choice movement; according to the National Association for Single-sex Public Education (NASSPE), in the 2011-2012 school year, at least 506 public schools in the United States offered single-sex educational opportunities (NASSPE website, "Schools", n.d.). About 390 of those schools are coeducational schools which offer single-sex classrooms as an option for some or all of the school day (NASSPE

website, “Schools”, n.d.). Zwang (2010) confirmed this trend, reporting that a growing number of public schools are experimenting with separate instruction for boys and girls in specific courses for part of the school day.

Arguments for Single-Sex Education for Females

Proponents argue that a wide variety of benefits are available for students for whom single-sex schooling is a good fit, particularly for females. While Sax (2005a, 2005b, 2010) and Gurian, Stevens, and Daniels (2009a) are among the most vocal and visible advocates, other researchers have investigated the phenomenon of single-sex classrooms with positive results in a variety of areas. In a study following girls in a single-sex physics classes, Kessels and Hannover (2008) reported that adolescent females were able to improve their self-concept in regard to their academic proficiency in physics by being in a single-sex classroom, in part because girls reported being less aware of being “girls” in a single-sex environment. Rex and Chadwell (2009) reported across South Carolina that an increase in academic proficiency and a decrease in disciplinary issues for males and females in single-sex classrooms had occurred as a result of a state-initiative touting single-sex education as a function of school choice. The South Carolina student surveys related to this initiative also indicated that single-sex education is positively perceived by most females (75%) in these classrooms (South Carolina Department of Education, 2008). Salomone (2007) argues that the single-sex option is one worth exploring for possible benefits it could offer to at-risk children who may not feel as comfortable in a traditional coeducational classroom.

A three-year study comparing single-sex classrooms to mixed-sex classrooms at Stetson University in the mid-2000s noted 75% of females from the single-sex classroom

scored at the proficient level on the Florida Comprehensive Assessment Test, compared to 59% of the girls in the mixed classes (Hutchinson & Mikulski, 2012; NASSP website, "Single-sex vs. Coed: The Evidence", n.d.). Blake (2012), in a study of Georgia middle schools that were offering both single-sex and traditional coeducational classrooms as options for students, found significant differences for both genders on the Georgia Criterion Referenced Competency Test, noting that females in single-sex environment outperformed females in the coeducational environment. Blair and Sanford (1999) found that providing a single-sex classroom for girls allowed the students gain confidence in their mathematical and scientific abilities. Ferrara and Ferrara (2004) reported that comments by girls in single-sex classrooms indicated that having no boys in the room increased the girls' comfort levels, as they were less afraid of making a mistake and liked not having to compete with boys for the teacher's attention. Baron, Bell, Corson, Kostina-Ritchey, and Frederick (2011) in their discussions with girls who chose to attend an all-girl middle school reported girls enjoyed a learning environment free from the distractions offered by boys. Ferrara and Ferrara (2004) also noted that teachers reported girls were more interactive and participated more in classroom activities such as volunteering to answer questions in the single-sex classrooms. Phillipps (2007) found benefits regarding comfort levels and increased self-efficacy for girls in single-sex mathematics classrooms.

Salomone (2003) also explores the concept of boy dominance in classroom interactions, calling it an issue of "linguistic space" (p. 96). Salomone argues that there is merit in the notion that boys dominate middle and high school classroom discussions in certain contexts, by volunteering to answer more questions than girls, by calling out more

answers, and by being more aggressive in seizing materials used with hands-on collaborative activities such as science experiments. In response, girls are less likely to volunteer or become aggressive in pursuing the teacher's attention, leading to an overall lack of participation by girls in comparison to boys (Kirschenbaum, 2007; Salomone, 2003). Other researchers have reported on this experience of "linguistic space" as well. Parker and Rennie (2002), in a study of gender specific learning strategies utilized in Australian science classrooms, related that there was almost "universal agreement" (p. 888) that single-gender all-girls classes were more pleasant for female students than mixed-gender or single-gender all-boy classes; the students, teachers, and research-observers in the classrooms reported that girls participated more, had more teacher interactions, and were more extroverted in the all-girls classrooms (Parker and Rennie, 2002). Gurian, Stevens and Daniels (2009a) also urge the adoption of single-gender classrooms especially for girls, noting that girls respond differently to stressors than boys do. Pubescent changes, media messages regarding the importance of appearance, and relationship dynamics all cause anxieties that many females struggle to cope with, resulting in a loss of self-esteem and self-worth for girls (Gurian, Stevens, and Daniels, 2009a).

In addition to these general research findings, examples of successful single-sex public institutions have begun to emerge on the national scene. In Woodbridge, VA, Woodbridge Middle School students in single-sex classrooms are experiencing high levels of achievement, despite a 48% free and reduced lunch rate and a diverse student population (25% white, 75% students of color) (Calhoun, 2012). The Young Women's Leadership School (TYWLS or "twills") in New York City is another example: housing

young women grades 7-12, there are no admissions exams; the mission of the school network is to "empower students to break the cycle of poverty through education" (TYWLS website, "Who We Are", n.d.). Since the first class graduated in 2000, TYWLS of East Harlem (the flagship campus) has had a 100% graduation rate every year, and since 2001, more than 4,600 students from TYWLS campuses have gone on to college (TYWLS Website, "Student Success", n.d.). These singular examples provide evidence that it is possible to capitalize at least in part on single-sex learning.

Arguments against Single-Sex Education for Females

In contrast to the research literature advocating for the option of single-sex public school classrooms, there is also research literature advocating against it. One of the most recent rebuttals against single-sex education is Halpern et al.'s 2011 *Science* publication, "The Pseudoscience of Single-Sex Schooling." Halpern et al. (2011) argue that single-sex education is "deeply misguided" (p. 1) and go to say that single-sex education is "often justified by weak, cherry-picked, or misconstrued scientific claims rather than by valid scientific evidence" (p. 1). The authors also clearly align themselves with the "classic" feminist theoretical perspective, arguing that single-sex education reinforces gender stereotypes, an assertion also reported by Lee, Marks, and Byrd (1994). The National Coalition for Women and Girls in Education (2012) maintains that single-sex classrooms "cater to stereotypes" (p.1) and that Title IX "is not an entitlement program: it offers no special benefits or advantages for girls and women. Rather, it is designed to ensure equality in education for *all* students" (p.1). Eliot (2009) questions the validity of brain-based research reports used to endorse single-sex education, believing that any perceived differences are due to rearing and experiences and not innate biological differences,

thereby negating the premise of single-sex education. Bigler and Eliot (2011), who both served as authors on the Halpern article, also maintain that single-sex schools that have been successful have not done so because of the single-sex model, but rather of the composition of the students (usually with higher socioeconomic status) who attend those schools. Patterson and Pahlke (2011) determined that there are some characteristics that tend to predict girls' success in single-sex classrooms, notably demographic factors (such as race and family income), prior academic achievement levels, and a strong sense of gender identity. However, this assertion is undermined by the success of schools like Woodbridge Middle School and TYWLS, making it difficult to draw clear conclusions on the issue.

Overall Results on Single-Sex Education Are Inconclusive

Despite the increasing wealth of research, overall the research on single-sex education is inconclusive. Bracey's (2006) meta-review of single-sex education to that point noted that it is difficult to accurately gage the effects of single-sex instruction, as many other variables are also involved. Spielhagen (2011) in a study of middle school teachers who volunteered to work at a single-sex academy for at-risk kids observed that there may be some benefits to single-sex education, but that the results depend on a variety of factors, including the level of professional development and training provided to teachers prior to beginning the initiative. This reinforces earlier work by Chadwell (2007) and Sax (2005a) who argued that single-sex education is not successful unless proper time and resources can be devoted to training teachers on how to engage students in single-sex education effectively. Cable and Spradlin (2008) also observed inconsistencies in single-sex research literature, noting as a recommendation for future

research that researchers examine results over time rather than a single data set. Bigler and Signorella (2011) stated that "no consensus has been reached on the optimal gender composition of classrooms" (p. 659), a conclusion previously mentioned by others (Holthouse, 2010; Parker & Rennie, 2002). Stotsky (2012) argues that the naysayers for single-sex education are trying to shut down same-sex classrooms before they can be thoroughly studied, again advocating for further research to establish perceived effectiveness of single-sex education. Protheroe (2009) discussed the research in question, noting the lack of consensus among experts and advocating for careful and considered implementation of single-sex initiatives with this in mind. Patterson (2012) points out that the debate of late has been reframed around the issue of school choice, with inconclusive results and single-sex supporters and detractors weighing in on both sides; however, Patterson (2012) also notes an increasing positive shift toward single-sex education, as the "movement's energy is pulling other critics into its orbit" (p. 40).

Summary (including Research Questions)

In order to more precisely examine the context of single-sex education, an egalitarian liberal/"difference" feminist theoretical perspective will be used to frame this study. As noted by a variety of researchers (Baron, et al., 2011; Ferrarra & Ferrara, 2004; Parker & Rennie, 2002; Patterson, 2012; Salomone, 2003; Sax, 2005a, 2005b, 2010), some social benefits associated with single-gender teaching and learning may be appreciated for adolescent females transitioning to middle school. However, given the inconclusive research around single-gender education and the correspondingly divided theoretical perspectives, additional investigation into the perceived benefits or negative aspects of single-sex education would seem to be an appropriate line of inquiry.

The following questions will guide this research:

R_1: To what extent is gender-based teaching associated with self-esteem, academic attitude, and student satisfaction for 6th grade girls?

R_2: How do 6th grade girls in single-gender classrooms perceive their school social experiences?

R_3: How do 6th grade girls describe the experience of being taught in an all-female grouped classroom versus a mixed gender classroom?

The following chapter will clarify the design and methodology that will be utilized for the study. First, the setting and participants for the study will be described in detail. Second, the study design will be explained, and the selected methodology will be presented. Third, a description of the measures used to assess the research variables is discussed, including an explanation of how selected surveys were developed. Finally, selected statistical analyses are selected and explained.

CHAPTER 3: METHOD

As indicated in Chapter Two, improving the self-esteem of female adolescents may have lasting benefits beyond that of academic achievement (Baron, et al., 2011; Ferrara and Ferrara 2004; Gurian, Stevens & Daniels, 2009a; Orenstein, 1994; Pettit, 2012; Sax, 2010). Females may find that their levels of self-esteem are improved from the choice of a single-gender classroom. However, the current body of research regarding single-gender teaching and learning is inconclusive (Bracey, 2006; Cable & Spradlin, 2008; Gill, 2004). This study helps to further the current body of research available regarding the effectiveness of single-gender teaching and learning beyond just academic achievement. Significant knowledge can be gained by understanding the self-esteem, academic attitudes, and student satisfaction levels of 6th grade females in single-gender classrooms where teachers use gender-based learning.

The purpose of this mixed methods study was to examine all-girls classrooms in 6th grade where gender-specific learning strategies are utilized, and compare levels of self-esteem, academic attitude, and student satisfaction with girls in mixed-gender 6th grade classrooms. The study also examined student descriptions of the single-gender experience; specifically, the researcher explored how the single-gender environment may contribute toward the female learning experience. This chapter includes information regarding the methodology and research design, participants and setting, instrumentation and data collection, and analysis procedures.

Setting

West Middle School is a regular middle school in North Carolina. The school serves students in grades 6 through 8, with a population of about 750 students (school website homepage, n.d.). It is one of seven middle schools in the district. According to the U. S. Department of Education, National Center of Education Statistics, it is classified by the Census Bureau as "rural fringe," defined as "rural territory that is less than or equal to 5 miles from an urbanized area, as well as rural territory that is less than or equal to 2.5 miles from an urban cluster" (U. S. Department of Education, National Center for Education Statistics, 2012a).

The student body is about 30% minority, with 20% being African-American and the rest primarily Latino (school website homepage, n.d.). It is a Title I school with fifty-five percent of the students listed on the school website as "economically disadvantaged" on the end-of-year assessments for 2010-11. Academically, it is considered to be a strong school; in 2010-11, under the North Carolina ABC Program for accountability, the school composite was rated with approximately 80% of students at or above grade level, (school website, "Performance Data," n.d.). All the students who attend West Middle School will also attend West High School. According to the principal via personal communications, there is a strong sense of community support and participation within the school, as many of the school parents also attended West Middle themselves.

Participants

Student-Participants

The student-participants in this study were all 6th grade females at West Middle School from 2010-2013 assigned to the Trailblazers team. Because the study investigated

a program already in place in a regular public middle school and because the treatment (i.e., participation in the single-gender classroom) was for an entire school year, random sampling of student participants was not possible. The sample selected is a convenience sample. There were 109 females assigned to the Trailblazers team during this period: 35 in 2010-11 (Year One), 41 in 2011-12 (Year Two) and 33 in 2012-13 (Year Three). The principal assigns all students to teams for each grade level at West Middle School. In an interview, the principal stated that she assigns 6th grade students to teams based on their IDEA/504 status, their Limited English Proficiency (LEP) status, and any information that the home elementary school wishes to provide regarding student performance or behavior.

Year One of the program (2010-11) was called a "pilot" year by the school personnel. The principal assigned students to the Trailblazers team and then parents and students were asked to complete consent/assent forms for participation in the single-gender program. Students who did not return signed parental consent and student assent forms were automatically placed into the mixed-gender classroom, while students who returned the forms were placed in either the all-boys or all-girls classroom depending on their gender. In Year One, 25 participants were assigned to the single-gender class and 10 were assigned to the mixed-gender class.

Student Assignment to the Single-Gender Program for Years Two and Three. In Years Two and Three of the program (2011-12 and 2012-13), a letter was sent home to parents during the summer describing the single-gender program and its perceived benefits, and an information session for parents and students was held during the 6th grade "open house" prior to the start of the school year. Since 2011, the principal has

selected students to be on the Trailblazers team from the rising 6th grade class, but the teachers assign students to the single-gender or mixed-gender classrooms.

Once the school year begins, the Trailblazers teachers spend the first two weeks getting to know their students and considering who might be a good "fit" for the single-gender program. During these two weeks, all the classes are mixed-gender. At the end of these two weeks, the Trailblazers teachers collaboratively assign the students to either the all-girls class, the all-boys class, or the mixed-gender class. According to written responses provided by teachers, the teachers consider several factors when determining who is placed in the single-gender program: 1) student / parent requests to be in or out of the program; 2) how introverted or extroverted the student is during classroom interactions; 3) whether or not the student seems to struggle academically; 4) how the student functions socially with their peers. Students who struggle either academically or socially are often placed into the single-gender program, barring other factors (such as parent or student requests).

The teachers also reported that they seek a balance in class dynamics among the student groups—for example, they do not want all the "shy" kids in one class. The teachers collaborate on these decisions, coming to consensus regarding where students are placed and how the groups are created, and using their knowledge about single-gender teaching and learning as guiding principles. Teachers always reserve the right to revisit the placement as the year goes on, and the teachers may move a student from the single-gender to the mixed-gender (or vice versa) if they determine a need to do so. For the purposes of this study, all participants were in the assigned classroom environment (single-gender or mixed-gender) for at least 80% of the academic school year. In Year

Two, 23 participants were assigned to the single-gender class and 18 were assigned to the mixed-gender class. In Year Three, 25 participants were assigned to the single-gender class and eight were assigned to the mixed-gender class.

Of the 109 total participants from the three-year period, only one participant is identified as a Student With Disabilities (SWD) under the umbrella of the Exceptional Children (EC) program; the student in question has dyslexia but only receives EC services on a consultative (as needed) basis. None of the participants are classified as academically gifted. Four participants over the three year period were identified as Limited English Proficient (LEP), three from Year One and one from Year Three. The ethnic breakdown of the participants from both groups (single-gender and mixed-gender) is available in Table 1.

Table 1: Ethnicity and class assignment of student-participants

	Single-gender participants (n=73)				Mixed-gender participants (n=36)			
Academic year	Ethnicity				Ethnicity			
	W	*AA*	*H*	Total	*W*	*AA*	*H*	Total
Year 1 (10-11)	17	3	5	25	8	2	0	10
Year 2 (11-12)	20	2	1	23	11	6	1	18
Year 3 (12-13)	17	3	5	25	7	1	0	8
Total	54	8	11	73	26	9	1	36

Note. *W* = White; *AA* = African-American; *H* = Hispanic.

Teacher-Participants

The teacher-participants for this study are 6th grade teachers on the Trailblazers team at West Middle School. According to the principal, these teachers are known for their creativity and resourcefulness in the classroom and are highly regarded as "teacher-leaders" within the school and the district. Based on observations by the researcher, the teachers work extremely well together and are respectful of one another. They are strong disciplinarians, yet they each demonstrate a positive rapport with the students. There are three teachers on the team.

Ms. Granger[3] is a white female with eight total years of teaching experience and all her experience has been in 6th grade. She holds a bachelor's degree and is licensed as a K-6 Elementary teacher. Ms. Granger is the English Language Arts teacher. Based on interviews and comments from previous interactions, she is highly motivated by the single-gender initiative. She regularly refers to research or recommended materials on single-gender best practices and infuses them into her instructional practice as much as possible. She has gone to great lengths to decorate and arrange her classroom to accommodate the students' behaviors; for example, she brought small sofas and beanbags to her room to create impromptu reading areas so students could spread out during reading time. Her classroom is ordered and well-directed. She exhibits a good rapport with her students and utilizes a high degree of time on task.

Ms. Potter is a white female with 10 total years of teaching experience; five of those have been in 6th grade. She holds a bachelor's degree and is licensed in K-6 Elementary Education and in K-12 Visual Art. Ms. Potter is the Math teacher. Like her teammates, she is highly motivated by the single-gender initiative and speaks with

[3] Pseudonyms were used for all teacher names. Respects to J. K. Rowling.

authority on how the program impacts boys and girls differently. Ms. Potter has also decorated and arranged her classroom to create an inviting learning environment for her students, adding a futon, bar stools, and curtains. Ms. Potter is the designated team leader; this means that she is often the "go to" person for various school meetings. She infuses a high degree of technology into her class lessons and consistently seeks new ways to present material to her students. Based on the researcher's observations and interactions with her, Ms. Potter is extremely driven and pushes herself to constantly improve her instructional practice. Her classroom is organized and, as a teacher, she demonstrates a high degree of time on task. She is constantly moving around her classroom.

The third team member, Ms. Weasley, is the veteran of the group. She is a white female with 23 total years of teaching experience; 13 of these years have been spent teaching 6th grade. She holds a bachelor's degree and is licensed as K-6 Elementary Education teacher by the state. Ms. Weasley is the science / social studies teacher. She is, by far, the most "laid back" of the team teachers. Based on observations by the researcher, Ms. Weasley's classroom is active and busy, but not stringent. Her demeanor is relaxed; very little fazes her. However, it is clear that she is in control of her classroom. Based on interviews and comments from previous interactions, she considers herself more "boy-oriented." She does not mind a loud, noisy classroom environment. Her observations about the single-gender initiative and its' impact on her students are thoughtful and well-considered.

The teaching schedule on a three-teacher team means that each teacher has one class of all-boys, one class of all-girls, and one class of mixed-gender students for

approximately 60 minutes each. Trailblazer teachers instruct students for the core content classes (math, English Language arts, and either science or social studies for alternating quarters). The classes rotate among the teachers, staying together as a group. For their elective classes, students leave the team and are integrated with other 6th grade students in coeducational classes in another part of the building. Every quarter, the Trailblazers teachers alternate the daily schedule for the class groups. For example, during 1st quarter the all-boys class may have math for 1st period, but at the beginning of 2nd quarter, the classes rotate schedules so the all-girls class will have math for 1st period. In the 3rd quarter, the mixed-gender group will have math 1st period. The 4th quarter schedule mirrors the 1st quarter schedule.

Using Gender-Based Teaching Strategies. Using available research, the Trailblazers team teachers implemented instructional strategies specifically developed for boys or girls in their classrooms. Their intent was not just to separate boys from girls, but *to teach each group differently according to their gender-based learning needs*, a distinction that some schools experimenting with single-gender initiatives have failed to recognize (Chadwell, 2007; Sax, 2005a; 2007).

Examples of single-gender learning strategies used by the Trailblazer team teachers with their female students included revising allotted instructional time to allow increased levels of class discussion; making real world connections to math and science concepts; allowing for evolution of an assignment that may change based on class discussions; using fiction-based materials for reading assignments; developing class activities that encouraged appropriate risk-taking; giving multiple assignments and allowing girls to self-monitor work completion; increasing the variety of art supplies

available in the classroom and incorporating this variety into classwork; and allowing time during school day to discuss “girl issues.”

Levels of teacher-fidelity regarding the use of the gender-based strategies were not observed on a daily basis; however, there is evidence to indicate high levels of teacher fidelity to using gender-based instructional strategies. The idea to investigate and pilot single-gender learning initiated with the teachers themselves, and therefore, teacher buy-in regarding these concepts was strong. On the recommendation of the researcher, the teachers made checklists to self-monitor how often they used certain gender-based learning strategies during a specified period of time, and the checklists indicated that gender-based learning strategies were being used on a consistent basis. Teachers regularly met to discuss the positives and negatives of their efforts and to share ideas. Through personal conversations with the researcher, the principal confirmed her belief that teacher fidelity to the concepts of gender-based teaching and learning were being maintained. The principal based this belief on her own personal observations of the teachers and students that occurred when she was in the classroom.

As professionals, the Trailblazer teachers were reluctant to refrain from using these strategies with their mixed-gender coeducational classes. Therefore, any instructional strategy that the teachers believed would yield positive results was utilized with both single-gender and mixed-gender classes. Consequently, while the use of gender-based instructional strategies is not part of the treatment per se, the teachers and the principal indicated through personal conversations with the researcher that using these gender-based strategies created a classroom environment where sensitivity to gender-based learning was increased. The degree to which gender-based strategies could

be integrated in the teachers' instructional designs was higher for the single-gender classrooms.

Role as Researcher

In 2009, the principal was approached by the 6th grade teachers from the Trailblazers team who wanted to explore new initiatives that could possibly improve student success. One area they wanted to learn more about was gender-based teaching and learning. To this end, the principal contacted me and asked if I would serve as a consultant to her teachers as they began this exploration and I enthusiastically agreed. During the 2009-10 academic year with the principal's approval, I met with the teachers to share recommendations for texts and articles that I thought they would find useful. I researched the federal guidelines for single-gender programs in public schools and shared that information with the principal. In addition, I attended a conference with the teachers on single-gender programs to see what we could learn from other educators.

As I began working with the Trailblazers team, I realized that this project could serve as the basis of my dissertation. While my role was that of a consultant in the beginning, by the end of the 2009-2010 school year I had developed a collegial and friendly relationship with the teachers and had become an advisor/confidant to the principal on the single-gender program. I wanted to avoid any conflict of interest that could possibly arise out of my involvement with this project as the foundation of my dissertation. To this end, in 2010 I consulted with a research professor regarding the use of previously gathered data as a part of my study. I asked her if there was a way that I could continue to work on the project, help the teachers, and provide advice and analysis when requested to do so, and without compromising the use of this project as a possible

dissertation topic. The research professor recommended that I serve as a program evaluator for the school, and that I clearly articulate to the school and to any interested parties that any data I used or helped collect or interpret for the school belong to the school; it would not be *my* data. I could not publish it or share it with others without the express consent of the school and without IRB approval. Based on these recommendations, I shared this information with the principal and teachers and asked if they were agreeable to defining my role in this way. They were happy to comply with this understanding.

To date, the information that has been collected on the West Middle single-gender initiative has been shared by me in the following ways:

1. as a class presentation project in one doctoral class;
2. as a presentation entry in the university's Graduate Research Fair, for which I received the principal's permission before sharing (awarded 2nd place); and
3. as a "status" presentation with the principal to the Instructional Sub-Committee of the local school board.

In my capacity as program evaluator, I have:

1. observed the single-gender classrooms and shared my observations with the teachers in our formal and informal discussions;
2. met with the teachers and principal to discuss the status of the initiative;
3. attended parent information nights at the beginning of the 2010-11 and 2011-12 academic years where teachers presented the information about the program. I was there to offer support and did not present; and
4. helped with data collection at the end of 2010-11, 2011-12, and 2012-13 by:

a. supervising the students on the library computers in small groups while they completed the online anonymous survey;
b. explaining to students how to access the online anonymous survey;
c. asking interview questions to students and recording responses; and
d. reviewing results as part of a team with the principal and the teachers.

In spring of 2012 I sought permission from my dissertation committee to seek IRB approval to collect data on behalf of the school for the 2011-12 school year, to use extant data from previous years, and to use all these data for my dissertation. Under the supervision of my dissertation advisor, I submitted a prospectus to my dissertation committee and received permission to submit an IRB proposal. Initial IRB approval was granted May 1, 2012. In April 2013, I submitted a renewal request to IRB and an amendment to my original application requesting permission to use the 2012-13 school data in my study, thus ensuring three years of data for my dissertation study.

Research Questions and Hypotheses

The following questions and hypotheses will guide this research:

R_1: To what extent is gender-based teaching associated with self-esteem, academic attitude, and student satisfaction for 6^{th} grade girls?

R_2: How do 6^{th} grade girls in single-gender classrooms perceive their school social experiences?

R_3: How do 6^{th} grade girls describe the experience of being taught in an all-female grouped classroom versus a mixed gender classroom?

H_0: There are no significant differences in the self-esteem, academic attitudes, and student satisfaction scores between 6th grade girls assigned to a single-gender classroom and 6th grade girls assigned to a mixed-gender classroom.

H_1: There are significant differences in the self-esteem, academic attitudes, and student satisfaction scores between 6th grade girls assigned to a single-gender classroom and 6th grade girls assigned to a mixed-gender classroom.

Research Design

As the student-participants were not randomly assigned to each group for this study, a true experimental design could not be utilized (Gay, Mills, & Airasian, 2006). The research design for this study encompassed a quasi-experimental approach with a posttest only-group design. While the lack of randomization is a limitation of the study, some steps were taken to ensure that samples were made up of similar participants to reduce threat of internal validity. All the students were female and assigned to the 6th grade. On the continuum of Exceptional Children's services provided by the district, the overwhelming majority of students on the Trailblazers team were categorized as "regular" students who did not qualify for special education services or academically gifted services. Of the 109 student participants, only one was classified as EC (for mild dyslexia; services were provided on a consultative basis). None were classified as academically gifted; four were identified as Limited English Proficient (LEP) with varying degrees of language proficiency.

Selection of student-participants into the single-gender program for Year One was determined by whether or not students and parents signed the consent/assent forms for program participation. Selection of student-participants into the single-gender program

for Years Two and Three was determined by a collaborative teacher-selection process (see the "Student-Participants" section for additional details on this process).

Research Method

The definition of what constitutes a "mixed methods approach" continues to evolve in the literature (Tashakkori & Creswell, 2007), but given that this study combines survey results with individual interviews for a clearer conceptual understanding, the label of "mixed methods" seems to best fit. As outlined in Chapter Two, a "difference" feminist theoretical framework was considered in the overall study of single-gender classrooms and their impact on female adolescent self-esteem. However, when considering a methodological framework, the researcher borrowed heavily from the recommendations for novice mixed methods researchers provided by Greenwood and Terry (2012) on how to best present a mixed methods design.

While historically a positivist methodological perspective has dominated research paradigms, the constructivist viewpoint has gained increasing use and acceptance in the last 20 years (Morgan, 2007). While it would have been possible to only examine and analyze quantitative data for this study, this would mean ignoring a rich and robust source of qualitative data from students and from teachers that was used to develop a deeper understanding of what was happening in the single-gender classrooms at West Middle School. Borrowing from the work of Morgan (2007) and Johnson and Onwuegbuzie (2004), the methodological framework for this study was a pragmatist paradigm. As Morgan points out:

> The great strength of this pragmatic approach to social science research methodology is its emphasis on the connection between epistemological concerns about the nature of the knowledge that we produce and technical concerns about the methods that we use to generate that knowledge.

> This moves beyond technical questions about mixing or combining methods and puts us in a position to argue for a properly *integrated methodology* for the social science (p. 73).

Johnson, Onwuegbuzie, and Turner (2007) also validate pragmatism as a valid approach to research and discuss a mixed methods definition as "generally speaking, an approach to knowledge (theory and practice) that attempts to consider multiple viewpoints, perspectives, positions, and standpoints" (p. 113). Creswell and Tashkkori (2007) argue that despite some critics' assertions that pragmatism is an American concept—the implication being that pragmatism is not a universally accepted paradigm—pragmatism is in fact a world view that has "been demonstrated in current research and is not unrealistic" (p. 306). With this information in mind, a mixed methods approach was the methodology used in this study. Data was collected via two methods: quantitatively via a student completed survey with Likert-type items and qualitatively via open-ended student survey responses and interviews with students and teachers. This approach allowed for triangulation of data, a process for analyzing evidence from multiple sources, and then using that analysis of evidence to uncover and justify themes present in the data (Hanson, Creswell, Plano-Clark Petska, & Creswell, 2005; Johnson, Onwuegbuzie, & Turner, 2007).

In Chapter Two, the theoretical framework of "difference" feminism was presented as a lens through which to view the work on single-sex classrooms. When the pragmatist "mixed methods" approach is added, a blended methodological model emerges, one that Hanson, Creswell, Plano-Clark, Petska, and Creswell (2005) describe as a *concurrent transformative design*. According to Hanson et al. (2005), "concurrent transformative designs use an explicit advocacy lens (e.g., feminist perspectives, critical

theory) which is usually reflected in the purpose statement, research questions, and implications for action and change" (p. 229). Since this blended method description seems to fully capture the intentions of both theoretical frameworks selected by the researcher (i.e., "difference" feminism and pragmatism), the methodological framework used for this study was a concurrent transformative design. Based on the recommendations by Greenwood and Terry (2012), a figure is presented to illustrate this blended methodological model for clarity.

Figure 2 demonstrates the concurrent transformative design.

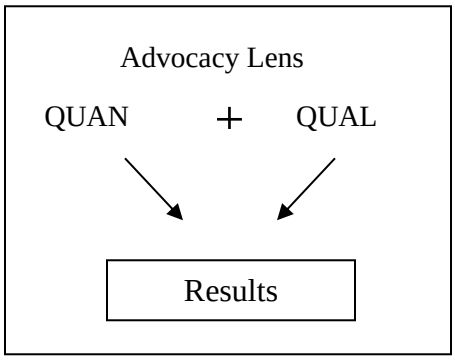

Figure 2. Illustration of a concurrent transformative method design model. Adapted from "Mixed Methods Research Designs in Counseling Psychology," by W. E. Hanson, J. W. Creswell, V. L. Plano-Clark, K. S. Petska, and D. J. Creswell, 2005, *Journal of Counseling Psychology*, *52*, p. 228. Copyright 2005 by the American Psychological Association.

Instrumentation

Developing the Student Survey Questions – Year One

Part one of the data collection occurred quantitatively via a student completed survey. The student survey used in Year One was originally developed by the school's single-gender advisory team, comprised of the Trailblazers team, the principal, and the

researcher. Developing the survey questions was a collaborative process which occurred over several weeks and began with the teachers. The group decided to use a Likert-type scale for recording student responses, as the students would likely have little difficulty in understanding such a system. Each teacher on the Trailblazers team submitted original drafts of potential survey statements/questions. This allowed each teacher to have a voice in the survey's development.

The drafted question items were compiled and shared with the entire group and then collectively reviewed. The group read each question item aloud and discussed the wording in detail. Items that had a common theme were clustered together and then revised until group consensus was reached on whether or not the item should be included in the survey. It was important to the teachers that the survey items were phrased clearly for the students; to that end, a common wording system emerged for the items relating to whether or not students liked / found each specific content area "easy" (items 3-9). For ascertaining the experience of being in a single-sex classroom, the teachers, principal, and the researcher all served as content experts, reviewing each item and discussing what it measured. The overall emphasis was on how students perceived the experience of being in the single-sex classroom: focus words for these items were "enjoy," "like," and "better" (e.g., item 14 on the single-gender survey: "Being in the boys-only or girls-only class has helped me learn better."). At the principal's suggestion, items were added regarding whether or not students are bullied at the school, and student satisfaction levels regarding being assigned to West Middle School and to the Trailblazers team. No items were reverse coded. Two versions of the school-developed survey were created, one for single-gender classes and one for the mixed-gender classes.

While rating scales can provide much information for quantitative analysis, they can at the same time be limiting to both researcher and participant. Open-ended responses provide a method for participants to more fully share the depth and quality of their experiences (Hanson et al., 2005). While the single-gender advisory team wanted to solicit robust student responses, the group was cognizant of the fact we were dealing with 6th grade participants, and therefore any open-ended questions needed to be brief and to the point. The single-gender survey included two open-ended responses and the mixed-gender survey included one open-ended response. Single-gender participants were asked to cite one or two things they enjoyed about being in the single-gender program and one or two things they did not like about being in the single-gender program. Mixed-gender participants were asked to explain why they answered the way they did in a previous question ("I wish I had been in the boys-only or girls-only class on my team this year").

As program evaluator, the researcher offered to compile the final survey questions into an electronic format on behalf of the group. The researcher sent a copy of the finalized survey to each teacher and the principal and suggested that any changes made to the survey questions occur electronically through the "reply to all" email feature. By that point, the group had met and discussed each survey question in detail, and any changes to wording were anticipated to be minor. No changes were suggested.

Revising the Student Survey Questions – Years Two and Three

There were originally 26 questions on the single-gender survey for student participants in Year One; however, when reviewing the survey questions in preparation for Year Two, the advisory team opted to remove two question/statements that were perceived to be repetitive and/or unnecessary for the Year Two survey. The first deleted

statement, "I learn better in my boys only or girls only classes than I do in my classes with boys and girls together," was perceived as negatively creating a competitive edge between single-gender and coeducational classes. The advisory team felt like the concept (i.e., how do I learn in single-gender versus coeducational classes) was better addressed with item 14 already on the survey ("Being in the boys-only or girls-only class has helped me learn better"). The second deleted statement, "All 6th grade students should be allowed to be in boys only or girls only classes if they want," was perceived as not accurately gauging the intended concept the team wanted to assess, which was whether or not the participants would recommend the single-gender program to upcoming 6th graders. The team believed this concept was better assessed with item 18 already on the survey ("I would tell new students to choose the boys-only or girls-only classes if they have the chance").

Final Version of the School-Developed Student Survey

Appendix A is the final version of the single-gender survey, with the two questions deleted after Year One. The finalized single-gender survey for Trailblazer team females was comprised of 23 total questions: 19 Likert-type questions, two demographic data questions, and two open-ended questions. No additional changes were made after Year Two.

On the final version of the single-gender survey, questions one and two are dichotomous questions regarding student demographic information, questions three through 10 are Likert-type questions regarding academic attitude toward core content classes, questions 11 and 12 ask about student behavior in the classroom and perception of classmates' willingness to learn, question 13 is a Likert-type question about whether

the student has been bullied at school, questions 14 through 18 and 20 are Likert-type questions about the experience of being in the single-gender classroom, and questions 23 and 24 are Likert-type questions asking about the student's overall level of satisfaction regarding their team and school. Questions 21 and 22 are open-ended questions asking participants to describe one or two things they liked and disliked about being assigned to the single-gender classroom. Question 19 did not apply to 6th grade females and so the participants did not answer this question.

Fifteen of the Likert-type questions are the same on both the mixed-gender and single-gender surveys for 6th grade females. Appendix B is the final version of the mixed-gender survey for Trailblazer team students. It is comprised of 18 total questions: 15 Likert-type questions, two demographic data questions, and one open-ended survey response. On the mixed-gender surveys, questions one and two are dichotomous questions regarding student demographic information, questions three through 10 are Likert-type questions regarding academic attitude toward core content classes, questions 11 and 12 ask about student behavior in the classroom and perception of classmates' willingness to learn, question 13 is a Likert-type question about whether the student has been bullied at school, questions 14 and 15 are Likert-type questions about the experience of being in the mixed-gender classroom, and questions 17 and 18 are Likert-type questions asking about the student's overall level of satisfaction regarding their team and school. Question 16 is an open ended response asking students to explain why they answered the way they did in Question 15 ("I wish I had been in the boys-only or girls-only class on my team this year").

Adding the Rosenberg Self-Esteem Scale Questions – Years Two and Three

In Year Two (2011-12), after receiving committee and IRB approval, the researcher suggested to the teachers and principal that they might wish to add validity and reliability to their survey by appending it to include the Rosenberg Self-Esteem Scale (SES) questions. Developed by renowned sociologist Morris Rosenberg, the Rosenberg Self-Esteem Scale was initially developed to measure self-esteem levels in adolescents (Rosenberg, 1965). The SES is comprised of 10 items measured on a Likert-type scale of four points, and asks respondents to consider their own feelings about themselves.

The Rosenberg SES is well-documented as reliable and valid (Erol & Orth, 2011). Blascovich and Tomaka (1991) in *Measures of Personality and Social Psychological Attitudes, Volume 1* reviewed the SES for reliability and validity. Internal consistent reliability values of Cronbach's α at .77 and .88 were noted, as well as significant levels of test-retest reliability (Pearson correlations were .85 and .82 on two separate measures). High degrees of convergent and discriminant validity for the SES were also demonstrated on several measures. The results section of the analysis reports that "the SES is the standard against which new measures are evaluated. Its ease of administration, scoring, and brevity underlie our recommendation for the use of the SES as a straightforward estimate of positive or negative feelings about the self" (p. 123). Gray-Little, Williams, and Hancock (1997) conducted an item-response theory analysis of the Rosenberg SES. Their results showed the Pearson item-total correlations for the Rosenberg survey items ranged from .61 to .76, and Cronbach's α for the test items was .88. The authors noted that the Rosenberg Scale "deserves its widespread use and popularity: This scale provides a highly reliable and internally consistent measure of global self-esteem" (p. 450).

The school personnel were amenable to adding the Rosenberg Self-Esteem Scale items to the original student survey questions. The addition of the Rosenberg SES questions (Appendix C) added 10 more Likert-type items to each survey, bringing the total number of Likert-type items for 6th grade female participants on the single-gender survey to 33 and the total number of Likert-type items for the mixed-gender survey to 28. This resulted in a total of 25 common Likert-type items on both the single-gender and mixed-gender end-of-year student surveys to use for comparative purposes.

Developing the Interview Questions

From the beginning, it was evident that a richer, more vibrant understanding of the single-gender experience for females would be possible by interviewing student and teacher participants. In addition, use of participant interviews allowed for the triangulation of data to aid with identification of themes present in the data (Greenwood & Terry, 2012; Johnson, Onwuegbuzie, & Turner, 2007). Student-participant interviews were the primary source of information; however, teacher interviews were also helpful in providing background information on the context of the initiative and served to verify student perceptions of their experiences. Consequently, the teacher interviews were used as a source of contextual information and data triangulation but not considered a primary source of data for the researcher.

Student interview questions were also developed by the school's single-gender advisory group (Appendix D). For the student interviews, five structured interview questions regarding perceptions of the single-gender learning environment were written. For the teacher interviews, 11 structured interview questions were developed asking teachers about the overall effectiveness of the single-gender program, positives and

negatives of the single-gender program, professional development regarding the single-gender program, and what the teachers would change about the program in the future (Appendix E). While specific questions were developed for each interview, a strict interview protocol was not followed in order to allow the researcher greater flexibility to follow-up on participant responses with additional questions if necessary to provide clarification.

In Years One, Two, and Three, student participants were randomly selected for short qualitative interviews. All potential student participants were provided copies of consent and assent forms approximately one month in advance of the data collection date and asked to return the signed forms if they wished to participate. Students were offered the incentive having their name entered into a drawing for a $25 gift card if they returned their signed consent / assent forms.

Data Collection

For the surveys, data collection occurred one day near the end of each school year. Students completed the survey anonymously via Survey Share, an electronic survey site. The survey was administered by the researcher. Students were brought to either the computers in the library or the school computer lab (depending on availability) in groups. Students logged in on the school computers using their school provided user ID. Once all students were seated, the researcher gave the students written and verbal directions on how to access the survey. Students were asked to remain quiet when they completed the survey and were told that they could take as much time as they needed to finish. The researcher encouraged students to raise their hands and ask for clarification if there was a word or question that they did not understand. In Year One, the survey took about 15

minutes for the students to complete; in Year Two, it was about 20 minutes. Once the student survey responses were gathered, students were asked to wait quietly until all the students in the group were finished. Students were then allowed to return to their classroom and send the next group (if necessary). No make-up surveys were given to students who were absent.

For the interviews, in Year One the researcher audio-recorded the interviews and used a laptop computer to record field notes. The researcher transcribed all the interviews in Year One. In Years Two and Three, the researcher audio-recorded the interviews and utilized a professional transcriptionist to save time. The interviews were administered at the school site in a quiet area designated by the principal (usually the school conference room in the main office area). Students were called individually to the interview area from one of their Trailblazers team classes. Each interview lasted approximately 15 minutes or less, depending on the length of student responses.

Structured interviews with the teachers occurred at the end of each academic year as part of the school's data collection process. The researcher met with each teacher-participant in their classroom to conduct an individual interview at the end of Years One and Two. In Year Three, the teachers were interviewed collectively as a group and the same questions were used. Regular meetings and communications (electronic and in person) between the Trailblazer team teachers, the principal, and the researcher have provided additional and ongoing insights regarding how the adults involved with the single-gender program perceive this initiative. Minutes and notes from these meetings were also recorded and shared when appropriate.

Data Analysis Methods

This study provided quantitative and qualitative data using a mixed-methods design to determine if differences exist in self-esteem, academic attitudes and student satisfaction levels between the control group (6^{th} grade females in a mixed-gender coeducational classroom) and the treatment group (6^{th} grade females in a single-gender classroom). For these quantitative statistical analyses, the researcher used the Statistical Package for the Social Sciences (SPSS) to record and analyze statistical patterns and trends.

For common Likert-scale survey items appearing on the single-gender and mixed-gender student surveys (addressed in Research Question One), inferential statistical methods were used to determine if statistically significant differences existed in the self-esteem, academic attitudes, and student satisfaction levels between girls in single-gender classrooms and girls in mixed-gender classrooms. For this study, the treatment (i.e., membership in a single-gender classroom) was the independent variable; *self-esteem* (DV 1), *academic attitudes* (DV 2), and *student satisfaction* (DV 3) were the dependent variables. A principal component analysis was conducted prior to any other statistical analysis to verify the assumed number of dependent variables. Adjustments were made accordingly before proceeding (see Chapter Four). In addition, a chi-square analysis was performed on the demographic data for each group to determine if the participant groups were appropriately equalized for ethnicity.

The statistical analysis was divided into two primary pieces. The Rosenberg Self-Esteem Scale was not added until Year Two of the study. Therefore, to compare *self-esteem* (DV 1) levels between the control group and the treatment group with data from

Years Two and Three, ANOVA was used. To compare the dependent variables of *academic attitude* (DV 2) and *student satisfaction* (DV 3) using the teacher-developed survey data from Years One, Two, and Three, MANOVA was used.

Self-esteem (DV 1) was measured using the Rosenberg Self-Esteem Scale items (items 25-34 on the single-gender survey; items 19-28 on the mixed-gender survey). *Academic attitudes* (DV 2) was originally measured for all participants by using items 3, 4, 5, 6, 7, 8, 9, and 10 on both surveys. *Student satisfaction* (DV 3) was measured for single-gender participants by using items 11, 12, 13, 23 and 24. For mixed-gender participants, *student satisfaction* will be measured by using items 11, 12, 13, 17, and 18 (Items 17 and 18 are the same as Items 23 and 24 on the single-gender survey). The multivariate *F* value was used for MANOVA and the univariate *F* value was used for ANOVA to determine if dependent variables differed between the two groups at an alpha level of .05. For results indicating a significant difference, post-hoc tests were conducted to identify the specific dependent variable that contributed to the significant overall effect.

Given that the sample size of the single-gender group was almost twice the size of the mixed-gender group, additional procedures to transform the data to assure homogeneity of variance and covariance as much as possible were applied. Both MANOVA and ANOVA assume a normal distribution among dependent variables; Box's Test of Equality of Covariance Matrices was applied to MANOVA and Levene's Test of Homogeneity of Variance was applied to ANOVA to determine normality of distributions. Items that were "reverse coded" were singled out and clearly identified so

as not to cause confusion; items three, five, eight, nine and ten on the Rosenberg Self-Esteem Scale were reverse coded.

For the non-common Likert-scale survey items that were specific to each class/survey, descriptive statistics were used to explore the experience of single-gender learning (addressed in Research Questions Two and Three). On the single-gender survey, this included items 14, 15, 16, 17, 18, and 20. Common descriptive statistics are reported, including measures of central tendency and standard deviation.

For the student-participant interviews (which are a primary source of qualitative data), responses were coded to look for emerging themes. In keeping with suggestions for coding recommended by Saldana (2013), two rounds of coding were conducted for this process. The first cycle of coding utilized Initial Coding combined with In Vivo Coding. Initial Coding is described as, "breaking down qualitative data into discrete parts, closely examining them, and comparing them for similarities and differences" (Strauss & Corbin, 1998, p. 102, as quoted by Saldana, 2013, p. 100). In Vivo Coding refers to "using a word or short phrase form the actual language found in the data record as used by the participants" (Saldana, 2013, p. 91). Saldana (2013) also notes that In Vivo Coding is very appropriate for use with qualitative research involving adolescents, as adolescent voices "are often marginalized, and coding with their actual words enhances and deepens an adult's understanding of their cultures and world views" (p. 91). Both methods use "first impression" phrases and actual participant language to identify preliminary codes (Saldana, 2013). Key words and phrases that suggested a common topic or trend were noted. Each student interview was coded individually before moving on to the next.

In the second cycle of coding, Focus Coding was used to capture and summarize the common main ideas and to determine the breadth and scope of themes in the interviews. Focus Coding is described by Saldana (2013) as an appropriate second cycle coding method to follow Initial and In Vivo first cycle coding methods. Focus Coding "categorizes coded data based on thematic or conceptual similarity" (Saldana, 2013, p. 209). It searches for the frequently reoccurring or significant codes to "develop the most salient categories" appropriate to the research (Saldana, 2013, p. 213). Coding was done manually; no software programs were used to analyze the qualitative data.

Summary

The methodology described for this study enabled the researcher to analyze student data via a mixed methods approach, allowing for both quantitative and qualitative sources of data. A concurrent transformative methodological design was employed to encompass both the "difference" feminist theoretical perspective and the pragmatic "mixed methods" approach. Quantitative data on the single-gender initiative for 6th grade females was provided via two survey instruments: a school-developed survey and the Rosenberg Self-Esteem Scale. Both inferential and descriptive statistics were utilized. Qualitative data were provided through open-ended survey questions and student interviews, with teacher interviews providing contextual background and secondary source information. This blending of methods provided a richer, more robust understanding of the single-gender initiative and its potential benefits for adolescent females.

The following chapter will include the results of the principal component and chi-square preliminary analyses, MANOVA and ANOVA analyses comparing single-gender

and mixed-gender female results for all dependent variables, the descriptive statistics for student-participants, and the coded themes that emerged from the participant interviews and the open-ended survey responses.

CHAPTER 4: RESULTS

The purpose of this mixed methods study was to examine all-girls' classrooms in 6th grade where gender-specific learning strategies are utilized, and to compare levels of self-esteem, academic attitude, and student satisfaction with girls in mixed-gender 6th grade classrooms. The study also examined student descriptions of the single-gender experience; specifically, the researcher explored how the single-gender environment may contribute toward the female learning experience. This chapter presents information on the data collected from three years of student survey data and student interviews, with interviews from teachers used as a secondary data source.

Preliminary quantitative analyses included a principal component analysis to verify the number of assumed dependent variables for both MANOVA and ANOVA. A chi-square analysis was also conducted to determine if the participant groups were appropriately equalized. After adjustments were made based on the preliminary results, the primary MANOVA and ANOVA results were analyzed. Descriptive statistics from specific items on the single-gender survey were utilized to provide a deeper understanding of the single-gender classroom experience. Qualitative analyses of student-participant interview data, in addition to the student open-ended item survey responses, were analyzed and coded following Saldana's (2013) recommendations. Two rounds of coding were utilized.

All these data examined the participation in a single-gender classroom to address the following research questions:

R_1: To what extent is gender-based teaching associated with self-esteem, academic attitude, and student satisfaction for 6th grade girls?

R_2: How do 6th grade girls in single-gender classrooms perceive their school social experiences?

R_3: How do 6th grade girls describe the experience of being taught in an all-female grouped classroom versus a mixed gender classroom?

Quantitative Analysis – Comparison of Dependent Variables

Preliminary Statistical Analyses

For this study, the treatment (i.e., membership in a single-gender classroom) was the independent variable; *self-esteem* (DV 1), *academic attitudes* (DV 2), and *student satisfaction* (DV 3) were the preliminary dependent variables. In order to verify the assumed number of dependent variables, a principal component analysis was completed on the student survey items assigned by the researcher to measure each dependent variable. These results indicated that the dependent variable *academic attitudes* needed to be reconsidered. The means and standard deviations for each group on each resulting dependent variable over the three year period are reported in Table 2.

Table 2: Means and standard deviation of dependent variables by year and class assignment

			DV 1 (Self-esteem)		DV 2a (Math)		DV 2b (ELA)		DV 2c (Sci)		DV 2d (SS)		DV 3 (Satisf.)	
	Class	n	*M*	SD	*M*	SD	*M*	SD	*M*	SD	*M*	SD	*M*	SD
Year 1														
	Mixed	11	__	__	3.23	.98	3.54	.99	4.27	.68	3.82	.96	3.55	.80
	Single	25	__	__	3.90	.90	2.52	1.04	3.98	.71	4.00	.66	4.34	.42
	Total	36	__	__	3.69	.97	3.53	1.01	4.07	.71	3.94	.75	4.10	.67
Year 2														
	Mixed	14	3.57	.84	3.36	1.01	3.43	1.07	4.25	.55	4.14	.66	3.73	.81
	Single	27	3.43	.97	3.52	1.06	3.43	.66	4.07	.72	3.87	.70	3.66	.92
	Total	41	3.48	.92	3.46	1.03	3.43	.82	4.13	.66	3.96	.69	3.69	.87
Year 3														
	Mixed	8	4.24	.38	3.75	.46	3.19	.92	4.50	.71	4.25	.53	3.97	.47
	Single	23	3.95	.79	3.93	.66	3.85	.97	4.48	.53	4.33	.58	4.38	.44
	Total	31	4.03	.71	3.89	.62	3.68	.99	4.48	.57	4.31	.56	4.27	.48
Totals (Y1-3)														
	Mixed	33	__	__	3.41	.89	3.41	.99	4.31	.62	4.06	.75	3.73	.74
	Single	75	__	__	3.77	.91	3.59	.91	4.17	.69	4.05	.67	4.11	.72
	Total	108	__	__	3.66	.92	3.53	.93	4.21	.67	4.06	.69	3.99	.75
Totals (Y2-3)														
	Mixed	22	3.81	.77	__	__	__	__	__	__	__	__	__	__
	Single	49	3.67	.92	__	__	__	__	__	__	__	__	__	__
	Total	71	3.71	.88	__	__	__	__	__	__	__	__	__	__

Note. ELA = English Language Arts; Sci = Science; SS = Social Studies

Determination of Revised Dependent Variables. *Self-esteem* (DV 1) was measured using the Rosenberg Self-Esteem Scale items (items 25-34 on the single-gender survey; items 19-28 on the mixed-gender survey). Items three, five, eight, nine and ten on the Rosenberg Self-Esteem Scale were reverse coded. Principal component analysis for *self-esteem* (DV1) found that the Rosenberg Self-Esteem Scale items produced a high degree of reliability to one another (Cronbach's alpha = .88), which was expected given the data reported on the Rosenberg Scale found in the research literature. DV 1 was not altered.

Principal component analysis for *academic attitudes* (DV 2) was completed on student survey items 3, 4, 5, 6, 7, 8, 9, and 10 on both surveys (see Appendices A and B). Analysis noted that the items did not produce a high degree of reliability to one another (Cronbach's alpha = .47), but the items did produce stronger levels of reliability to one another within the academic content areas used to identify each variable (i.e., math, language arts, science, and social studies). Reliability results indicated that items 3 and 4 ("Math is an easy subject for me" "I like my math class") produced a Cronbach's alpha level of .66. Items 5 and 6 ("Language Arts is an easy subject for me" "I like my Language Arts class") had a Cronbach's alpha value of .75. Items 7 and 8 ("Science is an easy subject for me" "I like my science class") had a Cronbach's alpha value of .64. Items 9 and 10 ("Social studies is an easy subject for me" "I like my social studies class") had a Cronbach's alpha value of .67. Because of these results, DV 2 (*academic attitudes*) was amended to four new dependent variables: 1) *academic attitude toward math* (DV 2a) 2), *academic attitude toward language arts* (DV 2b), 3) *academic attitude toward scienc*e (DV 2c), and 4) *academic attitude toward social studies* (DV 2d). These

variables were considered to collectively measure *academic attitude* but the interpretive statistical analysis will consider each variable (DV 2a-d) separately.

Correlation significance was also noted for each of the grouped items within the newly established dependent variables. Correlation results for each of the items measured appears in Table 3.

Table 3: Pearson's Correlation results among study variables for *academic attitude* (DV 2a-d)

	Math Easy	Like Math	ELA Easy	Like ELA	Sci Easy	Like Sci	SS Easy	Like SS
Math Easy	___	.494**	-.063	-.085	-.117	-.089	-.042	-.034
Like Math		___	-.072	.025	-.076	.106	-.167*	-.026
ELA Easy			___	.598**	.027	.022	.158*	.076
Like ELA				___	-.021	.139*	.070	.194**
Sci Easy					___	.480**	.363**	.170*
Like Sci						___	.201**	.486**
SS Easy							___	.505**
Like SS								___

Note. ELA = English Language Arts; Sci = Science; SS = Social Studies.
** $p < 0.01$ level (2-tailed); * $p < 0.05$ level (2-tailed).

Principal component analysis for *student satisfaction* (DV 3) was measured for single-gender participants by using items 11, 12, 13, 23 and 24. For mixed-gender participants, student satisfaction was measured by using items 11, 12, 13, 17, and 18 (items 17 and 18 are the same as items 23 and 24 on the single-gender survey; see Appendices A and B). Principal component analysis between the items produced a Cronbach's alpha value of .60; however, the reliability value increased to .65 if item 13 ("I am never bullied at this school") was not considered. This result caused the researcher

to reconsider the grouping of the items. Items 11, 12, 17/23, and 18/24 are positively worded, while item 13 is negatively worded; in addition, it can be argued that the item about bullying does not fit well into the group with the other items, three of which specifically relate to being placed on the team. Bullying could include a broader context that moves beyond just the team; bullying could occur in the locker room or on the school bus, and therefore may or may not actually relate to the student behaviors in the classroom. Based on these factors, item 13 was not included in measuring *student satisfaction.*

Equalized Participant Groups. A chi-square contingency test was used to determine whether there was a significant difference between the female students in the single-gender classes and the female students in the mixed-gender classes in terms of ethnicity over the three year period. In the single-gender classes, 54 (73.97%) of the participants were ethnically categorized as "white" while 19 (26.03%) were ethnically categorized as "non-white." In the mixed gender class, 26 (72.22%) of the participants were categorized as "white" while 10 (27.78%) of the participants were ethnically categorized as "non-white." The chi-square contingency analysis indicated that this difference was not statistically significant ($p = .85$). Based on this result, the researcher determined that the two participant groups were appropriately equalized in terms of ethnicity of student-participants.

The final survey results were collected over a three-year period. In Year One, there were 11 girls from the mixed class and 25 girls from the single-gender class who took the survey. In Year Two, there were 14 girls from the mixed class and 27 from the

single-gender class who took the survey. In Year Three, there were eight girls from the mixed class and 23 from the single-gender class who took the survey.

ANOVA-MANOVA analyses

As detailed in Chapter Three, two surveys were combined into a single instrument to collect data from the students. The teacher-developed survey was given to students three consecutive years; the Rosenberg Self-Esteem Scale was only given in Years Two and Three of the three-year study. ANOVA was used to analyze the means between the control group and the treatment group for dependent variable *self-esteem* (DV 1) using Rosenberg Self-Esteem Scale data from Years Two and Three to determine any statistical significance. MANOVA was used to analyze the means between the control group and the treatment group for dependent variables *academic attitudes toward math, language arts, science* and *social studies* (DV 2a-d) and *student satisfaction* (DV 3) using the teacher-developed survey data from Years One, Two, and Three.

ANOVA Results. ANOVA results compared *self-esteem* (DV 1) means between the control group and the treatment group using Rosenberg Self-Esteem Scale data from Years Two and Three to determine any statistical significance. Levine's Test of Equality of Error Variances was applied to determine if variance of *self-esteem* was equal across groups; all assumptions were met: [F (3, 67) = 2.19, p = .09].

The results indicated no statistical significance for class assignment on *self-esteem* [F (1, 67) = .89, p = .35, η^2= .01]. However, significance was indicated between the groups on year of participation, showing that overall the students in Year Three indicated higher levels of self-esteem than students in Year Two: F (1, 67) = 7.10, p = .01, η^2= .09.

No significant interaction between class and year was noted. As only two years of data were used, no post-hoc analysis was needed.

It is uncertain what can be determined by the significance regarding year of participation (Year Two versus Year Three). Data for students in Year Two may be an anomaly, as Year Two scores on other dependent variables were also lower than scores in Years One and Three.

Despite the lack of significance for dependent variable *self-esteem*, a simple review of the means may yield some insights. The mixed-gender group mean for *self-esteem* was higher than the single-gender group mean (3.81 versus 3.67). While not a staggering difference, it could indicate that teachers are correctly targeting their intended participants for the single-gender program (i.e., females who exhibited traits indicative of low self-esteem). To more fully examine this possibility, the researcher calculated effect sizes (Cohen's *d*) to determine the magnitude of this difference. For Year Two data, comparing the mixed-gender girls to the single-gender girls on *self-esteem* yields a small effect size (Cohen's $d = .15$); for Year Three data, the comparison on *self-esteem* yields a medium effect size (Cohen's $d = .47$), as defined by Cohen (1988). As previously discussed, given that means for Year Two data are consistently lower for all dependent variables across all statistical analyses, Year Two may be an anomaly. The effect size results for Year Three suggest that statistical significance may be found with bigger sample sizes. Additional data are needed.

MANOVA Results**.** For the MANOVA analysis, Box's Test of Equality of Covariance Matrices was applied to determine if variance of dependent variables DV 2 a-

d and DV 3 was equal across groups for all variables. Box's result was not significant [Box's M = 114.67, F (75, 5216) = 1.27, p =.06]; all assumptions were met.

For the dependent variable *academic attitudes* (DV 2a-d), MANOVA results indicated no significant statistical differences between the groups of girls related to class assignment. Specific results are as follows: for *academic attitudes toward math* (DV 2a) related to class assignment: F (1, 102) = 3.14, p = .08, η^2= .03. For *academic attitudes toward language arts* (DV 2b) related to class assignment: F (1, 102) = 1.12, p = .292, η^2= .01. For *academic attitudes toward science* (DV 2c) related to class assignment: F (1, 102) = 1.37, p = .24, η^2= .01. For *academic attitudes toward social studies* (DV 2d) related to class assignment: F (1, 102) = .001, p = .97, η^2< .01.

There were also no significant statistical differences between the groups of girls related to year of participation on *academic attitudes* (DV 2a-d). Specific results as are follows: for *academic attitudes toward math* (DV 2a) related to year of participation: F (1, 102) = 1.47, p = .24, η^2= .03. For *academic attitudes toward language arts* (DV 2b) related to year of participation: F (1, 102) = .125, p = .88, η^2< .01. For *academic attitudes toward science* (DV 2c) related to year of participation: F (1, 102) = 2.42, p = .09, η^2= .05. For *academic attitudes toward social studies* (DV 2d) related to year of participation: F (1, 102) = 2.18, p = .12, η^2= .04.

For *student satisfaction* (DV 3), MANOVA analysis did find statistical significance between the groups of girls related to both class assignment and year of participation. *Student satisfaction* was significantly increased for students assigned to the single-gender class, F (1, 102) = 6.91, p = .01, η^2= .06. Significance was also determined for s*tudent satisfaction* related to year of participation, F (1, 102) = 3.65, p = .03, η^2= .07.

A significant interaction was also noted between year of participation and class assignment, F (1, 102) = 3.43, p = .04, η^2= .06, meaning that students' perceptions of satisfaction were impacted by the combination of what year and class they were assigned to.

Tukey'S HSD method was used as a post-hoc analysis to identify where the differences existed among the groups regarding year of participation. The pairwise comparisons indicated that means for Year Two were significantly lower than for Year One (p = .02) and lower than for Year Three (p < .01). There were no significant differences between Years One and Three (p = .54).

A simple comparison of the means for *student satisfaction* finds the total group mean for the single-gender group was higher (4.11 for the single-gender group versus 3.73 for the mixed gender group). In looking at specific years, the single-gender group means on Years One and Three were, respectively, .79 higher and .41 higher than the mixed-gender group means for these years. Year Two results show the mixed-gender group average for *student satisfaction* was higher than the single-gender group average for that year, but only by .07. Given these collective results, the researcher concluded that *student satisfaction* was significantly higher for participants in the single-gender group versus the mixed gender group.

Examination of the post-hoc analysis results did not yield any additional insights. Since the means for Years One and Three are so similar for the single-gender class (4.34 in Year One; 4.38 in Year Three), it would seem that whatever caused the *student satisfaction* mean to drop for the single-gender group in Year Two was unexplained by

these data. Additional data from subsequent years might prove helpful in determining if the post hoc results were indicative of other phenomenon or simply an irregularity.

To summarize, ANOVA results indicated no statistical significance between the control group and the treatment group on *self-esteem* (DV1); however effect size results from Year Three data suggest that significance might be found with a larger sample size. MANOVA results reported no statistical significance on dependent variables *academic attitudes toward math, English language arts, science* and *social studies* (DV 2a-d). MANOVA results did indicate statistical significance on the dependent variable *student satisfaction* (DV 3), revealing that the single-gender group scores were higher than the mixed-gender group. Statistical significance was also noted regarding year of participation on *student satisfaction*. Post-hoc analysis showed that Year Two data were statistically significant compared to Years One and Three for *student satisfaction*; however, given that Year Two data were consistently low across all variables, this result may be an anomaly.

Other Data Results

In order to better understand the single-gender experience for middle grades females, qualitative and quantitative descriptive data were collected. Primary qualitative data results were collected from student-participants by two methods. First, on the surveys, open-ended questions asked participants what they liked and disliked about being in the single-gender classroom. Second, student interviews were conducted with a sample of single-gender participants each year for the three years of the study. In total, 15 student interviews were conducted over the three-year period. In order to ensure that a variety of student perspectives were included, the researcher made sure that interview

participants represented all available ethnic groups. Of the 15 participants, nine were ethnically categorized as white, six were non-white. Of the six non-white participants, three were Latino and three were African-American. One of the Latino student-participants was officially labeled as Limited English Proficient (LEP) and qualified for additional services.

In addition to these qualitative data, descriptive statistics extracted from specific single-gender survey items were analyzed to provide deeper context and understanding. On the single-gender survey (Appendix A), items 14, 15, 16, 17, 18, and 20 asked single-gender participants specifically about their experiences. The means and standard deviations for these items appear in Table 4.

Table 4: Means and standard deviations for specific single-gender-only survey items by year

		#14: Being in SG helped me learn		#15: Student behavior is better in SG than in MXD		#16: I want to be in SG for Math and ELA next year		#17: I want to be in SG for all my classes next year		#18: I would tell new 6th graders to pick SG		#20: I have enjoyed being in SG this year	
	n	*M*	SD	*M*	SD	*M*	SD	*M*	SD	*M*	SD	*M*	SD
Year 1	25	4.48	0.59	4.40	0.58	2.96	1.06	3.80	1.12	4.28	0.84	4.71	0.46
Year 2	27	3.52	1.25	3.33	1.33	2.56	1.12	3.48	1.40	3.58	1.17	3.96	1.19
Year 3	23	4.61	0.78	4.26	0.92	2.61	1.20	4.17	1.23	4.26	0.75	4.64	0.66
Totals	75	4.17	1.04	3.97	1.10	2.71	1.12	3.80	1.27	4.03	0.99	4.41	0.91

Note: SG = single-gender classes; MXD = mixed-gender classes

Once the student-participant data had been reviewed and analyzed, teacher-participant data was examined as a secondary data source to provide additional understanding and context for the researcher. Three individual interviews were used for this purpose, one with each participating teacher. Informal interviews were conducted

with the teachers as a group at least once per year and at the end of each school year. School visits and email exchanges with the teachers and the principal also provided conceptual understanding for the researcher. However, only the individual teacher-interviews are reported as secondary data sources. All these sources have been synthesized for this study.

Emerging Conceptual Framework

Following Saldana's (2013) recommendations, two rounds of coding were utilized for the interviews and the open-ended responses. As described in Chapter Three, the first round of coding combined Initial Coding with In Vivo Coding, using the students' actual words to capture concepts where appropriate. For example, the words "drama" or "girl-drama" were used by numerous participants as one of the drawbacks to the single-gender classroom. This emerged as a prevalent theme as the coding process unfolded.

In the second round of coding, Focus Coding was used to combine emerging concepts into an understandable framework. This emerging conceptual framework centered on the idea of *behaviors* indicative of the single-gender classroom environment. Within this central idea, the participant responses were conceptualized into two primary sets of *behaviors*: behaviors that characterize what the single-gender classroom *is* and behaviors that characterize what the single-gender classroom *is not*. Each subsequent emerging theme was then grouped into one of these two overarching concepts; themes were collapsed where appropriate.

Table 5 shows emerging themes and coding results.

Table 5: Emerging themes and coding results from primary source qualitative analysis

Emerging Theme (coding categories in bulleted list)	Primary Qualitative Source	
	Student Interview N=15	Open-Ended Survey Items N=75
Supportive • Supportive / understanding • Helpful • Not embarrassed, shy, or nervous • Be with friends / make new friends / get to know friends better	12 (80%)	42 (56%)
Perceived increases in academic performance • Academics improved • Learn better	12 (80%)	12 (16%)
Less teasing and ridicule • Boys not present to laugh / make fun / tease	10 (66.7%)	8 (10.6%)
Fewer classroom disruptions • Boys not present to distract / cause trouble	11 (73.3%)	12 (16%)
Increased focus and engagement • Comfortable • Ask more questions • Confident • Able to focus • Concentrate	8 (53.3%)	16 (21.3%)
"Girl drama" • "girl drama" • Drama as a negative • Girls judging each other as a negative	10 (66.7%)	37 (49.3%)

Quantitative statistical results that could provide additional insights or confirmation of emerging themes were also reviewed and included in subsequent discussions. Teacher-interviews were helpful in exploring the themes associated with the single-gender classroom and *what it is;* however, the teacher-interview questions did not

lend themselves as easily to exploring the themes of *what it is not*, and therefore teacher-interviews were not used as in considering *what is not* themes.

Figure 3 illustrates the emerging conceptual framework.

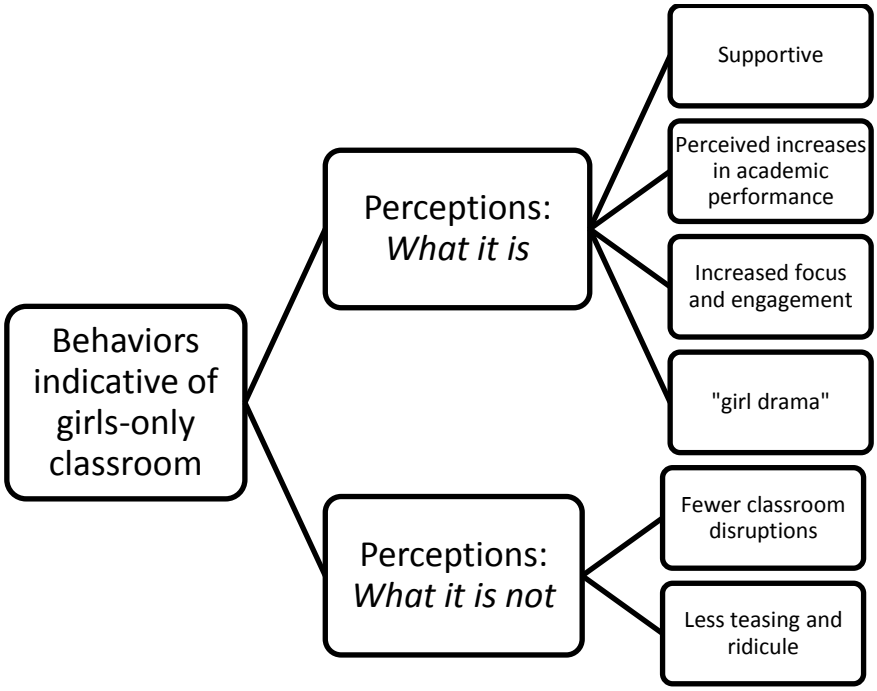

Figure 3: Student-participant perceptions of behaviors indicative of the single-gender girls-only classroom: themes compiled and interpreted after qualitative data analysis.

Perceptions of the Single-Gender Classroom: *What it is*[4]

Supportive

12 of the 15 interview participants (80%) used words to describe the girls-only single-gender classroom that were categorized as *supportive*. Key words from the In Vivo coding method that assisted in defining this attribute were "help," "trust," and "friend." One participant noted that in the girls-only class, "If you need help, they help." Three participants used the exact phasing, "They help me." One student noted, "They

[4] Grammatical errors within student quotes were corrected to ensure readability. Content was copied verbatim as submitted by participants.

[classmates] are helpful. If you need help they will tell you to fix this." "My friends in the girls' class help me when I don't understand things," and "In the girls' class if you need help they can help if the teacher can't come," other students said. "I've made a lot of new friends … and we can get closer instead of being with boys," one student pointed out. Another student said, "I have more friends in there [the girls-only class] and I can talk to them and it's easier for me." Descriptions of classmates also implied an increased level of trust among the students, saying that they were, "people I can trust" and "people to count on." One participant said, "They back me up" in difficult situations.

The open-ended survey question responses asking participants to name one good thing about single-gender classrooms echoed these sentiments. Being helpful or receiving help was again noted: "I can count on people to help me if I need it," "I enjoy that we can have a better talk like how to figure out the answer," and "I can get help from classmates" were indicative examples of participant responses. A high level of trust among the single-gender participants was also described in the survey responses: "We never judged each other," noted one student. "We can understand each other's feelings and we are there for one another," observed another. "In the girl class … I meet [sic] a friend that have [sic] my back everywhere I go around school and I have hers," wrote another student. "You have more people you can count on [in the girls' class]," observed a participant, "because you can count on everybody. They are kind of like your family." "If I'm having trouble with another friend on a different team, they [single-gender classmates] come and back me up," stated another.

Two of the most revealing comments about the girls-only class highlight the underlying concerns many adolescent girls have regarding social acceptance and their

maturing bodies: “I don’t feel pressure or judgment from my pears [peers] [sic]” and “you can not be embarrassed about your period.” Being able to talk to girls about common issues they face was observed as well: “I get along with girls better cause [sic] they have – they know about girls better and they can help with problems girls have.”

Analysis of teacher-participant interviews served to further support the emergence of this *supportive* theme. All three teachers noted a high level of support among participants in the single-gender classroom and described how that support contributed to the girls’ overall feeling of confidence in the classroom. Ms. Weasley noted that the girls in the single-gender classroom were more comfortable with other girls because they enjoyed being with and interacting with other females. She also commented that this camaraderie was beneficial in particular for girls who are not always accepted by their peers:

> They try to support each other, and they try to – we have some girls that are just a little odd, odd girls here and there – that they [the single-gender classmates] were very supportive and very kind to those girls and I’m not sure that in a mixed class that would have happened … I felt like in the girls class, they tried harder to bring in some people that wouldn’t have normally fit.

Ms. Granger echoed this sentiment: “I saw a lot of support of one another and girls willing to help girls that weren’t in their social class, who weren’t in their clique of friends.” Ms. Granger went on to discuss the sense of community support she observed that builds among the girls in the single-gender classroom:

> I see a lot of anxiety when they [the girls] first get here … they are more socially insecure and emotionally insecure I think when they get here than the boys are. Because they are being judged on what they look like. Who their friends are … things that have very little to do with academics, but the support in the girls’ class and the freedom to share what’s going on with them emotionally gives them a sense of community. I see girls flourish in the girls’ class that I fear would otherwise be ostracized in a mixed gender

class.

Perceived Increases in Academic Performance

A second key theme that emerged from the qualitative data was *perceived increases in academic performance.* Although the question of how single-gender programs impact student achievement was not investigated in this study, student perceptions regarding their understanding of their own academic performance in the single gender classroom did materialize as a significant theme. In the student interviews, 12 of the 15 participants (80%) noted that their grades had improved since being in the single-gender class or that there was an increased concern in the single-gender class with making good grades, more so than in their other classes. “Last year I made As, Bs, and Cs. Now I’ve gotten straight As,” remarked one student. “I’ve done way better this year than I have in the past years,” stated another. Other comments repeated this perception: “I think I have done better [academically],” “Last year I would make bad grades but this year I went from a bad grade to a good grade in math,” “I think I have brought up my grades now that I am in the girls’ class,” and “I think I am better than I would [be] with boys in the class because I made A-B honor roll all year so far … and I don’t usually.”

There was also the perception that girls care more about their grades than boys do: “In the girls’ class we care more about our grades … we like more extra credit so we can do better and be able to pass.” “The girls’ class is a whole lot better,” stated another participant, “that’s why I like the girls’ class because we can always get our work done.” “I’ve gotten better grades than I did when I was in elementary school because there was [sic] no boys in my class,” shared a participant. Again, open-ended survey responses posited to all participants confirmed these perceptions. “I enjoyed being in the girls’ class

because it seems to help me learn more," "I like being in the girls' class because it is fun and I learn better," "I like the girls' class only because it helps me learn easier," "I think I have brought up my grades now that I am in the girls' class," "I get my work done faster because other girls think alike and most of us like good grades," and "I think being in this class helped me learn more without boys" were other comments. Based on these data, the absence of boys seems to directly impact the quality of the learning environment for the girls.

Other descriptive statistical data from survey for the single-gender participants assists in confirming this second theme. The total mean for item 14 ("Being in the boys-only or girls-only class has helped me learn better") was 4.17, with 77.3% of participants indicating that they agreed or strongly agreed that being in the single-gender program did help them learn better. While academic achievement data were not specifically examined as part of this study, teacher-interviews used as secondary data sources also confirmed the presence of this theme. Ms. Potter noted that in the first two years of the single-gender program, academic achievement as reported on the end of year tests increased more in the single-gender class as compared to her mixed-gender classes of that year or previous years. The teacher's observation indicates that her perceptions around this theme echo the students' collective perceptions. Ms. Weasley also noted that the teachers had been pleasantly surprised by the academic improvement made by the single-gender girls class in Year Two, explaining that, "they were our lowest academic group at the beginning of the year, they had the most needs academically, and they all improved, with a couple of exceptions."

Increased Focus and Engagement

A third theme to develop from the qualitative data featured *increased focus and engagement* in the girls' class. This theme was conceptualized as a separate entity from increased academic performance, although the two are closely related; eight of the interview participants said that being in the single-gender classroom resulted in an environment where they could better focus on their work. The classroom environment was described as "quiet" by two interview participants, which allowed them to "concentrate" better. Other participants also used the word "concentrate" when describing the class (e.g., "I can concentrate.") One participant noted, "I can focus more because there is not a lot of talking all the time." The word "focus" emerged from In Vivo coding: "I'm able to focus" was directly attributed to two participants; three others said they could "focus more" in the single-gender class. For some interview-participants, better behavior helped to explain the increased focus: "The behavior is better [in the girls' class]. I can focus more." "Pay attention more" was also a phrase used by two participants. One girl said, "I just think you can listen better, you pay attention more whenever you're with your same gender."

Increased engagement, particularly in terms of asking questions during class, was also mentioned as a benefit. Interview-participants observed that the single-gender environment allowed them to take risks in asking and answering more questions than they would otherwise, in large part because they felt "comfortable" and accepted. "I feel more better [sic] in an all-girls' class because I can ask more questions," stated one participant, "If I had to be in a mixed [gender] class, I would feel like I don't want to ask questions and stuff and then I would make bad grades."

Open-ended survey responses also reflected an increased level of engagement from single-gender participants. “It’s better being in the all-girls’ class because you ask more questions” and “being in the all-girls’ class, you can raise your hand and not feel stupid that you have to ask this question” were other responses. “I was not embarrassed to ask questions in class if I did not understand a question. I could be myself and get questions wrong,” noted one student. In her interview, the LEP student specifically noted that she is shy, especially in front of boys, and so she participates more in the girls-only class than she would otherwise:

> I still don’t talk a lot in the girls’ class but I say stuff when they call on me. But if I was in the mixed class I would talk less than I talk right now because I am shy in front of boys …. All my life I have not talked a lot in class. I don’t ask questions. But like in [single-gender] math class I’ve started asking questions.

Interview data from Ms. Granger also helped to confirm *increased focus and engagement* as an emerging theme: “Emotionally and socially girls feel a lot less safe in the classroom … I think these girls [in the single-gender class] raise their hands when they normally would not in front of boys.” Ms. Potter explained how the single-gender class encouraged quiet, shy girls to become more outgoing and involved: “By getting them out of that mixed-gender class, I think all of their barriers came down and they felt free … they were talkative. They were upbeat. They were happy. Confidence goes through the roof.” Ms. Weasley also concurred. “I think that socially they feel a lot more comfortable in risks once the class is sort of established,” she said. “It builds their self-confidence. It seemed to me that the girls in the all-girls class were more positive and friendlier, and willing to try things.”

Girl-Drama

The fourth theme to evolve was the concept of *girl-drama*. This theme overwhelmingly emerged as the single biggest drawback to being in the single-gender classroom. Of the 15 interview participants, eight (53.3%) of them specifically used the word "drama" when asked to describe one "not-so-good" thing about being in the single-gender class. Of the other seven participants, two of them used the word "gossip" as being the thing they disliked the most. These responses were also categorized as *girl-drama*, bringing the total number labelled with this theme to ten (66.7%). The interviews provided the researcher with additional information which clarified this phenomenon. If the students failed to explain what they meant by the phrase "drama," they were asked follow-up questions to elaborate and provide examples.

The respondents differed by year in their discussions around what caused the girl-drama. At least three students in Year One noted that the drama was in some way related to boys. One student opined:

> They [girls in class] still think about boys, if someone talks about a boy they like, it's like crazy … [with] boys, like usually it will get really bad and then they'll start fighting. But girls, they don't fight [physically], they walk off and go tell their friends … and so everyone is going to know.

Another Year One student said, "They [girls] all fight over different kinds of boys and stuff." Breakups were also mentioned; a third participant observed that more drama occurs when, "There are girls talking about, like, how another girl's boyfriend broke up with them or something … It makes some people upset." However, participants in Year Two and Three specifically refuted this, stating, "with boys and girls [together], there might be like drama going back and forth with like boyfriend, girlfriend. In just the girls' class, there is nothing like that." Another participant concurred, stating that one thing she

liked about the girls' class was "no guy drama." When asked to describe the drama in the single-gender class, the same participant observed that drama occurs, "when they [girls] fight over something that's plain silly, about like one time this year they fought over a seat." Another participant replied that drama in the class is, "people not liking each other and they get on one side and then there is another side, and then there's, like, 'who's on my side?' and they just keep going back and forth with arguments." Yet another described the drama as, "just girls talking about other girls and it just goes on and it makes everyone uncomfortable." One insightful participant noted that girls handle disagreements differently than boys do:

> Girls … whenever they're mad at each other, it's not like a guy to where they just make up later; it stays there for a while. When you're trying to tell somebody something, girls try to get in that too. Like if you're passing notes, or if you're trying to tell one person to say something else, and it gets kind of crazy. Some of the girls try to take the spotlight in everything.

Further discussion of the open-ended survey questions clearly demonstrates this phenomenon. Of the 75 survey respondents who opted to answer one or both of the open-ended questions, 34 respondents (45.3%) used the word "drama" when describing one thing that they did not like about the single-gender class. Three additional responses coded with the theme *judgment* were grouped with the *girl-drama* responses, bringing the total number of responses coded with this theme to 37 (49.3%). Examples of the *judgment* coded responses included descriptions similar to those in the *girl-drama* responses, only the word "drama" was not specifically used by the student. (e.g., "I did not like it when the other girls thought they were better than all the others.") Of the remaining responses, 22 respondents (29.3%) skipped the response altogether, four respondents (5.3%) said there was nothing wrong with the single-gender class, three

respondents (4%) said they missed their friends in other classes, and other responses fell into a variety of themes. Only two respondents commented that the teachers or their actions were the one thing they disliked, and of those two, one of the students clearly disliked being in the single-gender environment, even turning her positive comment about the class into a negative: "Sometimes we get ahead … and we have free time or something like that and that's basicly [sic] the only thing I've liked about this class." Without question, girl-drama emerged as the single shortcoming of the single-gender classroom, no matter what form it took.

However, despite the definitive presence of girl-drama in the single-gender classroom, several of the interview participants mitigated their responses with commentary indicating that while the drama in the single-gender class was something they were very aware of, they perceived that it was no worse (and in fact, might be more manageable) than in other middle grades classrooms. When asked if, despite all the drama, she wanted to continue in the single-gender class in 7th grade, one interview respondent said, "Yes … [the] mixed people [i.e., mixed-gender participants] say there is a lot of drama going on there, and I don't want to involve in it." This would imply that she perceived the drama in the single-gender class as manageable for her, and also that drama is not solely perceived as something that only happened in the single-gender classroom.

In a follow-up question, a second participant was asked if the drama in her single-gender class was more of a problem than in her mixed-gender classes; her response was, "Not really." A third participant was asked in a follow-up question if the girl-drama could ever be managed in such a way that it could be eliminated in the classroom; her response

was, “No, that’s just girls.” A fourth respondent made the observation, “There’s always drama in middle school.” Collectively, these responses would seem to indicate that while girl-drama in its various forms is a definite feature of the single-gender classroom, the students did not find it unusual that this dynamic was present, and may have even resigned themselves to it as just a normal (albeit unwelcome) expectation of school.

Teacher-interviews also contributed secondary data to verify the theme of *girl-drama*. However, the teachers discussed the girl-drama more in terms of how the girls handled it, not whether it was present in the first place. (This seemed to be a given.) Ms. Potter explained that she felt the girl-drama began when the participants interacted with peers outside of the single-gender classroom. “Within the girls’ class itself, per se, there is little drama. It’s not until outside interference came in that there were problems,” she said. One good thing to come out of the girl-drama was that the drama provided more “life-lesson” topics for discussion in the girls-only classroom:

> We had some very good conversations about socially appropriate conversations and drama and if you go to this young lady and said, “so and so said this about you,” what would happen? We did a lot of, I guess scenarios … They are all on Facebook and they all have cell phones. They text all the time and they are just flooded with that social media, but they don’t know how to handle it. They are not wired yet to be able to handle it. So we have several discussions about Facebook, what’s appropriate, what’s not appropriate.

It would seem that while girl-drama may be a negative and unavoidable element of the single-gender classroom, its presence provided a platform for teachers to facilitate meaningful conversations appropriate to the middle school experience.

Perceptions of the Single-Gender Classroom: *What it is not*

In considering the themes that emerged from the qualitative data, it was clear to the researcher that the participants continually contrasted their experiences in the single-

gender classroom to their experiences in mixed-gender classrooms. While the emerging primary theme of *what it is not* sounds negative, the descriptions were, in fact, extremely positive. Characteristics of what the single-gender girls' class was not included things that many of the students (all middle-school girls) had experienced in mixed-gender classrooms and that they found troubling in some way. Overall, they seemed quite glad that these characteristics were absent in their single-gender classroom.

Fewer Classroom Disruptions

The first theme to develop around the single-gender class and *what it is not* was *fewer classroom disruptions*. This was, in every case, attributed to the lack of boys in the classroom; it was also directly linked to several of the other themes, including *increased focus and engagement* and *perceived increases in academic performance*. Interview participants frequently cited this as a reason for why they were able to perform better in the single-gender classroom. "I have learned more than I did when I was in elementary school because boys are disruptive a lot," said one participant. When asked (as a follow-up question) to describe the disruptive behaviors demonstrated by boys, the same participant explained, "They talk too much. They mess around, like throwing paper and pencils. And they talk and flick and hit each other sometimes." She went on to report that once that year in homeroom (where boys and girls are together) the boys were talking too much, which resulted in everyone getting lockout lunch (i.e., silent lunch). A second participant noted that, "When you are in the girls' class, they are not as goofy. They are not goofing off the whole time." This same word was used by a third participant: "I think guys seem to goof off more. I like Exploratories (mixed-gender elective classes), but it's easier to work with all girls because everyone is quiet when you are working." A fourth

student observed that, “The girls’ class is a whole lot better. The mixed classes are really talkative and they don’t pay attention.” “With the boys in with the girls it is really crazy,” stated a fifth student. “Boys are rowdy. They have so much energy. And girls are calm … they [boys] yell out and say things and they might do weird stuff – like a weird dance in the middle of class.” Yet another student explained that, “In the classes with boys and girls in it [sic], the boys are always trying to make you laugh, and get your attention, and stuff, so you can’t learn as well as you would with just girls.” A seventh student stated that she liked the girls class because “We don’t get in trouble all the time,” and then went on to explain that the girls-only class was the best class because “usually all the boys are the ones that act up.” Other respondents explained that boys “Like to show off” and “Play around and laughing [sic] and not taking things seriously.” One participant offered this summary of boys’ behaviors:

> Boys are silly. They play around a lot. They don’t get all their work done like always. The girls want everything perfect. Boys don’t really care … they don’t care about their grades or anything.

The open-ended survey responses also provided data to validate this theme. “I enjoy not having boys in class because they try to cause trouble,” stated one survey participant. “[I like] not being with wild crazy boys and being with nice and calm girls,” said another. “There is [sic] no boys which equals more work is done. It is easier to learn,” said a third survey respondent. “You can concentrate more without the boys talking all the time,” “Having no boys talking and taking up your time being bad,” “Not as many disruptions,” and “Boys are very hyper and they make it harder for you to concentrate” were other notable responses from various survey participants.

Descriptive data analysis from selected survey items on the single-gender survey provided additional information around this theme. Item 15 ("Student behavior is better in my boys-only or girls-only class than in my classes with boys and girls together") again noted lower mean score responses in Year Two compared to Years One and Three, but overall a solid level of agreement was established. The total mean for item 15 was 3.97 ("agree" = 4.0), with 70.6% of respondents noting that they agreed or strongly agreed that behavior in the single-gender classroom was better than behavior in mixed-gender classrooms. This finding adds credence to the consistency of student responses around this theme.

Less Teasing and Ridicule

The last theme to emerge from the qualitative data was *less teasing and ridicule.* Again, this theme was directly attributed to the absence of boys in the classroom and was strongly linked to other themes, including *supportive* and *increased focus and engagement.* Participants seemed more willing to take risks in the classroom (e.g., volunteering an answer aloud, going to the board to work a problem in front of the class) without boys present to tease or laugh at them if they made a mistake. This was especially true for the LEP student, although it was not limited to her. "You can express yourself [in the girls' class]," the LEP student stated. "In other classes people or boys would laugh about you when you say something wrong." When asked about behavior in her single-gender class compared to her mixed-gender classes, the LEP student said:

> Girls can be loud too but boys are louder than girls … I think they are more talkative but the girls are too because the girls talk but they don't say bad stuff to each other. But I think the mixed class does – they say stuff like "you're ugly" and stuff like that. I like being in the girls' class.

Other students also cited lack of ridicule from the boys as a reason for preferring the single-gender classroom. Of the 15 interview participants, ten of them (66.7%) specifically noted this; In Vivo coding produced language like, “laughed at,” “embarrassed,” and “make fun.” “If you’re in an all-girls’ class no one will make fun of you if you get the answer wrong,” said one participant, “if you are in the mixed class whenever you go up there [to the board] and get it wrong boys will laugh at you.” “I feel comfortable and feel that if I mess up they [the girls] are going to help me and not laugh at me,” stated a second participant. A third participant said that she had more friends in the single-gender class “instead of someone laughing at you,” and went on to say, “it makes me feel better being with people I can trust … instead of being embarrassed.”

A fourth interview participant explained that in the girls’ class, “I am not scared that the boys will make fun of you … when I was in elementary school I was always scared to ask questions because I didn’t want to be made fun of.” “I know I can go up to the board and if I have a wrong answer I won’t get laughed at as much,” said fifth student. “I like it [the girls’ class] a lot better,” said a sixth participant, and she explained that she was able to risk raising her hand to ask questions without feeling like she might be ridiculed if she gave a wrong answer: “Whenever you’re in front of people [i.e., mixed-class], you’re like, ‘well, I don’t want to ask that,’ because people might think that I’m stupid.” A seventh participant said that “if you get an answer wrong [in the girls’ class] unlike in the mixed class they’re not going to laugh at you.” “I think we understand better [in the girls’ class] because no one laughs at you,” explained an eighth participant. An ninth participant used the word “embarrassing” twice when explaining herself: “If you have to answer a question out loud and you get it wrong, it isn’t as embarrassing as it

would be [with boys] … it just kind of embarrassed me, cause some of them [boys] start laughing."

An interesting corollary to this theme emerged when two participants noted that in the mixed-gender class the other girls act differently when boys are present, implying that whatever support girls could give one another in a mixed-gender class is lessened. When asked a follow up question about how girls act differently when boys are present, one participant said, "They [girls] are louder and they try to get more attention," attributing the girls with characteristics highly associated with boys. The second participant made the direct connection: "[In] the mixed class because it's the boys and the girls with the boys in there – most of the girls act like the boys."

Open ended survey responses again supported the more detailed interview responses in establishing *less teasing and ridicule* as a credible theme. "If you didn't know the answer to a question you never got laughed at," wrote one survey respondent. "I like the girls' class because when I have to answer a question out loud if I get it wrong I don't get embarrassed," wrote another. "I think it was easier for some students to learn because they weren't feeling like 'oh my gosh' I don't want to say the wrong thing because the guys might laugh," explained a third. Not having to feel "shy or nervous" or "embarrassed" to get in front of the class for presentations or going to the board were noted by separate survey participants.

Being "laughed at" also emerged from the survey responses as a common fear among girls when boys are present. "They won't laugh," "Can't be laughed at," "They won't laugh at me," and "Not being laughed at" were common responses on the survey questions. One survey respondent associated boy-ridicule of girls with the idea that boys

perceive girls are smarter: "Sometimes boys think that girls are smarter than [they are]; so if a girl askes [sic] a question then the boys will probley [sic] laugh." In the girls-only class, "I liked that we didn't have to be embarrassed if we got something wrong and that you wouldn't have to be afraid of people laughing at you," summarized another survey participant.

Other Descriptive Survey Data

Of the final descriptive survey items not previously discussed, items 16 and 17 asked students about how they would prefer the single-gender program structured in 7th grade, if it was expanded to the 7th grade in the next academic year. The teachers had expressed a concern that students might prefer only part of their day to be single-gender versus having their entire core content class structured around single-gender; they attempted to ascertain student feeling on this issue through these items. Item 16 asked students if they would like to have their math and English Language Arts classes as single-gender in 7th grade and item 17 asked students if they preferred to have all their core content classes as single-gender in 7th grade. The means for individual item responses are available in Table 5 (p. 79).

Over the three year period, the group mean for item 16 was 2.71, with 21.3% of students agreeing or strongly agreeing that they preferred their math and Language Arts classes should be single-gender in 7th grade. This result is potentially misleading until we review the result for item 17. For item 17, the group mean was 3.80, and 62.6% of the respondents indicated that the agreed or strongly agreed that <u>all</u> their core content classes should be single-gender in 7th grade. Collectively, these results would seem to indicate that the participants in the future would select a single-gender classroom over a mixed-

gender classroom given the option, and that participants preferred most (if not all) of their core content classes be offered as single-gender. However, it is important to note that some students still preferred a mixed-gender option based on these results.

Items 18 and 20 on the single-gender survey results contribute to the general understanding of student perceptions regarding the single-gender classroom in a broader context. Item 18 asks if the students would recommend the single-gender program to incoming 6th graders ("I would tell new students to choose the boys-only or girls-only classes if they have the chance"); ostensibly, if the students themselves felt the single-gender experience to be a positive one, they would recommend it to others. Item 20 asks students to rate their overall level of enjoyment of the single-gender classroom ("I have enjoyed being in my boys-only or girls-only class this year"). Both items serve to further establish how well the students responded to the single-gender experience.

While group means for item 18 were lower than item 20, both items generally received positive ratings from participant groups over the three-year period. Total group means for item 18 was 4.03, with 73.3% of respondents noting that they agreed or strongly agreed recommending single-gender to new students. Total group means for item 20 were higher than for any other item reported in the descriptive set at 4.41 (see Table 5, p. 79). In addition, 86.6% of respondents indicated that they agreed or strongly agreed that they had enjoyed being in the single-gender program. Clearly, the experience of the single-gender classroom was perceived as a positive one by many participants.

Summary

An overall review of the quantitative results taken from the survey data found that significant differences existed between single-gender participants and mixed-gender

participants for the dependent variable *student satisfaction* (DV 3) as it was defined within the parameters of this study. No statistically significant differences were noted between the two groups on *academic attitudes* (DV 2a-d) or *self-esteem* (DV 1). However, a simple review of the means for *self-esteem* found that group means for single-gender participants were lower than group means for mixed-gender participants for each year of the study. This result could suggest that the teachers are reaching their target population for the single-gender initiative (i.e., females with lower self-esteem). Examination of effect sizes indicated that a larger sample could possibly yield statistical significance on the *self-esteem* variable, but additional data are needed to confirm this.

A simple review of the means for *academic attitudes* revealed no additional insights. Descriptive statistical analysis for survey items asked only to single-gender participants indicated that participants believed the single-gender experience helped them to learn better, that they would like to continue being in the single-gender classroom in 7^{th} grade, and that they enjoyed the single-gender experience and would recommend it to others.

Qualitative results from open-ended survey responses given to all single-gender participants and from interviews with 15 single-gender participants provided further detail and elaboration of these findings. Teacher-interviews served as secondary data sources for confirmation and clarification. The resulting conceptual framework emerged to define the experience of a single-gender girls' classroom as *what it is* and *what it is not.* Within the understanding of *what it is,* four themes emerged to describe the experience: the single-gender girls experience is characterized as *supportive;* it results in a *perceived increase in academic performance* (although increased academic

achievement was not studied); it creates an environment where participants had *increased focus and engagement* in the classroom activities; and it is characterized by *girl-drama* as inevitably present. Within the understanding of *what it is not*, two themes emerged to describe the experience: the single-girls experience is characterized by *fewer classroom disruptions* and by *less teasing and ridicule*, both of which were attributed directly to the absence of boys in the classroom. While these concepts emerged as separate themes, all the themes are inexorably tied to one another. The results clearly indicated that the single-gender participants viewed their experience in the single-gender class positively overall, and that participation in the experience can result in higher levels of *student satisfaction* (as it was defined in this study) for single-gender participants.

CHAPTER 5: CONCLUSIONS

The final chapter of this study summarizes the results and offers conclusions based on the findings. Implications on how this study can provide additional knowledge for educators and parents in considering single-gender programs for girls are considered. Recommendations for future research and best practice as well as limitations of this study are also discussed.

Considering Single-Gender Learning: Theoretical Framework Revisited

Adolescence is a difficult transition for many girls, fraught with concerns about changing bodies and social missteps (Bokhorst, Westenberg, Oosterlaan, & Heyne, 2008; Knauss, Paxton, & Alsaker, 2007). Doubt and uncertainty about their abilities become common for many girls; a drop in self-esteem for females may be related to the tendency for girls to underestimate their own abilities (Harter, 2006; Sax, 2005b, 2010). Moving from elementary to middle school may only exacerbate these problems; reporting of gender differences in tested areas has indicated that academically girls fall behind boys beginning around grade 6 (Meyer, 2008). This time period is widely regarded as one of the most difficult academic transitions many children will make, due in large part to the changing nature of adolescent development (Hernandez, 2000; 2001; Powell, 2011; Rice & Dolgin, 2005; Van Hoose, Strahan, & L'Esperance, 2005).

When considering these issues, and how educators can best assist adolescent middle-school girls during this life transition, the theoretical framework of egalitarian

liberal/"difference" feminism, with its focus on "girl power," is an attractive approach to this problem (Kenway & Willis, 1990). It allows for "valuing attributes, whether inherent or socialized, that may appear more common among females than males" (Salomone, 2004, p. 92), an approach that would leverage the perceived differences between males and females. Empowerment of girls emerges as a natural remedy to many of the self-esteem issues middle school girls encounter: what kind of classroom environment can make girls feel more empowered? More comfortable with their own bodies? More confident? More successful? Empowerment of females by allowing them choices and options in their own education is a key tenet of "difference" feminism (Kenway & Willis, 1990). As noted by a variety of researchers (Baron, et al., 2011; Ferrarra & Ferrara, 2004; Parker & Rennie, 2002; Patterson, 2012; Salomone, 2003; Sax, 2005a, 2005b, 2010), some social benefits associated with single-gender teaching and learning may be appreciated for adolescent females transitioning to middle school. By embracing the unique needs of females and providing them an environment tailored specifically for them, advocates argue that single-sex education can fulfill a need for many girls (Gurian, Stevens, & Daniels, 2009a; Hutchinson & Mikulski, 2012; Patterson, 2012; Protheroe, 2009; Sax, 2005a; 2005b). With this in mind, an egalitarian liberal/"difference" feminist theoretical perspective was used to frame this study, and the results were considered in this context.

The primary purpose of this study was to investigate how female participants in a 6th grade single-gender classroom perceived their overall experience in a girls-only learning environment: what they liked, what they disliked, and (in keeping with the identified theoretical framework) what, if anything, about that environment empowered

them in some meaningful way. As an additional means of comparison, the study also investigated what differences, if any, were present between single-gender participants and girls in a mixed-gender classroom regarding the dependent variables of *self-esteem, academic attitudes* and *student satisfaction*. A mixed methods study utilizing a concurrent transformative design was employed for these purposes, using a two-part survey of student-participants as the initial data collection method, and then using follow-up interviews with a subset of participants to provide a richer contextual understanding of the single-gender experience. Teacher-interviews were used as a secondary data source. From these data, the following conclusions were drawn.

Research Questions Answered

Research Question One

Gender-Based Teaching Impact on Self-Esteem**.** Research Question One specifically queried how single-gender participants were compared to their mixed-gender counterparts in terms of self-esteem, academic attitudes, and student satisfaction (*To what extent is gender-based teaching associated with self-esteem, academic attitude, and student satisfaction for 6th grade girls?*). Regarding *self-esteem* (DV 1), no statistically significant differences were found between single-gender participants and mixed-gender participants from on the Rosenberg Self-Esteem Scale (noting that only two years of data were available for comparison). However, a review of group means indicated that the single-gender participants had lower levels of self-esteem than the mixed-gender participants, even though these differences were not statistically significant. An effect size comparison for each year of data noted a small effect size for Year Two and a medium effect size for Year Three.

Two conclusions were drawn from Rosenberg Scale results: first, that the single-gender participant selection process currently utilized by the teachers may indeed be targeting the intended students. In selecting who was placed in the single-gender class, the teachers targeted girls displaying characteristics of low self-esteem. It is therefore not entirely unexpected to learn that the girls in the mixed-gender class had higher levels of self-esteem than their single-gender counterparts. The students or their parents could request to be part of the single-gender class during the first two weeks of the year; presumably, any girl who opted to remain with the boys in the mixed-gender class felt confident in doing so. The effect size results could indicate that statistical significance might be obtained with a larger sample size, but additional data are needed to confirm this.

Second, that the lack of statistical significance between the groups on self-esteem *could* indicate that the single-gender classroom is helping to increase self-esteem of participants; additional data are needed to confirm this assumption as well. A pre-test / post-test research design could better inform the researcher about this possible result. The lack of statistical significance does indicate that while the single-gender participants' self-esteem levels were no better than their mixed-gender counterparts, statistically speaking, they were no worse, either. Whether being in the single-gender classroom is responsible for this result is uncertain.

Gender-Based Teaching Impact on Academic Attitude and Student Satisfaction. No statistical significance was noted between the single-gender group and mixed-gender group on *academic attitudes toward math, English Language Arts, science* and *social studies* (DV a-d). A simple review of means yielded few insights; this was not

surprising. The items used to measure academic attitudes are somewhat simplistic (i.e., "I like my math class," "math is easy for me"). Revising the items or adding additional items to measure academic attitudes might be helpful in providing additional information in the future.

Statistical significance was noted between single-gender participants and mixed-gender participants on DV 3, *student satisfaction*. Significance was noted on this variable related to comparisons of both group assignment (mixed-gender vs. single-gender) and year of participation. For group assignment, MANOVA analysis indicated that higher levels of *student satisfaction* were noted for participants assigned to the single-gender classroom [F (1, 102) = 6.91, p = .01, η^2= .06]. This would help to confirm the conclusion that single-gender participants enjoyed the experience of single-gender and found benefits in program participation.

Research Questions Two and Three

Empowering Middle School Females by Utilizing Single-Gender Classrooms. Research Question Two (*How do 6th grade girls in single-gender classrooms perceive their school social experiences?*) and Research Question Three (*How do 6th grade girls describe the experience of being taught in an all-female grouped classroom versus a mixed gender classroom?*) were both developed to ascertain whether single-gender could be a viable solution to assist 6th grade girls with the transition to middle school. Middle school is an unquestionably fragile time in the lives of most middle school students, especially females. Pubescent changes, media messages regarding the importance of appearance, and relationship dynamics all cause anxieties that many females struggle to cope with, resulting in a loss of self-esteem and self-worth for girls (Gurian, Stevens, and

Daniels, 2009a). Investigation into these research questions may identify single-gender classrooms as a possible remedy to assuage the social difficulties that can become a source of angst for many middle school girls.

Data from survey questions and participant interviews does show that participation by females in a single-gender classroom can help to ease this transition and allay fears by creating a supportive and empowering classroom environment. Emerging themes indicated that single-gender participants tended to describe the environment in terms of *what it is* and *what it is not*; five of the six identified themes were directly attributed to the absence of boys in the classroom (*girl-drama* was the exception). While coding efforts produced six individual themes, the themes often overlapped and discussions of one theme easily bled into another.

Supportive Environment Leads to Increased Focus and Engagement. The single-gender classroom was repeatedly characterized as supportive and nurturing by participants, a place where they could seek help from classmates without fear of ridicule or rejection. From these results, the theme of *supportive* was established. The supportive nature of the environment led to increased risk-taking behaviors, such as volunteering to answer more questions or going to the board to work problems more readily than occurred in the mixed-gender classes. The single-gender classroom was also labelled as quieter and calmer than a typical mixed-gender classroom; students in the class described being able to concentrate more and effectively get their work completed in a timely fashion, the implication being that this was not always possible in a mixed-gender environment. From these results, the theme of *increased focus and engagement* was established.

The established themes were overwhelmingly attributed to the lack of boys in the classroom; many girls noted that in their mixed-gender classes, boys "laugh" or "made fun" if a girl answers a question with an incorrect answer. For girls who already struggle with self-esteem issues, this kind of ridicule has a powerful psychological impact, as Salomone (2003) observed. Why answer a question when you know you're setting yourself up as a target for mockery? Why volunteer to go to the board if you're just going to be teased for it? These pressures are increased for students with identified learning needs, such as an LEP student. In a classroom where some boys may turn anything into a joke, not being able to speak the language well can be an additional source of teasing. Participants reported that the single-gender classroom helped to alleviate these pressures.

Fewer Disruptions Leads to Perceived Academic Performance. In addition to an increased focus and supportive environment, the single-gender classroom was also characterized by participants as having fewer disruptions because boys were not present. Boys were described as "goofy" and distracting; they "show off," they "talk too much," they "act silly;" 70.6% of single-gender survey participants agreed or strongly agreed that student behavior was better in their single-gender classes than in their mixed gender classes. From these results, the theme of *fewer classroom disruptions* was established. In the single-gender environment, girls perceived they were able to spend more time learning the content of the class and completing their assignments. This resulted in many participants believing that their academic performance had improved by participation in the single-gender class. It is important to note that this study did not investigate the impact of the single-gender environment directly on student achievement outcomes; nonetheless, whether the students' achievement data actually improved or not, overall the

participants perceived that it had. From these results, the theme of *perceived increases in academic performance* was established.

A majority of participants (77.3%) agreed or strongly agreed that that being in the single-gender classroom had helped them to learn better. Many also reported that their grades had improved since entering the single-gender class, primarily because of the lack of distractions and the increased focus attributed to the absence of boys, a finding previously reported by other research (Baron, et al., 2011; Ferrara & Ferrara, 2004; Parker & Rennie, 2002). When we consider that girls typically struggle with self-esteem issues, perceptions of improved academic success may be one way to help girls gain confidence as they move into middle school. Several interview participants used the word "confident" to describe themselves after being in the single-gender classroom.

"Girl-Drama" as an Unavoidable Drawback to Single-Gender. Girl-drama was prominently noted by the majority of participants as the biggest drawback to the single-gender classroom. Numerous respondents noted that girl-drama was continually present in the classroom, the only change being to what degree it manifested itself and in what ways. From these results, the theme of *"girl-drama"* was established. While participants noted that they found the girl-drama tiring and expressed a desire for it to be gone, they also seemed to regard it as an inevitable by-product of being in a middle school classroom. This is not intended to downplay the distraction of girl-drama, but rather to put it into a context. The participants' descriptions of boy-distractions were described in the same manner: as just a regular expectation of a mixed-gender classroom. This is not meant to suggest that boy-distractions are acceptable, but rather that the participants were just resigned to their presence in mixed-gender classrooms. The same resignation was

present when the participants discussed the presence of girl-drama in the single-gender classroom.

However, despite the participants' assertion that girl-drama was a negative, its presence did not overly affect the final results. Even with girl-drama, the majority of participants still indicated high degrees of satisfaction and overall enjoyment with the single-gender classroom. On a positive note, teacher-participants reported that the presence of girl-drama provided some opportunities for meaningful conversations around the struggles inherent to adolescence. Therefore, while girl-drama is a factor to account for in contemplating a single-gender classroom, it should not be the only factor considered. Not having to cope with distractions and possible ridicule from boys seemed to be a much more desired outcome for participants versus escaping girl-drama.

Other data helped to verify these results in answering Research Questions Two and Three. Over the three year period, 86.6% of survey respondents indicated that they agreed or strongly agreed with the statement, "I enjoyed being in the single-gender classroom this year," and 73.3% agreed or strongly agreed that they would recommend single-gender classrooms to new students. Clearly, the single-gender experience was viewed very favorably by the majority of the participants in comparison to their mixed-gender learning experiences.

Finally, in considering the results of the research questions, the researcher analyzed the preponderance of data related to each method of investigation. In utilizing the mixed methods study design, the researcher theorized that a fuller, richer understanding of single-gender education for middle school girls was possible through this approach. This assumption was indeed confirmed. Quantitatively, the researcher

determined that statistical significance is present for *student satisfaction*, but not for *academic attitudes* or *self-esteem* as defined in this study; in addition, descriptive quantitative data confirmed that a large majority of the students in the single-gender classes enjoyed being in the program (86.6%) and would recommend it to others (73.3%). Quantitative analysis helped to establish the presence of the phenomenon; the qualitative analysis served to identify the reasons why the phenomenon occurred, thereby strengthening the study results. Qualitative results identified behaviors in the single-gender classroom according to six specific themes; these themes helped to better inform the researcher as to the nature of the phenomenon, in particular what specifically the participants liked and did not like about the single-gender classroom. After thorough review and consideration of all the results, the researcher rejected the null hypotheses, and concluded that there are some significant differences among the identified dependent variables.

Significance of Findings

With the passing of No Child Left Behind in 2001, restrictions on configurations of public schools in the United States were lessened, thereby increasing the types of educational options currently available for parents and students (Cable & Spradlin, 2008; Madigan, 2009; Salomone, 2003). Single-gender education in a public school setting is only one of these options (Chadwell, 2009) and yet it remains one of the most controversial, with advocates and detractors on both sides (Holthouse, 2010; Lankes, 2010). Despite the increasing wealth of research on single-gender education, overall the results are inconclusive (Bracey, 2006; Bigler and Signorella, 2011; Holthouse, 2010; Parker & Rennie, 2002). However, research does indicate that some positive benefits for

students beyond that of academic achievement may be gained by participation in a single-gender classroom (Smith, 2010; Petit, 2012; Sax, 2005). Middle-school girls often struggle with social interactions related to their adolescent development, including self-esteem and anxiety stemming from the pressures of social conformity (Booth, Sheehan, & Earley, 2007; Orenstein, 1994; Pomerantz & Saxon, 2002). When considering this problem from the theoretical perspective of egalitarian-liberal feminism, single-gender education emerges as a viable possibility to these problems. Empowerment of females by leveraging the differences between males and females and then capitalizing on those differences is what single-gender education is all about.

Single-gender participants in this study expressed a high degree of satisfaction with the single-gender classroom, describing it as supportive and helpful to them. Statistical significance on the dependent variable *student satisfaction* indicated that the single-gender group was more satisfied with their school experiences than the mixed-gender group. The meaningful and caring relationships developed within that classroom among participants allowed the girls to feel safe in asking others for help and in taking risks to answer questions—risks they felt less secure about taking in mixed-gender classroom where boys were present. Even with the acknowledged presence of girl-drama, single-gender participants felt empowered by their interactions in the classroom and many (62.6%) expressed a desire to continue in the single-gender program for all their core content classes in the 7th grade. Furthermore, many participants reported that they believed their academic performance had improved because of their participation in the single-gender classroom; teachers alluded to this as well in their interviews, thereby providing credence to the idea.

In considering the variable of *self-esteem*, it is difficult to draw clear conclusions. While the overall means may suggest that the teachers are targeting the right group of students for the single-gender program (i.e., girls with traits indicating lower self-esteem), it is unclear how much measureable impact the single-gender program actually made on the self-esteem of the participants. While other data indicate that an overall positive impact was made, the Rosenberg Scale results only show an end result for the variable *self-esteem*; without a beginning comparison point, it is difficult to determine how much (if any) measurable change was noted on the self-esteem levels of the participants. Additional research utilizing a pre-post-test research design would be helpful in resolving this dilemma, and could possibly provide a quantifiable measureable determination of the impact of the single-gender program on *self-esteem* for the two participant groups.

Perhaps the most significant finding of this study is that single-gender classrooms can provide other benefits to 6th grade females beyond that of just academic achievement. A strong, supportive environment where girls feel empowered to take risks and where they perceive improved academic performance may ultimately prove to be more beneficial to the single-gender participants than any instructional strategy. While this study terminated with 6th grade participants, there are obvious long-term possibilities that present themselves with the single-gender option. As is clear from these study results, there are still some girls who would prefer to be in classes with boys; however, it is equally clear that for some girls, single-gender classes empower them in ways mixed-gender classes do not.

Limitations and Delimitations (Revisited)

The limitations and delimitations of this study were described in detail in Chapter One; those remain unchanged. To summarize, the study participants included all 6th grade females at West Middle School from 2010-2013 assigned to the Trailblazers Team and the teachers on the Trailblazers team from 2010-2013. The study was delimited to examination of the extent to which these student-participants' self-esteem, academic attitudes, and student satisfaction levels differed between girls enrolled in the single-gender versus the mixed-gender classroom, and the descriptions of how the students in the single-gender classrooms regarded their experiences with single-gender teaching and learning. The results are generalizable to 6th grade female students enrolled in single-gender classrooms following a similar school schedule and with similar demographics to the students at West Middle School.

There are several limitations noted with the study:

1. The study only investigated the perceptions of 6th grade females assigned to single-gender classrooms over a three-year period at one school site;
2. The students on this team, per the principal, were considered "regular" students who did not fall under the umbrella of the Exceptional Children (EC) program; some students do qualify to receive English as a Second Language (ESL) services, but the extent of services varied among these students. The results may not apply to students who are labeled EC or have other documented learning disabilities.
3. The results may not apply to an urban population or more ethnically mixed population, although statistical analysis of participant ethnicity confirmed that the participant groups were appropriated equalized (see Chapter Four).

4. Teacher use of single-gender instruction was not verified on a daily basis; however, there was evidence to indicate high levels of teacher fidelity to using gender-based instructional strategies (see Chapter Three).
5. One of the two data collection instruments used by the teachers was developed by the teachers themselves and had not been psychometrically evaluated prior to this study (see Chapter Three).

Recommendations for Future Research

There are several recommendations for future research on single-gender education based on this study:

1. Considering that low self-esteem issues are common for adolescent females, and that single-gender classrooms may be a possible remedy to alleviate this, future studies should utilize pre-post-test research designs to more accurately measure the true impact of single-gender programs on self-esteem.
2. Future research studies should utilize participants from multiple classrooms in multiple schools, in order to strengthen the validity of the data results.
3. Any attempt to replicate this study might include revision of the items used to measure *academic attitudes*, or replacement of these items altogether with a previously established valid instrument, in order to better and more accurately measure the intended variable construct.
4. Longitudinal studies that established whether single-gender program participation yielded long-term benefits would be helpful for both parents and educators, particularly if the single-gender program was extended beyond just 6^{th} grade.

5. Single-gender programs may provide benefits to males as well as females. Single-gender research that focuses on possible benefits for male middle school students beyond just academic achievement may also yield significant results.

Recommendations for Practice

As with any initiative, implementing a single-gender program should be fully and thoughtfully considered. The data results collected in this study suggest the following recommendations for practice:

1. In utilizing the egalitarian-liberal feminist theoretical perspective that informed this work, single-gender programs for girls should be offered as one viable option for public school students transitioning from elementary to middle school and their parents. In establishing this option, educators should research best practices around single-gender and observe reputable, proven single-gender programs already in place. Parents and students should be given a strong voice in deciding whether or not they wish to participate in a single-gender program.
2. Middle school leaders and teachers seek professional development opportunities to learn more about single-gender education and its' perceived benefits to girls, particularly those suffering from low self-esteem. Understanding leads to acceptance. As teachers and school leaders understand more about the possible benefits to single-gender, commitment to single-gender best practice may be increased. In addition, teacher buy-in is a crucial element in a successful single-gender program. Enhanced professional development opportunities for teachers to learn about effectively utilizing single-gender education can assist with this.

3. Parents of females approaching adolescence consider single-gender education as one possibility that could be of benefit to their children. To assist with this, educators should provide parents research-based information on the possible benefits of single-gender programs, particularly in regard to females transitioning to middle school. However, parents should also be informed that single-gender programs are only one option available to them, and that single-gender programs are not a good fit for all children. No parent or child should ever be forced into a single-gender program.

Final Reflection

The middle school experience is a precarious and fragile time for most adolescents; females in particular face pressures that can make the transition to middle school a difficult one. The 6th grade girls interviewed by the researcher over the three year period were incredibly forthcoming and appreciative of the support, camaraderie, and encouragement they received as part of the single-gender classroom. While many participants were still interested in boys from a developmental perspective, they also clearly perceived that their learning environment was highly impacted in a negative way by the presence of boys. They described their single-gender classrooms as a safe harbor, a place where they could seek help and support from other girls about their problems—both academic and personal—and where they could be accepted without fear of ridicule.

In observing these girls as they shared their perspectives, I was repeatedly struck by what close friends they were, how the support they shared with each other empowered them all. As 6th graders, they were only beginning to move into adolescence; as a group, they had not yet reached the "boy-crazy" stage, so not being around boys was no particular burden. They truly appreciated the cohesive and caring environment that

existed within the single-gender classrooms. While girl-drama was notably present and did create distractions, it was not off-putting enough to outweigh the positives of participation in the single-gender classroom.

One of the benefits of this study was its longitudinal approach; over the three year period, I developed a collegial and friendly rapport with the teachers involved in this study. I observed them in their classrooms and interacting with their students. We discussed instructional and disciplinary strategies. I spent a great deal of time examining their results with their principal. It would be remiss of me not to note that of all the pieces that must be in place to begin a single-gender initiative, "teacher-fit" is unquestionably the most important. These teachers were highly motivated and decidedly dedicated to the single-gender initiative. They had strong support from their principal. The positive results achieved were directly related to the commitment of the teachers and the principal. It is difficult to see how any single-gender initiative could be successful without total and enthusiastic buy-in from the adults involved.

In conclusion, it is clear that single-gender classrooms can be of enormous benefit to adolescent females, particularly those who suffer from low self-esteem and fear transition to middle school. While not a panacea for all middle school girls, it presents as a real and viable option for educators, parents, and students to fully and thoughtfully consider.

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APPENDIX A: SCHOOL-BASED SINGLE-GENDER ADVISORY TEAM SURVEY FOR STUDENTS IN THE SINGLE-GENDER CLASS*

1. Are you male or female? (answer options: male, female)
2. Which class are you in on the team for math? (answers options: all-boys, all-girls, mixed boys and girls)

Please tell us how much you agree or disagree with the following statements:
(answer options: Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree)

3. Math is an easy subject for me at school.
4. I like my math class.
5. Language Arts is an easy subject for me at school.
6. I like my language arts class.
7. Science is an easy subject for me at school.
8. I like my science class.
9. Social Studies is an easy subject for me at school.
10. I like my social studies class.
11. Student behavior in my classes on my team is good overall.
12. Students in my classes on the team want to learn.
13. I am never bullied at this school.
14. Being in the boys-only or girls-only class has helped me learn better.
15. Student behavior is better in my boys-only or girls-only class than in my classes with boys and girls together.
16. FOR NEXT YEAR, I would like for only my math and ELA classes be boys-only or girls-only, and all my other classes be boys and girls together.
17. FOR NEXT YEAR, I would like for all of my classes to be boys-only or girls-only.
18. I would tell new students to choose the boys-only or girls-only classes if they have the chance.
19. BOYS ONLY: I would like my boys-only class better if the teacher were a man.
20. I have enjoyed being in my boys-only or girls-only class this year.
21. Please describe one or two things **you enjoyed** about being in the boys-only or girls-only class. If you cannot think of anything, just leave it blank.
22. Please describe one or two things **you did not like** about being in the boys-only or girls-only class. If you cannot think of anything, just leave it blank.
23. Overall, I am happy to be on this team instead of another team.
24. Overall, I am happy to be at _____ Middle School.

*Two additional items appeared on the Year One version of the survey and were deleted for Years Two and Three: "I learn better in my boys only or girls only classes than I do in my classes with boys and girls together," and "All 6th grade students should be allowed to be in boys only or girls only classes if they want." Data for these two items has not been included in results.

APPENDIX B: SCHOOL-BASED SINGLE-GENDER ADVISORY TEAM SURVEY FOR STUDENTS IN THE MIXED-GENDER CLASS

1. Are you male or female? (answer options: male, female)
2. Which class are you in on the team for math? (answers options: all-boys, all-girls, mixed boys and girls)

Please tell us how much you agree or disagree with the following statements:
(answer options: Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree)

3. Math is an easy subject for me at school.
4. I like my math class.
5. Language Arts is an easy subject for me at school.
6. I like my language arts class.
7. Science is an easy subject for me at school.
8. I like my science class.
9. Social Studies is an easy subject for me at school.
10. I like my social studies class.
11. Student behavior in my classes on my team is good overall.
12. Students in my classes on the team want to learn.
13. I am never bullied at this school
14. I have enjoyed being in my classes with boys and girls this year.
15. I wish I had been in the boys-only or girls-only class on my team this year.
16. Please explain why you answered the way you did in Number 15.
17. Overall, I am happy to be on this team instead of another team.
18. Overall, I am happy to be at _____ Middle School.

APPENDIX C: THE ROSENBERG SELF-ESTEEM SCALE

Below is a list of statements dealing with your general feelings about yourself. Please select the answer option that best describes you.
(answer options: Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree)

1. I feel that I'm a person of worth, at least equal to others.
2. I feel that I have a number of good qualities.
3. All in all, I am inclined to feel that I am a failure.
4. I am able to do things as well as most other people.
5. I feel I do not have much to be proud of.
6. I take a positive attitude toward myself.
7. On the whole, I am satisfied with myself.
8. I wish I could have more respect for myself.
9. I certainly feel useless at times.
10. At times I think I am no good at all.

Retrieved from the University of Maryland, Department of Sociology website, http://www.bsos.umd.edu/socy/research/rosenberg.htm.

APPENDIX D: INTERVIEW QUESTIONS FOR STUDENT PARTICIPANTS

1. Tell me one good thing about being in the all-girls class this year.

2. Tell me one not-so-good thing about being in the all-girls class this year.

3. Describe the overall behavior and learning environment in the all-girls class compared to the behavior of students in your mixed classes.

4. If you could be in all-girls classes next year for at least some of the time, would choose to do that? Why/not?

    a. Follow up: Would it make a difference if you knew that one of your teachers would be a man? Would that matter? Explain.

5. Rate from 1-10 your overall level of satisfaction with being in the all-girls class this year. ("10" meaning "I loved it, I thought it was wonderful to be in the all-girls class," and "1" meaning "I hated it, I never want to be in an all-girls class again."). Please explain your score to me.

APPENDIX E: INTERVIEW QUESTIONS FOR TEACHER-PARTICIPANTS INVOLVED WITH THE SINGLE-GENDER INITIATIVE

1. Please answer the following demographic questions:
    - Number of years teaching experience
    - Number of years teaching in single-gender program at _____ Middle School
    - Gender
    - Content area currently teaching

2. On a scale from 1 to 10, 1 being "it made no difference," and 10 being "it makes a substantial difference," rate the overall level of effectiveness you believe the single-gender program has had on student achievement in your classroom.

3. Please briefly explain your ratings above.

4. On a scale from 1 to 10, 1 being "it made no difference," and 10 being "it makes a substantial difference," rate the overall level of effectiveness you believe the single-gender program has had on student social interactions in your classroom.

5. Please briefly explain your ratings above.

6. Would you want to continue teaching in the single-gender program next year? (answer options: yes, no, maybe)

7. If your answer to # 6 was "no" or "maybe," please explain your response.

8. Please discuss how you perceive the professional development for this initiative has impacted the effectiveness of implementation in your classroom.

9. Please list one or two positive outcomes you believe have occurred as a result of the single-gender initiative at _____ Middle School for either students or teachers or both groups.

10. Please list one or two things you would like to change about the single-gender initiative at _____ Middle School for either students or teachers or both groups.

11. Please list any additional information that you believe would be beneficial in helping us to understand your perceptions of the single-gender program and its overall implementation.