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A Comparison of Sixth-, Seventh-, and Eighth-Grade Student Outcomes in Schools Configured K-8 Elementary Versus 6-8 Middle Schools as Measured by State Standardized Tests, Student Discipline Referrals, and Student Attendance

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A COMPARISON OF SIXTH-, SEVENTH-, AND EIGHTH-GRADE STUDENT OUTCOMES IN SCHOOLS CONFIGURED K-8 ELEMENTARY VERSUS 6-8 MIDDLE SCHOOLS AS MEASURED BY STATE STANDARDIZED TESTS, STUDENT DISCIPLINE REFERRALS, AND STUDENT ATTENDANCE

by

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ABSTRACT

The purpose of this study was to examine the differences in sixth-, seventh-, and eighth-grade students' outcomes in relation to school configuration, specifically K-8 elementary schools as compared to 6-8 middle schools. Student outcomes focused on in this study were standardized test scores, number of out-of-school suspensions, and number of days absent. Race and gender served as moderator variables for all research questions.

Quantitative data were obtained from a large central Florida school district and included 2016 Florida Standards Assessment scale scores in English Language Arts, Mathematics, and Algebra 1 End-of-Course Examinations, 2015 Florida Standards Assessment scale scores in English Language Arts and Mathematics for students in Grade 8 during the 2015-2016 academic year, 2013 and 2014 Florida Comprehensive Assessment Tests 2.0 Reading and Mathematics developmental scale scores for students in Grade 8 during the 2015-2016 academic year, number of out-of-school suspensions, and number of days absent by student for the 2015-2016 academic year. The data were analyzed via two-way analysis of variances to determine if statistically significant differences existed in student outcomes based on school configuration.

The literature review supported the need to align the educational environment with student development in order to maximize student outcomes. In the quest to accomplish this, many districts have employed a number of school configurations, including the K-8 elementary school configuration and 6-8 middle school configuration to best meet the unique needs of early adolescents. The large central Florida school district selected for this study was unique in that it employed both the K-8 elementary school and 6-8 middle school configurations to serve students in Grades 6 through 8.

As can be seen by results of this study, school configuration, either alone or in conjunction with one of the moderator variables, was indicated in differences in Grades 6 and 7 FSA ELA scale scores, Grades 6 and 7 FSA Mathematics scale scores, Grades 7 and 8 FSA Algebra 1 EOC Examination scale scores, FCAT 2.0 Reading growth, Grades 6, 7, and 8 number of OSS by student, and Grade 7 number of days absent by student. One of the most noteworthy findings of this study was differences in FSA ELA, Mathematics, and Algebra 1 EOC scale scores due to the interaction of school configuration and race. In general, students classified as Black had better FSA outcomes when attending schools of the 6-8 middle school configuration. In contrast, students classified as White or Other had better FSA outcomes when attending schools of the K-8 elementary school configuration. Such findings indicated that the K-8 elementary school configuration may be only a part of the puzzle when considering how to best educate students in the early adolescent developmental period.

This research is dedicated to Rosemary June Dailey

for the dreams she was not permitted to pursue and the inspiration she has been

to the women of this family.

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Often, it's not about becoming a new person, but becoming the person you were meant to be, and already are, but don't know how to be. ~Heath L. Buckmaster

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INTRODUCTION

Background of the Study

"Transitions between schools are often difficult times for students, a point at which grades decline and behavioral difficulties increase" (Weiss & Baker-Smith, 2010, p. 825). Unfortunately, students who do not successfully make the transition from elementary to middle school often face even greater problems as they navigate the transition from middle school to high school (Eccles et al., 1993b). Mac Iver and Mac Iver (2006) asserted that high school dropout rates can be predicted as early as sixth grade, as the foundation for the dropout problem is often laid in the elementary and middle grades. According to a 2000 report by the National Center for Education Statistics, "Abundant evidence indicates that the seeds that produce high school failure are sown in grades 5-8" (Yecke, 2006, p. 20). An unsuccessful transition from elementary school to middle school may have long-term negative consequences on student academic performance, behavior, and attendance and is therefore worth further examination.

The transition between elementary school and middle school is especially challenging, as it coincides with the onset of adolescence. "Few developmental periods are characterized by so many changes at so many different levels--changes due to pubertal development, social role redefinitions, cognitive development, school transitions, and the emergence of sexuality" (Eccles et al., 1993a, p. 90). The transition from elementary to middle school during the onset of adolescence is perilous, as students at this age must simultaneously transition from the elementary to middle school setting while navigating both developmental and school changes (Carolan, 2013). The elementary school to middle school transition often marks a decline in student academic success. International comparisons of student achievement such as the Trends in International Mathematics and Science Study (TIMMS) have shown declines in achievement of U.S. students during middle school (Yecke, 2006). Student attitudes and characteristics contributing to successful student development are also affected by the elementary to middle school transition. Rockoff and Lockwood (2010) explained, "Education[al] researchers and developmental psychologists have been documenting changes in attitudes and motivation as children enter adolescence, changes that some hypothesize are exacerbated by middle-school curricula and practices" (p. 69). The combination of school form transition and adolescent change impacts students in numerous areas and may potentially derail student success.

In a study conducted by the Rand Corporation, it was recommended that school districts "consider alternatives to the 6-8 structure to reduce multiple transitions for students and allow schools to better align their goals across grades K-12" (Patton, 2005, p. 55). The K-8 elementary school configuration eliminates school transition during early adolescence. Anecdotal evidence from current K-8 elementary schools has suggested that students in this school configuration demonstrate "fewer behavioral problems and higher academic achievement than many students enrolled in [6-8] middle schools" (Yecke, 2006, p. 21). Movements toward the K-8 elementary school configuration has resulted in higher standardized test scores, better attendance, lower dropout rates, reduction in number of student leaving the district, increased parent satisfaction, and lower building and operating cost in cities such as Cleveland, Philadelphia, Fayetteville, Baltimore, Oklahoma City, and Chicago (Herman, 2004).

Problem Statement

Across the country, several large urban school districts have already transitioned to the 8-4 model and have reported positive results (Jacob & Rockoff, 2012; Patton, 2005; Yecke, 2006).

These initial reports of success will likely prompt other school districts to follow suit in their quest to improve student outcomes. However, to date, there has been little research conducted to explore the impact of K-8 elementary school and 6-8 middle school configurations on sixth-, seventh-, and eighth-grade student outcomes in the areas of achievement, behavior, and absenteeism. The large central Florida school district that served as the focus of this study was unique in that it utilized several schooling patterns to serve adolescent student populations, including Grade 6-8 middle schools, traditional Grade K-8 elementary schools, one charter Grade K-8 elementary school, and one Grade 6-12 school for the arts.

Weiss and Kipnes (2006) explained "the history of efforts in the United States to develop structures of schooling for the "middle grades"--the span from fifth grade through eighth grade--is one of continually tinkering and persistent dissatisfaction" (p. 239). School configuration options for students of this age range include, among others, K-8 elementary schools, 6-8 middle schools, 7-9 junior high schools, and 6-12 upper schools. Weiss and Baker-Smith (2010) noted that educational reform and educational research have not definitively determined if one school form is better or worse for early adolescent students. Two driving questions regarding school configuration are related to (a) the age at which school transition is least detrimental to student achievement, behavior, and absenteeism and (b) if school transition should be avoided completely during early adolescents. Educational reform has focused almost exclusively on setting a strong foundation in the elementary grades and successful completion of high school, but little emphasis has been placed on the middle grades. Middle school reform efforts have varied widely in focus and direction leading to the creation of a myriad of grade configurations and educational environments in the hopes of better serving the unique needs of the early adolescent student population. "Over the past nine decades, schools for educating children in the middle grades have seen numerous revisions and alterations, conducted in an effort to create an educational environment that is suited to the particular academic, social, and emotional needs of students in an often difficult time of life" (Weiss & Kipnes, 2006, p. 239). As it stands, middle schools are far from living up to the ideal of providing a seamless transition from the primary grades to high school. Rather, middle school has become a place where student motivation, engagement, and success are lost (Eccles et al., 1993a).

Unfortunately, a limited number of studies exist that have directly compared school forms for early adolescents (Weiss & Kipnes, 2006). One of the challenges of comparing different schooling forms has been that very few districts have more than one configuration of schooling to serve students in the same grade range and of similar demographic composition. Comparing student achievement, discipline, and attendance data for three Grade K-8 elementary schools and three demographically matched 6-8 middle schools in the selected large central Florida school district provided rare insight into how school configuration affects adolescent student academic, behavior, and attendance outcomes.

Purpose of the Study

The purpose of the study was to compare FSA scale scores, FCAT 2.0 DSS, number of out-of-school suspensions, and numbers of days absent for sixth-, seventh-, and eighth-grade students attending schools configured as K-8 elementary schools to outcomes for sixth-, seventh-, and eighth-grade students attending schools configured as Grade 6-8 middle schools. This comparison of outcomes is intended to provide insight for school districts as they consider the impact of school configurations when addressing the unique needs of early adolescent students.

Research Questions and Hypotheses

This study was guided by the following research questions and hypotheses.

1. To what extent, if any, is there a difference in FSA ELA and/or FSA Mathematics and/or FSA Algebra 1 EOC Examination scale scores among sixth-, seventh-, and eighth-grade students, disaggregated by gender and race, based on school configuration?

   H_{1-0} There is no statistical difference in FSA ELA and/or FSA Mathematics and/or FSA Algebra 1 EOC Examination scale scores for sixth-, seventh-, and eighth-grade students based on school configuration.

   Variables:

   Independent: school configuration (K-8 elementary school, 6-8 middle school)

   Dependent: FSA ELA scale scores, FSA Mathematics scale scores, FSA Algebra 1 EOC Examination scale scores

   Moderator: gender, race (Black, Hispanic, White, Other)

   Statistical Tool--Two-way Analysis of Variance (ANOVA)

2. To what extent, if any, is there a difference in growth, from fifth grade to sixth grade and seventh grade to eighth grade, disaggregated by gender and race, as evidenced by FSA ELA and/or Mathematics scale scores and FCAT 2.0 in Reading and/or Mathematics DSS, for eighth-grade students based on school configuration?

   H_{2-0} - There is no statistical difference in growth, from fifth grade to sixth grade and seventh grade to eighth grade, as evidenced by FSA ELA and/or Mathematics scale scores and FCAT 2.0 in Reading and/or Mathematics DSS, for school year 2015-2016 eighth-grade students based on school configuration.

Variables:

Independent: school configuration (K-8 elementary school, 6-8 middle school)

Dependent: FSA ELA scale scores, FSA Mathematics scale scores, FCAT 2.0 Reading DSS, FCAT 2.0 Mathematics DSS

Moderator: gender, race (Black, Hispanic, White, Other)

Statistical Tool--Two-way Analysis of Variance (ANOVA)

3. To what extent, if any, is there a difference in number of out-of-school suspensions, disaggregated by gender and race, for sixth-, seventh-, and eighth-grade students based on school configuration?

$H_{3\text{-}0}$ - There is no statistical difference in the number of out-of-school suspensions between sixth-, seventh-, and eighth-grade students based on school configuration.

Variables:

Independent: school configuration (K-8 elementary school, 6-8 middle school)

Dependent: number of out-of-school suspensions

Moderator: gender, race (Black, Hispanic, White, Other)

Statistical tool--Two-way Analysis of Variance (ANOVA)

4. To what extent, if any, is there a difference in number of absences, disaggregated by gender and race, for sixth-, seventh-, and eighth-grade students based on school configuration?

$H_{4\text{-}0}$ - There is no statistical difference in the number of days absent between sixth-, seventh-, and eighth-grade students based on school.

Variables:

Independent: school configuration (K-8 elementary school, 6-8 middle school)

Dependent: number of days absent

Moderator: gender, race (Black, Hispanic, White, Other)

Statistical tool--Two-way Analysis of Variance (ANOVA)

Definition of Terms

Absence--According to the School District of Osceola County, a student in Grades 4-12 is only marked absent if the student is absent for more than one period during the school day.

Algebra 1 End-Of-Course (EOC) Examination--Examination given to all students enrolled in and completing Algebra 1, Algebra 1 Honors, Algebra 1-B, Pre-AICE Mathematics 1, IB Middle Years Program/Algebra 1 Honors. The Algebra 1 EOC Examination is aligned to the Florida Standards. “Middle grade students will not take both a grade-level FSA mathematics and a mathematics EOC” (Florida Department of Education, 2016a, p.1)

Developmental Scale Scores (DSS)--“Developmental Scale Scores (DSS) allow for comparison of student academic progress over time in a particular subject by linking assessment results at adjacent grades” (Florida Department of Education, 2014c, p. 5). For the Florida Comprehensive Assessment Test 2.0 in reading and mathematics, developmental scale scores were “created using linking items--items that appeared identically on the assessments of adjacent grade levels--to relate the scores from one grade to those in the grades one grade level above and one grade level below it" (Florida Department of Education, 2012a, p. 1).

Florida Comprehensive Assessment Test (FCAT) 2.0--Standardized test used from 2011-2014 "to measure student achievement of the Next Generation Sunshine State Standards in reading, mathematics, and writing" in the state of Florida (Florida Department of Education, 2015a, p. 1). During the 2012-2013 school years, Florida students in Grades 3-10 participated in the FCAT 2.0 Reading administration and students in Grades 3-8 participated in the FCAT 2.0 mathematics administration (Florida Department of Education, 2015a).

FSA (FSA)--"Florida's K-12 assessment system [purpose] is to measure students' achievement of Florida's education standards" (Florida Department of Education, 2016b, p. 1). Results from FSAs "help Florida's educational leadership and stakeholders determine whether the goals of the education system are being met" (2016b). FSAs measure student progress in ELA, and mathematics, as well as for certain course in the form of End-Of Course examinations. FSAs were first administered in the spring of 2015 in both paper and online forms. Currently, Florida students in Grades 3-8 are assessed via the FSA mathematics test. Students in grades three through ten are assessed via the FSA ELA test. FSA EOC examinations are available for Algebra 1, Algebra 2, and Geometry (2016b).

Junior High School--Schools designed to serve students in Grades 7-9. Eccles, Lord, and Midgley explain that although middle school students make the school transition one year earlier than junior high school students, student outcomes do not differ between the two school configurations (1991). "More often than not, middle schools look like, and operate very similarly to, traditional junior high schools" (Eccles, Lord, & Midgley, 1991, p. 526).

For the purpose of this research, the terms junior high school and middle school are used interchangeably.

K-8 Elementary School--Public schools (traditional or charter) configured to serve students in grades kindergarten through eight.

Growth--For this study, growth is defined as difference in standardized test scores between consecutive years of the same type of assessment. Growth will be calculated for eighth-grade students who took the Florida Comprehensive Assessment Test 2.0 in reading and/or mathematics during their fifth-grade year (2012-2013) and sixth-grade year (2013-2014). Growth will also be calculated for students who took the FSA in ELA and/or Mathematics during their seventh-grade year (2014-2015) and eighth grade year (2015-2016).

Middle School Concept--"The middle school "concept"…is the belief that the purpose of school is to create children imbued with egalitarian principles, in touch with their political, social, and psychological selves, who eschew competition and individual achievement and instead focus on identity development and perceived societal needs" (Yecke, 2005, p. 3).

Out-of-school Suspension (OSS)--"Out-of-school suspension is defined as the temporary removal of a student from a school and the school program for a period not exceeding ten days" (Florida Department of Education, 1992, p. 1).

Race/Ethnicity--According to the Florida Department of Education (2014b) definitions of Black or African American, Hispanic or Latino, and White are as follows:

> "Black or African American--A person having origins in any of the black racial groups in Africa". In this study, the term Black will be used to refer to students who identified as Black or African American.

"Hispanic or Latino--A person of Cuban, Mexican, Puerto Rican, South or Central America, or other Spanish culture or origin, regardless of race. All students who indicated they are Hispanic or Latino are included only in the Hispanic counts; they are not included in the other racial categories they selected". In this study, the term Hispanic will be used to refer to students who identified as Hispanic or Latino

"White--A person having origins in any of the original peoples of Europe, The Middle East, or North Africa" (p. 1).

Scale Scores--According to Tan and Michel, reporting standardized test scores as scale scores allow scores to be compared across different test forms (2011). "Reported scale scores are obtained by statistically adjusting and converting raw scores onto a common scale to account for differences in difficulty across different forms" (Tan & Michel, 2011, p. 3).

6-8 Middle School--Public schools (traditional or charter) configured to serve students in Grades 6, 7, and 8.

Limitations

This study was limited by the following:

1. stability of student enrollment year-to-year within the same school district during Grades 5-8 (Research Question 2);
2. variations in teacher efficacy and grade level experience;
3. variations in ability to match schools by demographics;
4. variations in the size of the student populations served by K-8 elementary schools in comparison with 6-8 middle schools may influence the school climate as related to the extent of child focus;

5. inability to distinguish days absent due to OSS from other absences (Research Question 4);
6. influence of multiple incidences of OSS by some students may cause distortion of OSS figures (Research Question 3);
7. teacher certification differences between school configurations;
8. differences in school culture as established by school leaders and classroom teachers.

Delimitations

For all research questions, this study was delimited to students in Grades 6-8, attending selected K-8 elementary schools or 6-8 middle schools in the large central Florida school district chosen for the study. For Research Question 1, FSA scale scores were available for ELA and/or Mathematics and/or Algebra 1 EOC Examinations for academic year 2015-2016 and the study is delimited to students who participated in one or more of these tests. For Research Question 2, the study was delimited to eighth-grade students who participated in FSA for ELA and/or Mathematics during the 2014-2015 and 2015-2016 administrations and FCAT 2.0 for reading and/or mathematics during the 2012-2013 and 2013-2014 administrations. Addressing Research Question 2 required scores in FSA ELA, and/or FSA Mathematics, and/or FCAT 2.0 reading and/or FCAT 2.0 mathematics for students in Grade 8 (school year 2015-2016) tracking back to fifth grade (school year 2012-2013) for the same group of students. This cohort of students would have taken the FSA test as seventh and eighth graders and the FCAT 2.0 as fifth and sixth graders. Longitudinal data for the four-year span allowed the researcher to analyze differences in academic growth in relation to school configuration. For Research Questions 3 and 4, discipline and attendance data were available for students in Grades 6-8 attending the selected schools.

Conceptual Framework

The conceptual basis for this study was rooted in Eccles and Midgley's person-environment fit theory. According to Midgley, Feldlaufer, and Eccles (1989), "systematic changes in the classroom environment as children move from elementary school to junior high school contribute to the decline in motivation and performance" (p. 247) of students. Eccles et al. (1993b) proposed that the failure of traditional middle schools to provide an appropriate educational environment for young adolescents contributes to motivational and behavioral declines during this time period. Eccles et al. (1993a) described how the person-environment fit theory accounts for declines in student outcomes during early adolescence as students make the transition from the elementary school environment to the middle school environment:

> According to person-environment fit theory, behavior, motivation, and mental health are influenced by the fit between characteristics individuals bring to their social environments and the characteristics of these social environments. Individuals are not likely to do well, or be motivated, if they are in social environments that do not meet their psychological needs. If the social environment in the typical [middle] school do not fit with the psychological needs of adolescents, then person-environment theory predicts a decline in motivation, interest, performance, and behavior as they move into this environment. (p. 91)

In other words, the structure of middle schools may be a poor fit for the increased vulnerability of students during the onset of puberty.

Eccles et al. (1993a) described six factors that contribute to the mismatch between the needs of early adolescents and the environment of middle schools. The first factor is there are limited opportunities for student decision-making, choice, and self-management combined with a greater emphasis on teacher control and discipline. Second, students in middle school experience less personal and positive student-teacher relationships than elementary school students due to departmentalization and the larger number of students served per teacher in middle schools

(Eccles et al., 1993a; Midgley et al., 1989). Third, middle schools place a greater emphasis on "whole-class task organization, between–classroom ability grouping, and public evaluation of the correctness of work" (Eccles et al., 1993a, p. 93). Fourth, Midgley et al. (1989) asserted that elementary teachers have a higher sense of efficacy and take a greater responsibility for student lack of success than secondary teachers. Fifth, middle school students have often been expected to complete less rigorous work that relies on lower level cognitive skills than same grade students in elementary schools (Eccles et al., 1993a). "The actual cognitive demands made on adolescents may decrease rather than increase as they make the transition from primary school to secondary school" (p. 94). Sixth, middle school teachers often make use of stricter, comparison-based standards than elementary school teachers when assessing student competency and performance (Eccles et al., 1993a).

Factors such as increased rates of pubertal and cognitive development and changes in classroom environment contribute to declines in "students' achievement-related attitudes, values, and performance after the transition to [middle school]" (Midgley et al., 1989, p. 247). During early adolescence, there is often a poor fit between adolescent needs and school structure which may negatively impact student outcomes.

> If it is true that different types of educational environments may be needed for different age groups to meet developmental needs and to foster continued developmental growth, then it is also possible that some type of changes in educational environments may be inappropriate at certain stages of development (e.g., the early adolescent period). In fact, some types of changes in the educational environment may be developmentally regressive. Exposure to such changes is likely to lead to a particularly poor person-environment fit, and this lack of fit could account for some of the declines…seen at this developmental period (Eccles et al., 1993a, p. 92).

According to stage-environment fit theory, many characteristics of middle schools do not provide early adolescents with an appropriate educational environment (Eccles et al., 1991). Eccles et al. (1993a) expressed the belief that

> the nature of these environmental changes, coupled with the normal course of individual development, results in a developmental mismatch so that the fit between the early adolescent and the classroom environment is particularly poor, increasing the risk of negative motivational outcomes, especially for adolescents who are having difficulty succeeding in school academically. (p. 94)

Eccles et al. (1991) examined the findings of the National Educational Longitudinal Study (NELS) conducted by the Center for Educational Statistics in 1989 and found that outcomes for K-8 schools are superior to other typical middle-grade structures. Results from the NELS indicated that students attending K-8 schools have lower rates of truancy, student violence, substance abuse, feel better prepared for and more interested in class work, have higher self-concepts and greater locus of control, receive higher grades, and perform better on standardized test (Eccles et al., 1991). The K-8 elementary school configuration may prove to be the best environment for the unique needs of early adolescents.

Eccles and Midgley's stage-environment fit theory is based on work completed by Hunt in applying person-environment fit theory to educational psychology (Eccles et al., 1993a). According to Hunt (1975), behavior results from the interaction of person and environment. As applied to an educational setting, student learning is determined by the interaction between student characteristics and environmental structures. In working within the Behavior-Person-Environment model, it is important to coordinate the needs of the learner with the structure of the environment (Hunt, 1975). Eccles and Midgley et al.'s (1993a) application of the person-environment fit theory to the interaction between the characteristics of the early adolescent and the structure of middle schools led to the stage-environment fit theory (Eccles et al., 1993a). "At the most basic level, [Hunt's] perspective suggests the importance of looking at the fit between the needs of early adolescents and the opportunities afforded them in the traditional [middle] school environment" (Eccles et al., 1993a, p. 92). Eccles et al. (1993a) further explained, if certain types of educational environments are needed for certain age groups to meet developmental needs and to continue growth, "then it is also possible that some types of changes in educational environments may be inappropriate at certain stages of development (e.g., the early adolescent period)" (p. 92).

Hunt's application of the person-environment fit theory has been built on research published by Mitchell in 1969. Mitchell advocated "that the determinates of behavior need to be sought more often in the characteristics of the environmental context and the interaction of these characteristics with individual traits and abilities" (p. 696). According to Mitchell, the interactions between the educational environment and individual traits merits closer examination if psychological and educational theory is to accurately predict human behavior. In fact, individual traits may be overshadowed by social forces and environmental context; therefore, social forces and environmental context cannot be ignored in predicting human behavior. Mitchell's foundational work in focusing sound research methodology on the interaction between person and environment supports the examination of the effects of the middle school educational context on early adolescent development with the purpose of improving educational outcomes.

Methodology

Research Design

This study was designed to determine if differences existed in student outcomes as measured by FSA scale scores, FCAT 2.0 DSS, number of out-of-school suspensions, and number of absences for sixth-, seventh-, and eighth-grade students attending schools configured as K-8 elementary schools versus sixth-, seventh-, and eighth-grade students attending schools configured as 6-8 middle schools during the 2015-2016 academic year. The study was a quantitative, ex-post facto, non-experimental research study. Data consist of pre-existing/archival data requested under Florida Statute 119, Article 1, section 24 of the Florida Constitution from a large central Florida school district. The data request included student grade level, gender, race, school attended, standardized test scores, number of out-of-school suspensions, and number of absences for all sixth-, seventh-, and eighth-grade students attending the selected schools during the 2015-2016 school year. Data were de-identified by the district and transferred to the software program Statistical Package for the Social Sciences (SPSS) by the researcher for statistical analysis.

Population and Sample

Within the large central Florida school district selected for this study, there were four K-8 elementary schools and eight 6-8 middle schools. Three K-8 elementary schools and three 6-8 middle schools were chosen for this study based on similarities in their demographic compositions. The remaining K-8 elementary school was excluded from the study due to lack of a 6-8 middle school with a similar demographic composition within the district. The sample was comprised of students in Grades 6-8 attending one of the six selected schools. Three of the schools, identified for this study as K-8ES-A, K-8ES-B, and K-8ES-C, were K-8 elementary schools. The three remaining schools, identified for this study as 6-8MS-A, 6-8MS-B, and 6-8MS-C, were Grade 6-8 middle schools. The three K-8 elementary schools served a total of 1,508 students in Grades 6-8 during the 2015-2016 academic year. The three 6-8 middle schools served a total of 3,737 students in Grades 6-8 during the 2015-2016 academic year. Table 1 shows the student enrollment at each of the selected schools during the 2015-2016 school year.

Table 1

K-8 Elementary School and 6-8 Middle School Students Served: 2015-2016 School Year

Schools	Enrollment
K-8 Elementary Schools	
K-8ES-A	490
K-8ES-B	493
K-8ES-C	525
Total	1,508
6-8 Middle Schools	
6-8MS-A	1,236
6-8MS-B	1,185
6-8MS-C	1,316
Total	3,737

Source. Florida Department of Education (2016e)

All sixth-, seventh-, and eighth-grade students attending the selected school during the 2015-2016 school years were included in the study. For Research Question 1, student must have taken one or more of the following assessments, FSA ELA, FSA Mathematics, and/or the Algebra 1 EOC Examination. For Research Question 2, students in Grade 8 during school year 2015-2016 must have taken the FSA ELA and/or the FSA Mathematics during school years

2014-2015 and 2015-2016 for the researcher to examine student growth from seventh grade to eighth grade. In addition, students in Grade 8 during school year 2015-2016 must have taken the FCAT 2.0 in Reading and/or the FCAT 2.0 in Mathematics during school years 2012-2013 and 2013-2014 for the researcher to examine growth from fifth grade to sixth grade.

Data Collection

Data were requested from the large central Florida school district under Florida Statute 119, Article 1, section 24 of the Florida Constitution (Appendix A). Approval to conduct the study was also sought and received from the Institutional Review Board of the University of Central Florida (Appendix B).

Data were requested for all students in Grades 6-8 attending one of the six selected schools (K-8ES-A, K-8ES-B, K-8ES-C, 6-8MS-A, 6-8MS-B, 6-8MS-C) during the 2015-2016 school year. Descriptive data fields included school attended, grade level, gender, and race. In addition to the descriptive data requested, the following qualitative data were requested from the large central Florida school district to address each research question.

Research Question 1--FSA ELA scale scores, and/or FSA Mathematics scale scores, and/or FSA Algebra 1 EOC Examination scale scores were requested for all sixth-, seventh-, and eighth-grade students attending the selected schools during 2015-2016 school year.

Research Question 2--FSA scale scores for ELA and/or FSA scale scores for Mathematics for school year 2014-2015 and FCAT 2.0 DSS for Reading and/or FCAT 2.0 DSS for Mathematics for school years 2012-2013 and 2013-2014 were requested for students in the eighth grade during the 2015-2016 school year.

Research Question 3--Data reporting the number of out-of-school suspensions per student were requested for all sixth-, seventh-, and eighth-grade students attending the selected K-8 elementary schools and 6-8 middle schools during the 2015-2016 school year.

Research Question 4--Data reporting the number of absences by student were requested for all sixth-, seventh-, and eighth-grade students attending the selected K-8 elementary schools and 6-8 middle schools during the 2015-2016 school year.

Data Analysis

The research design of the study was selected to determine if there exists a statistically significant difference in academic, behavioral, and attendance outcomes for students in Grade 6, seven, and eight, disaggregated by gender and race (Black, Hispanic, White, Other), based on school configuration (K-8 elementary school versus 6-8 middle school). The difference in mean standardized test scores, number of out-of-school suspensions, and number of absences was examined for sixth-, seventh-, and eighth-grade students attending the selected schools during school year 2015-2016. For Research Question 2, the differences in mean growth between seventh (2014-2015 scores) and eighth (2015-2016 scores) grade as reflected by the FSA ELA scale scores and/or FSA Mathematics scale scores and the differences in mean growth between fifth (2012-2013 scores) and sixth (2013-2014 scores) grade as reflected by the FCAT 2.0 in Reading and/or the FCAT 2.0 in Mathematics DSS was examined. Table 2 depicts the grade level and type of standardized test taken by the eighth-grade cohort from school year 2012-2013 through school year 2015-2016 (Florida Department of Education, 2015c). The dependent variables for the study include standardized test scores (FSA--scale scores, FCAT 2.0--developmental scale scores), number of out-of-school suspensions by students, and number of absences. The moderator variables include gender and race (Black, Hispanic, White, Other). The independent variable for the study was school configuration, K-8 elementary school or 6-8 middle school.

Table 2

Standardized Testing by Year and Grade Level

School Year	Grade	ELA or Reading	Mathematics
2012-2013	5	FCAT 2.0	FCAT 2.0
2013-2014	6	FCAT 2.0	FCAT 2.0
2014-2015	7	FSA	FSA or Algebra 1 EOC
2015-2016	8	FSA	FCA or Algebra 1 EOC

Source. Florida Department of Education (2015c)

In order to determine if a statistically significant difference exists between the means for each student outcome (standardized test score, number of out-of-school suspensions, and number of absences), two-way analyses of variance (ANOVAs) were utilized. For all research questions, two separate two-way analysis of variance (ANOVA) were performed. The first two-way ANOVA utilized school configuration as the independent variable and gender (male, female) as the moderator variable. The second two-way ANOVA utilized school configuration as the independent variable and race (Black, Hispanic, White, Other) as the moderator variable. According to Steinberg (2011), an ANOVA is appropriate when the researcher desires to test the difference between means of more than two groups (2011). The use of gender and race as moderator variables generates more than two groups for comparison of each student outcome (achievement, behavior, attendance). Use of a two-way ANOVA for statistical analysis allowed the researcher to determine if statistically significant different means existed in the student outcomes of standardized test scores, number of out-of-school suspensions, and number of days absent for gender and racial subgroups. Table 3 provides information regarding the sources of data and variables associated with each of the four research questions that guide this study.

Table 3

Research Questions, Sources of Data, and Variables

Research Question	Source of Data	Variables
To what extent, if any, is there a difference in FSA ELA and/or FSA Mathematics and/or FSA Algebra 1 EOC Examination scale scores among sixth-, seventh-, and eighth-grade students, disaggregated by gender and race, based on school configuration?	FSA scale scores--ELA, Mathematics, Algebra 1 EOC Examination	Dependent: FSA scale scores (ELA, Mathematics, Algebra I EOC) Independent: School configuration Moderator Variables: Gender, Race
To what extent, if any, is there a difference in growth from fifth grade to sixth grade and seventh grade to eighth grade, disaggregated by gender and race, as evidenced by FSA ELA and/or Mathematics scale scores and FCAT 2.0 Reading and/or Mathematics DSS, for eighth-grade students based on school configuration?	FSA scale scores--ELA, Mathematics (2015-2016, 2014-2015) FCAT 2.0 DSS--Reading and Mathematics (2013-2014, 2012-2013)	Dependent: FSA scale scores, FCAT 2.0 DSS Independent: School configuration Moderator Variables: Gender, Race
To what extent, if any, is there a difference in number of out-of-school suspensions, disaggregated by gender and race, for sixth-, seventh-, and eighth-grade students based on school configuration?	Number of out-of-school suspensions by student	Dependent: Number of out-of-school suspensions Independent: School configuration Moderator Variables: Gender, Race
To what extent, if any, is there a difference in number of days absent, disaggregated by gender and race for sixth-, seventh-, and eighth-grade students based on school configuration?	Number of days absent	Dependent: Number of days absent Independent: School configuration Moderator Variables: Gender, Race

Significance of the Study

The results of this study provide much needed insight into the effect of school configuration on student outcomes such as standardized test scores, number of out-of-school suspensions, and number of absences. The timing of the transition to middle school with the beginning of adolescence and the mismatch between school structure and adolescent developmental needs contribute to declines in student outcomes during early adolescence (Eccles et al., 1993b). "For some children, the early adolescent years mark the beginning of a downward spiral in school-related behaviors and motivation that often lead to academic failure and dropping out of school" (Eccles et al., 1993b, p. 554). Research conducted by Simmons and colleagues provided "clear evidence of greater negative change among adolescents making the [middle] school transition than among adolescents remaining in the same school setting" (Eccles et al., 1993b, p. 555). Schools configured as K-8 elementary schools allow adolescent students to remain in an environment structured in better alignment with their needs while avoiding school transition. The intent of this research was to assist decision-makers as they endeavor to meet the unique needs of early adolescents.

Summary

In the first decade of the 21st century, cities such as Cleveland, Denver, Phoenix, Philadelphia, and Milwaukee have begun to transition to a K-8 elementary school configuration in the hopes of improving academic performance and student behavior (Patton, 2005). This study was conducted to investigate if those same outcomes were present when K-8 elementary schools were compared to demographically matched 6-8 middle schools within a large central Florida district. According to Patton (2005), the intimate structure of K-8 schools creates a learning environment better suited to the unique needs of early adolescents which, in turn, improves student achievement and minimizes behavior problems. The K-8 elementary school configuration holds promise in addressing the mismatch between the needs of adolescents and middle school structure.

Organization of the Study

This study is divided into five chapters. Chapter 1 has provided an overview of the study including an introduction to the problem, the problem statement, the statement of purpose, the research questions and related hypotheses guiding the study. Also presented were definitions of relevant terms, limitations and delimitations of the study, the conceptual framework for the study, a brief description of the methodology employed in the study, the significance of completing the study, and a summary. Chapter 2 contains a review of the literature and research related to the problem. Chapter 3 provides a detailed description of the methodology utilized in the study including a review of the research questions and associated hypotheses that will guide the study. The research design employed in the study is discussed and the population and sample selected for the study are described. Instrumentation used to generate the standardized test scores examined in the study along with data collection and analysis procedures used in the study are also explained. In Chapter 4, results generated from statistical analysis of data organized to respond to the research questions are presented. A summary of findings, implications for policy and practice, and recommendations for future research are found in Chapter 5 of the study.

CHAPTER 2
REVIEW OF LITERATURE

Introduction

The American school system has experimented with several different grade-level configurations in an effort to serve the unique needs of early adolescents. Unfortunately, many of the school configurations have produced less than optimal results for students in Grades 6-8. In fact, the search for the perfect combination of school organization, curriculum, and instructional practices to meet the particular needs of young adolescents remains an unmet challenge in educational reform efforts (McEwin, Dickinson & Jacobson, 2005). Weiss and Kipnes (2006) explained that there is often widespread discontent with schools that serve the middle grades despite numerous modifications and reforms aimed at improving middle grades education. As noted by Clark, Slate, Combs, & Moore (2013), “Those individuals involved in the endeavor have raised more questions over the life of the debate, and as a result, an optimal configuration for adolescent education has yet to be identified” (p. 1).

At the time of the present study, research into the effect of grade level configuration on student outcomes was scant. Weiss and Kipnes (2006) lamented, even though it has been well established that middle schools influence student behaviors and outcomes in negative ways, few studies exist that directly compare outcomes for students in different forms of middle grade education. Clark, Slate, Combs, & Moore (2014) decried the lack of comprehensive research focusing on school configuration. Weiss and Baker-Smith (2010) added that little attention has been devoted to school configuration in scholarly research and education policy. Lack of similar student groups has provided one of the biggest challenges in examining the effect of school configuration on student outcomes. As Holas and Huston (2012) explained, the lack of same-grade comparison groups has limited research into the effects of school configuration on student outcomes during the early adolescent years. Most districts have relied solely on one configuration of schooling, making comparisons of similar student groups highly problematic (Elovitz, 2007; Weiss & Kipnes, 2006).

Although research on optimal grade level configurations for early adolescents has been limited, there exists a wide breadth of research documenting both the academic and motivational declines experienced by early adolescent students (Byrnes & Ruby, 2007; Clark et al., 2013; Mac Iver & Mac Iver, 2006). Many researchers have attributed these declines in student outcomes to the timing of the elementary school to middle school transition as well as the middle school environment itself. According to Rockoff and Lockwood (2010), "Education[al] researchers and developmental psychologist have been documenting changes in attitudes and motivation as children enter adolescence, changes that some hypothesize are exacerbated by middle-school curricula and practices" (p. 69). As Anderson, Jacob, Schramm, and Splittgerber (2000) explained, the elementary school to middle school transition combines developmental changes with contextual changes such as "increased school size, increased departmentalization and tracking, and greater emphasis on relative ability and competition in contrast to effort and improvement" (p. 326). Whether it is due to changes in school context factors as students move from elementary school to middle school or the timing of the elementary school to middle school transition, the middle grades often present a challenge to student success. During the middle grades, student often fall victim to lower academic achievement and motivation due to changes in instructional quality (partially due to differences in elementary and middle school characteristics) combined with a transition occurring during a developmentally challenging period (Holas & Huston, 2012).

The literature review for this study has been organized to provide a brief history of grade configuration with its beginning as an 8-4 model with an optional four-year high school pursued by only a few students. The changes in configuration over time are described along with the eventual return to the 8-4 model for the purpose of meeting the unique needs of early adolescent students to best prepare them for compulsory high school attendance. The unique needs of young adolescents and strategies for addressing those needs are discussed in the second section of the literature review. Next, the rise and fall of the middle school concept, with its focus on addressing the social and emotion needs, of early adolescents is explored. The fourth section contains a discussion of findings of researchers regarding the impact of traditional middle school configurations on academic and behavioral outcomes for early adolescents. Finally, the current trend of returning to the K-8 elementary school configuration is examined.

History of School Configuration

A wide variety of school configurations have been implemented throughout the history of education in the United States, many without a solid research base to support selecting any one configuration over another. As early as 1974, Martin, in his introduction to a report of a national panel on high schools and adolescents noted that there was a lack of a validating research base as well as significant findings supporting one school configuration over another (Blythe, Simmons, & Bush, 1978). In 2006, Weiss and Kipnes found the research base comparing school configurations still lacking. Although researchers have shown that school configuration influences student outcomes and behaviors, there exists a lack of direct comparison of student outcomes based on attendance of students at schools of differing configurations (Weiss & Kipnes, 2006).

In the 1800s, one room school houses serving all grade levels were the norm in rural settings. However, in urban schools, students were divided into Grade 1-8 primary schools and Grade 9-12 secondary schools (Clark et al., 2014). Throughout the 1800s, the two-tiered system (or 8-4 model) of education prevailed and often consisted of Grades 1-8 housed in an elementary school and Grades 9-12 housed in a separate high school (Elovitz, 2007; Lounsbury, 2009). The 8-4 pattern has the advantage of preparing a large number of students with basic skills and vocational training and reserving more advanced educational preparation for the smaller number of students planning to attend college (Manning, 2000).

The first reorganization of the 8-4 model came in 1894. At that time, a recommendation from the Committee of Ten on Secondary Studies, led by then Harvard University president Charles Eliot, suggested a 6-6 school configuration with Grades 7 and 8 moving from the elementary school to the high school (Clark et al., 2014; Yecke, 2005). "The committee advocated for secondary education to begin in the seventh grade rather than the ninth, in order to provide gifted and college-bound students a better opportunity to reach their full potential as early as possible" (Clark et al., 2014, p. 2).

In 1905, prominent psychologist, G. Stanley Hall, launched the idea of a three-tier education system. The three-tier education system provided a separate transitional school to ease the transition from the primary school to the more demanding secondary school (Clark et al., 2014). Educational reformers of the period argued that separate junior high schools would expose students in Grades 7-9 to an environment more in-line with that of a high school without the exposure to older teenagers (Bedard & Do, 2005). Factors such as large numbers of elementary aged immigrants, new child labor laws, and the industrialist call for a secondary experience before Grade 9 all contributed to the rise of the junior high school (Clark et al., 2014). Because most students at the time were not expected to attend high school, the new 6-3-3 school configuration allowed students to receive three additional years of schooling before leaving the academic realm for the world of work (Yecke, 2005). As an added benefit, the 6-3-3 school configuration allowed elementary schools with rising enrollments to move students in Grades 7-9 to the junior high school while preserving the elementary school for the youngest of students (Yecke, 2005).

Although junior high schools were housed separately from high schools, they maintained much of the academic rigor characteristic of high schools. The inclusion of the ninth grade in the junior high configuration forged a strong link between high schools and junior high schools. As a result, the two differed very little in terms of curriculum, rigor, and expectations (Yecke, 2005). Manning (2000) described the "curriculum imperatives" that drive junior high programs as "enriched academic programs for college-bound students and vocational programs for students heading into the job market, with the later addition of "meet[ing] the unique social, personal, and academic needs of young adolescents" (p. 192). The 6-3-3 pattern of school organization replaced the earlier 8-4 pattern and remained the predominate school configuration pattern in the United States for 37 years (Lounsbury, 2009).

As is common with educational reforms, especially those designed to meet the needs of students in the middle grades, the concept of the junior high was soon modified. Large birth cohorts and the growing popularity of early childhood education caused overcrowding at the elementary school level and led many schools to move sixth grade from the elementary school to the junior high school (Clark et al., 2014; Juvonen, Le, Kaganoff, Augustine, & Constant, 2004). Another factor contributing to the movement of sixth grade to the junior high was Tanner's assertion that early adolescents were reaching puberty earlier than their 20th century counterparts; and, therefore, an earlier transition to junior high school was warranted (Clark et al., 2014; Juvonen et al., 2004). Critics of junior high schools soon claimed that the high school-like environment that pervaded most junior high schools was not well suited to the needs of early adolescents (Clark et al., 2014 Lounsbury, 2009; Weiss & Kipnes, 2006). By the 1950s, the replication by the junior high of high school programs and policies was seen by critics as failing to meet the goal of effectively educating adolescents (Weiss & Kipnes, 2006).

As dissatisfaction with the junior high grew, an increased focus on the unique needs of early adolescence spurred another wave of educational reform aimed at the middle grades. The 1980s brought renewed concerns on the part of middle school researchers, educators, and advocates over society's lack of attention to young adolescents (Juvonen et al., 2004). The new 5-3-4 school configuration, featuring a Grade 6-8 middle school, was more than just a structural change for schools; the new configuration called for a massive paradigm shift in the practices for educating students in the middle grades (Clark et al., 2014; Juvonen et al., 2004; Lounsbury, 2009). The middle school movement of the 1980s, shifted the focus of middle schools towards "student self-esteem and identity development, education in egalitarian principles, and attention to students' physical, sexual, social, and mental health"(Yecke, 2005, p. 2) over that of more academic pursuits rooted in "systematic teaching and purposeful learning" (Yecke, 2005, p. 2). Both Juvonen et al. (2007, p. 12) and Clark et al. (2014, p. 3) cited Alexander and George's

(1981, p. 2) *The Exemplary Middle School* as providing the foundation framework for the middle school concept:

> The concept of a bridging school is not enough, however, because children of middle school age have their unique characteristics and needs which cannot be subordinated to the impact of the elementary school nor to the demands of the high school. An effective middle school must not only build upon the program on earlier childhood and anticipate the program of secondary education to follow, but it must be directly concerned with the here-and-now problems and interests of its students. Furthermore, the middle school should not be envisioned as a passive link in the chain of education below the college and university, but rather as a dynamic force in improving education. (p. xx)

The American educational system embraced the idea of the middle school concept as a promising solution in addressing the inadequacies of early adolescent education (Clark et al., 2014) and the number of public middle schools grew from 1,500 to 15,000 between 1970 and 2000 (Rockoff & Lockwood, 2010).

The 21st century educational reform trend is a movement back toward the 8-4 model of the late 1800s. However, the purpose, goals, and emphasis of the 8-4 model is much different this time around. According to Byrnes and Ruby (2007), the reform movement driving a return to K-8 has been driven by the belief that K-8 schools are more effective in producing positive achievement outcomes for middle grade students. Initial research and anecdotal evidence suggests that middle grade student outcomes for students attending K-8 elementary schools may be superior to middle grade student outcomes for students attending 6-8 middle schools (Clark et al., 2014; Juvonen et al., 2004; Weiss & Kipnes, 2010). The K-8 school configuration has several advantages. One is the elimination of school transition during early pubertal development. Eccles et al. (1991) suggested that cumulative stress theory accounts for the increased risk of negative student outcomes when pubertal change and school change occur simultaneously. A second advantage of the K-8 school configuration is better alignment of the K-8 elementary school educational environment with early adolescent needs (Eccles et al., 1991; 1993a; 1993b). Researchers reported factors such as smaller class sizes (Patton, 2005), smaller school sizes (Jacob & Rockoff, 2012), less ability grouping (Bedard & Do, 2005), and a greater sense of community (Byrnes & Ruby, 2007) all contribute to student success at K-8 schools. Due to preliminary findings that middle grade students in K-8 schools out perform their same aged peers, the movement of middle grade education from 6-8 middle schools back to K-8 elementary schools has gained support (Byrnes & Ruby, 2007). Several large urban districts in New York, Milwaukee, Ohio, and Maryland have already implemented the 8-4 model and are reporting positive results for student outcomes (Jacob & Rockoff, 2012; Patton, 2005; Yecke, 2006). However, some researchers have cautioned that the K-8 school configuration itself is only one factor to be considered as schools embrace the revival of the 8-4 model. In separate studies, Juvonen et al. (2004), Herman (2004), and Eccles et al. (1991) all suggested that academic rigor, personal support available to students, the presence of strong instructional leaders, parental involvement, and overall classroom environment may be at least as important, if not moreso, than grade configuration in determining student outcomes.

The Middle School Concept

> The middle school concept is a philosophy of education with a special spirit and deep theoretical roots--a set of beliefs about kids, education, and the human experience. Those who adhere to it are passionate and determined advocates. The concept's ideals and recommendations are direct reflections of its two prime foundations, the nature and needs of young adolescents and the accepted principles of learning, both undergirded by a commitment to our democratic way of life (Lounsbury, 2009, p. 32).

The introduction of the middle school concept represents more than a structural grade configuration framework. The middle school movement of the 1960s was not only a reorganization of school configurations. It was a concerted effort to make middle grade schools a better developmental fit for young adolescent students (Weiss & Kipnes, 2006). The middle school concept represented a shift in the ideological purpose of the middle school in addressing the social and emotional needs of early adolescents. According to Yecke (2005), the middle school concept was "driven by the belief that old-fashioned cognitive skills and knowledge should be deemphasized"… and middle schools should "focus instead on such concerns as self-esteem, mental health, identity development, interpersonal relations, egalitarian principles, and social justice" (preface ii). Clark referenced the 1985 National Association of Secondary School Principals*' Excellence at the Middle Level*, noting the following were essential components of the middle school concept:

> (a) altering the culture and climate of the school to support excellence and achievement rather than intellectual conformity and mediocrity; (b) providing opportunities for students to achieve and excel in a number of domains, including the arts, athletics, academics, crafts; (c) creating a caring, supportive atmosphere that tolerates and welcomes a wide angle of student diversity; (d) establishing student advisement programs that would assure each student regular, compassionate, and supportive counsel from a concerned adult; (e) fostering sensitivity to the needs of the physical, intellectual, emotional, and social conditions of students; (f) creating opportunities for students to explore their aptitudes, interests, and special talents and to develop accurate and positive self-concept; (g) instituting a curriculum that balances skills for continued learning with content coverage which may be outdated before it is used; and (h) relating curriculum content to the immediate concerns of the young adolescent, assuring its utility outside the classroom (Clark et al., 2014, p. 4).

Herman (2004) characterized middle schools as educational environments that place emphasis on developing students' ability to problem-solve, think reflectively, and actively participate in individualized learning. Benefits of middle schools include increased opportunities for curriculum integration, teachers serving as personal guides and facilitators, utilization of interdisciplinary teaching teams, and a decreased emphasis on content and competition (Herman, 2004). At its inception, the middle school concept was seen as an ideal way to address the unique needs of early adolescents that had been previously overlooked by the junior high school model. Herman (2004) asserted that the middle school was intended to provide students with the chance for exploratory learning, a goal never adequately addressed by junior high schools. The middle school concept, implemented properly, was proposed as the solution to the failure of intermediate education in meeting the needs of middle aged students (Clark et al., 2014).

As is common in education, the ability of the middle school and the middle school concept to improve student outcomes soon came under fire. Beginning in the 1980s, research began appearing that called the effectiveness of middle schools into question (Clark et al., 2014). Yecke (2005) asserted that it is the middle school concept, not the structural grade configuration of middle school, that would eventually lead to middle schools falling out of favor. Lounsbury (2009) explains, "Because many students do not reach targeted academic goals, [the middle school] has been labeled the "weak link in American education," primarily by those who believe the middle school's primary responsibility is to prepare students for advanced high school courses, and who presume that the school's concern for students as persons takes away from its academic responsibilities" (p. 32). Middle schools that were once praised for their team teaching, flexible schedules, and interdisciplinary instruction came under attack in the mid-1990s by those who saw the focus of providing a nurturing environment taking priority over academic achievement (Herman, 2004).

Current emphasis on accountability and academic rigor over whole child development has placed additional scrutiny on the effectiveness of the middle school concept in meeting the academic needs of early adolescents. The passage of No Child Left Behind (NCLB) Act of 2001, Public Law 107-110, with its emphasis on standardized testing, focused attention on accountability for schools and districts across the nation (Clark et al., 2014) and laid bare the declines in adolescent performance previously identified by educational researchers (Clark et al., 2014). Lounsbury (2009) contended that the development of the middle school concept as a pedagogical framework was being forced to move away from its ideals due to the implementation of No Child Left Behind. The passage of NCLB and its obsession with testing and accountability caused many schools and districts to eschew anything not directly related to improving test scores (Lounsbury, 2009) The middle school concept, as described by Yecke (2005), with its emphasis on student emotional and social development, was at odds with education's focus on accountability and standards. Yecke (2005) further asserted that the rigorous expectation and increased accountability associated with current standards-based educational reforms should bring an end to the middle school concept.

> Supporters of the middle school "concept" need to realize that the war is indeed over, by admission of their own leaders. It is time to admit defeat, lay down arms, and cosign middle schoolism [the middle school concept] and the faddish theories and approaches it entails to the dustbin of educational history. Then they [supporters of the middle school] can and should return to the urgent and noble work of equipping their young charges with the knowledge and skills that they need, and the nation expects (Yecke, 2005, preface iii).

Educational Needs of Young Adolescents

Researchers often characterize adolescence as a period of heightened risk and challenge for students. Gutman and Midgley (2000) explained that the many stresses associated with adolescence makes this developmental period especially risky. Sadly, lack of positive outcomes during the middle grade years can have long term consequences for early adolescents. For some students, a tumultuous start to the early adolescent years begins a downward spiral in school related behaviors and motivation that results in long-term academic failure and eventually dropping out of school (Eccles et al., 1993b). According to Gutman and Midgley (2000), the inability of adolescents to successfully traverse this formative period can result in life-long negative consequences. Even with a knowledge of the importance of this developmental stage, there still exists a need for additional research into the effects the educational system has on early adolescents, as "It has only been in recent decades that human developmental specialists have established a research base that informs educators and others about youth in this key transition period as childhood wanes and adolescence comes into its own" (Lounsbury, 2009, p. 33).

With an awareness of the importance of this particular developmental stage comes the responsibility to responsively meet the developmental needs of early adolescents. Eccles et al.(1993b) predicted positive consequences when there is alignment between the developmental trajectories of early adolescent growth and environmental change across the school years. "When the environment is both responsive to the changing needs of the individual and offers the kinds of stimulation that will propel continued positive growth" … the environment will "have a positive impact on children's perceptions of themselves and their educational environment" (Eccles et al., 1993b, p. 92). Eccles et al. (1993b) applied Hunt's person-environment fit perspective to aligning educational structures with student developmental stages as follows:

> [Hunt] stressed the need for teachers to provide the optimal level of structure for student's current level of maturity. This optimal level would pull students along a developmental path towards higher levels of cognitive maturity. [Hunt] further argued that the type of structure needed would differ for different age groups. (p. 557).

When designing educational structures to meet the developmental needs of early adolescents, Eccles et al. (1993b) identified the following hallmarks of early adolescent development to keep in mind: (a) increased desire for autonomy, especially from parents and teachers, (b) increased focus on peers and social acceptance, (c) increased focus on identity development, and (d) ability to engage in more abstract thinking. It is suggested that adolescent desire to experience more freedom be addressed by allowing students to engage in a gradual increase in decision making and rule making opportunities (Eccles et al., 1993a). Yecke (2005) suggested that upper grade students be allowed greater freedom and responsibility in terms of behavioral expectations. Eccles et al. (1991) advocated a focus on improved and expanded student-teacher relationships for early adolescents regardless of grade or school configuration. In 1989, the Carnegie Council on Adolescent Development suggested the following as strategies for best meeting the developmental needs of early adolescents: “creating smaller learning communities for learning within [larger] schools, eliminating tracking, empowering teachers and administrators to have more responsibility over their own schools’ programs, [and] using teaming and cooperative learning” (Eccles et al., 1993b, p. 567). Holas and Huston (2012) emphasized the role of classroom climate in shaping student experiences during the middle grades, explaining that higher achievement, student engagement and self-perceived competence is possible in schools providing students with high quality instruction. As McEwin (a professor of curriculum and instruction at Appalachian State University) explained, it is the utilization of developmentally appropriate practices that makes the difference, not grade configuration per se (Reeves, 2005).

Effects of the Middle Grades on Student Outcomes

> Too many educators see middle school as an environment where little is expected of students either academically or behaviorally, on the assumption that self-discipline and high academic expectations must be placed on hold until the storms of early-adolescence have passed. The sad reality is that by the time those storms have dissipated, many students are too far behind to pick up the pace to meet current state academic

> requirements, much less the challenging expectations of federal laws such as No Child Left Behind (Yecke, 2005, p. 1).

Researchers such Lockwood (2010), Weiss and Baker-Smith (2010), and Clark et al. (2014), have documented declines in outcomes in areas of academics, behavior, and motivation as students reach the middle grade years. Most researchers have hypothesized that it is the onset of puberty combined with school transition that leads to the negative outcomes experienced by so many early adolescents. Eccles et al. (1993b) explained: "Studies suggest that something unique may be going on during early adolescence and that it interacts with the nature of school transition in affecting the motivation of early adolescents" (p. 556). The combination of biological and psychological changes accompanied by changes in school configuration can produce a significant misalignment between the needs of young adolescents and the learning environment provided by traditional middle schools. Eccles et al. (1991) clarified that person-environment predicts a decline in adolescent motivation, interest, performance, and behavior when students move into the typical junior high school.

Some adolescent groups are at a greater risk for experiencing increased negative outcomes as they transition from the elementary school to middle school settings. Student factors contributing to less successful transitions from elementary school to middle schools as identified by Anderson et al. (2000), Gutman and Midgley (2000), and Seidman, Allen, Aber, Mitchell, and Feinman (1994) include gender, prior problem behavior, low academic achievement, and socioeconomic status combined with race. Eccles et al. (1993b), in explaining findings from Simmons and colleagues, declared the risk of experiencing negative outcomes was greater for girls as the onset of puberty for girls often coincides with the elementary school to middle school transition resulting in the need for girls to navigate a developmental as well as environmental change simultaneously. Gutman and Midgley (2000), who had earlier reported that minority students have academic problems that begin or accelerate in middle school, also found significant post-transition declines in self-esteem, class preparations, and grade point average for minority students. Seidman et al. (1994) added that poor urban youth often experience a greater number of environmental stressors which contribute to a greater risk of negative outcomes owing to the disruption of the self-system and social relationships caused by school transitions . Eccles et al. (1993b) explained why traditional middle schools are often such a poor fit for early adolescents:

> traditional middle grade schools are likely to be especially harmful since they emphasize competition, social comparison, and ability self-assessment at a time of heightened self-focus; they decrease decision making and choice at a time when the desire for autonomy is growing; they emphasize lower-level cognitive strategies at a time when the ability to use higher-level strategies is increasing; and they disrupt social networks and decrease the opportunity for close adult-child relationships to develop at a time when adolescents are especially concerned with peer relationships and may be in special need of close adult relationships outside of the home (pp. 559-560).

Examination of research published by Eccles et al (1993a, 1993b) and Gutman and Midgley (2000) yielded a list of characteristics and structures of traditional Grade 6-8 middle schools that contribute to the poor fit between early adolescent students and the middle schools learning environment:

1. larger school size
2. less personal interactions between teachers and students, teachers and families, and students themselves
3. more formal classroom structure
4. tendency of teachers to be subject-matter specialist
5. teacher responsibility for a larger number of students
6. less autonomy for students
7. lower sense of efficacy in teachers' ability to affect student achievement, especially with low-ability students
8. greater emphasis on teacher control and discipline
9. less personal and positive student-teacher relationships

10. fewer opportunities for student decision making, choice, and self-management
11. emphasis on whole-class task organization
12. emphasis on public evaluation, social comparison, and correctness of work
13. more consistent ability grouping across all curriculum areas
14. increased emphasis on academic rigor and future implications of current progress
15. high level of standards in judging student competence and in grading student performance
16. lower cognitive complexity of course work for entry middle school grades than same aged peers attending elementary schools.

Some researchers have reported declines in student academic success, motivation, and engagement in students' post elementary school to middle/junior high school transition. The Michigan Adolescence Study, a two-year, four-wave longitudinal study of students transitioning to junior high at seventh grade, was conducted by Eccles et al. (1993b). These researchers reported the results of students and teachers who responded to a questionnaire focused on mathematics:

1. Seventh-grade teachers believed students needed to be disciplined and controlled significantly more than did sixth-grade teachers.
2. Seventh-grade teachers rated students as significantly less trustworthy than did sixth-grade teachers.
3. Seventh-grade teachers felt significantly less efficacious than did sixth-grade teachers.
4. Both observers and students saw seventh-grade (post-transition) math teachers as less supportive, friendly, and fair than sixth-grade (pre-transition) teachers.
5. Students, teachers, and observers reported an increase, after transition, in between classroom ability grouping, whole-class instruction, and social comparison.

Seidman et al. (1994) conducted a longitudinal study of students attending schools in Baltimore, Washington, DC, and New York City. The study centered on the mismatch between the school environment and developmental stage in urban schools serving student populations consisting of high concentrations of poor, racially and ethnically diverse young adolescents. Study results detailed declines in student self-esteem, grade point average, and class preparation across the transition from elementary school to middle school. Declines in social support and participation in extracurricular accompanied by an increase in "daily hassles with the school microsystem" (Seidman et al., 1994, p. 514) were also indicated by study results. Seidman et al. advocated strongly for avoiding the transition from elementary school to middle school during the early adolescent years:

> Developmentally, early adolescence is an inopportune time to leave the familiarity of one's school peers for a new group of peers…It is equally inopportune to leave the confines of a single, supportive teacher who knows each child's academic and social strengths for an environment characterized by brief contact with numerous teachers. In this structural arrangement, it is difficult for youth to experience being valued and special, particularly in overcrowded, resource-poor urban public schools (p. 519).

In comparing student groups attending K-8 elementary schools to student groups attending traditional middle schools, students attending K-8 elementary schools exhibited more positive outcomes in the areas of test scores, school attendance, and future course completion. In a five-year longitudinal study conducted by Clark et al. (2013) researchers found that in Grades 6-8, students attending K-8 elementary schools had statistically significant higher reading and mathematics pass rates on the Texas Assessment of Knowledge and Skills than students attending 6-8 middle schools. Weiss and Baker-Smith (2010), in analyzing data from the Philadelphia Education Longitudinal Study, found attendance at a middle school, not of other factors, was associated with significantly lower grades during the ninth grade year as compared to students attending K-8 schools . Weiss and Baker-Smith (2010) also found that in examining the odds of course failure that students attending middle schools were more likely to fail a ninth-grade course than students attending K-8 schools. In addition, a marginally significant positive effect was noted when number of absences was compared to attendance at a middle school versus K-8 school (Weiss & Baker-Smith, 2010). In examining an administrative dataset from New York City, Rockoff and Lockwood (2010) found that academic achievement in both

English and mathematics, as measured by standardized test, declined when students moved to a middle school in comparison to students who continued their middle grade education at a K-8 elementary school. Rockoff and Lockwood (2010) also found that the negative effects evidenced by students attending middle schools persisted through the eighth grade. In addition to lower levels of academic achievement among students attending middle schools during early adolescence, Rockoff and Lockwood (2010) noted an increase in student absenteeism rates for students as they entered middle school. As Elovitz (2007) explained, researchers have consistently indicated that student achievement for students in expanded elementary schools is higher than student achievement for students in either middle or junior high schools. Simply stated, there is evidence that student learning in a K-8 school configuration is better than in separate 6-8 or 7-8 school configurations (Jacob & Rockoff, 2012).

The Revival of the K-8 Elementary School as an Alternative to Middle School

> The standard practices of grouping middle school students by chronological age, placing them in classes of 25, and scheduling them in 45- to 50- minute periods are bereft of any research to justify their unquestioned continuation as the “right” way to conduct an educational program for young adolescents (Lounsbury, 2009, p. 33).

As Jacob and Rockoff (2012) observed, the existence of junior high schools and middle schools has been based on “ideas about how adolescents learn that were prevalent in the 1960s and 1970s and during that time, large-scale changes were made in school and grade organization without strong evidence to back up those theories” (p. 29). Given the more recent findings indicating an increased likelihood of negative outcomes for students attending traditional 6-8 middle schools, 21st century educational reforms have called for a return to the K-8, 9-12 structure to serve the unique needs of early adolescents (Elovitz, 2007). Baltimore, Cincinnati, Cleveland, New York, and Philadelphia are just a few of the major districts that have adopted the K-8 school configuration, in part or whole, as the preferred method for serving early adolescents (Jacob & Rockoff, 2012).

Unlike earlier educational reform movements focused on serving the unique needs of early adolescents, the movement back K-8 schools has been based on a solid, although still developing, research base. Studies conducted in Milwaukee, Baltimore, and Philadelphia provide evidence of increased academic achievement (as measured by grade point average and standardized test scores), greater extracurricular involvement, greater leadership skills, fewer instances of bullying, and greater admittance rates to competitive high schools for students attending K-8 schools when compared to students attending Grade 6-8 middle schools (Yecke, 2006). As noted by Byrns and Ruby (2007), "Over the last decade or so, middle grades students attending K-8 schools show distinct advantages over middle school students in both academic and nonacademic areas" (p. 103). Jacob and Rockoff (2012) asserted that even though conversion from 6-8 middle schools to K-8 elementary schools is costly, the benefits reaped in terms of student achievement are worth the investment. When spread over time, the cost to convert traditional middle or junior high school configuration to a K-8 configuration can range from $50 to $250 per student. Although the total cost of conversion can be significant when considered district-wide, some educational reformers consider the estimated 0.1 standard deviation improvement in test scores to be well worth the financial cost (Rockoff & Lockwood, 2012).

Improved outcomes during the middle years may increase students' potential for success as they later transition to high school. Weiss and Baker-Smith (2010) hypothesized that students who have attended K-8 schools may experience a more successful transition to high school in part due to the emphasis placed on student academic and personal needs by K-8 elementary schools. Further, by avoiding a difficult transition during early adolescence and focusing on improvement of students' academic and social capacity, students attending K-8 schools have a solid foundation for the later transition to high school (Weiss & Baker-Smith, 2010). Students who do not experience positive outcomes during the middle years, may face an increased risk for negative outcomes as they make the transition to high school and beyond. Students are at risk for long-term consequences if they are not able to successfully traverse the transition from elementary to middle school (Seidman et al., 1994). Rockoff and Lockwood (2010) posited that students in public middle schools who fall behind K-8 students are increasingly at a disadvantage over the course of the middle years.

Although reconfiguration towards K-8 holds promise for improving student outcomes, some districts may not possess the necessary facilities, resources, or community support to implement the reconfiguration. As revealed by Clark et al. (2014), school reforms and grade configuration decisions are often driven by factors such as building costs, fluctuations in school enrollment, and workforce/college readiness needs rather than focusing on producing ideal outcomes for students. For districts that lack the ability to reorganize schools to achieve the K-8 configuration, addressing organizational and instructional factors may present some possible solutions for improving student outcomes during the middle grades. Jacob and Rockoff (2012) suggested that better managed transitions between the elementary school and middle school are a key factor in improving student outcomes for districts who lack the K-8 configuration.

> Better managed transitions could involve repeated school visits and an orientation period for incoming students; extensive coordination by teachers from both sending and

> receiving schools to align curricula and exchange information on the needs of particular students; and other steps to facilitate the flow of information to both students and instructional staff. (p. 31)

Holas and Huston (2012) contended that regardless of school configuration, classroom quality is the most important factor in determining the success of early adolescents. These researchers have contended that when middle schools are equivalent in quality to elementary schools, declines in achievement and school functioning are not evident. Rather, they expressed the belief that achievement levels and self-evaluations of competence are similar between same age students attending middle schools and elementary schools when the middle schools are of high quality (Holas & Huston, 2012). Yecke (2006) clarified that sound educational practices make the difference for middle grade students:

> The key to renewing middle-grades education in the United States is to treat it as education rather than as personal adjustment. That means having high academic standards, a coherent curriculum, effective instruction, strong leadership, results based accountability, and sound discipline (p. 25).

Addressing the misalignment between early adolescent needs and educational environment may contribute to improving middle grade student outcomes regardless of school configuration. Eccles et al. (1993b) suggested it is the mismatch between developmental stage and opportunities provided by the educational environment that has led to declines in motivation over the characteristics of the early adolescent period. It is often the poor fit between student needs and educational environment, rather than school configuration, that determines middle grade student outcomes. Eccles et al. (1993a) asserted that the decline in motivation and corresponding increase in school misconduct of early adolescents have been due in large part to the regressive environmental change associated with the transition from elementary school to middle school. Holas and Huston (2012) found that regardless of school type "youth in stimulating, warm classrooms taught by efficacious teachers with close relationships to their students had better test scores, teacher-rated achievement, school engagement and perceived self-competence than did those receiving lower quality instruction" (p. 343).

Summary

Declines in student academic and motivational outcomes for students attending traditional Grade 6-8 middle schools have prompted educational researchers to reexamine the effects of school configuration, especially those configurations requiring multiple transitions and that involve changes to the educational environment. Student outcomes may decline as students make the move from elementary school to middle for a variety of reasons:

> 1) Adolescents may feel less positive about school as biological and social changes prompt a normative developmental shift in emotional responses and attitudes.
> 2) The environment of post-transition schools, for example, having subject specialist teachers, may engender more negative emotions than their pre-transition counterparts.
> 3) Both factors might interplay to create sudden loss of enthusiasm about school.
> 4) The act of transferring to a new school might provoke unique psychological responses that influence engagement. (Symonds & Hargreaves, 2016, p. 55)

Recent educational reform has focused on a return to the K-8, 9-12 school configuration to eliminate the need for students to navigate school form transition during the early adolescent years. School transitions may be especially harmful to young adolescents as they present both organizational and social discontinuities for students. Anderson et al. (2000) explained

> Organizational discontinuities include changes in school size, departmentalization, tracking (or streaming), academic standards (particularly increased rigor in grading), teacher expectations, and student autonomy. Social discontinuities include changes in the diversity of the student population, relations with teachers, and a sense of belonging (p. 326).

When districts provide students with a K-8 elementary school option, students are afforded the opportunity to delay school transition past the early adolescent years.

The return to the K-8, 9-12 school configuration is also prompted by the tendency of K-8 schools to employ practices that are a better fit for the unique needs of early adolescents. According to Clark et al. (2014), researchers conducting studies since the passage of the No Child Left Behind Act have indicated that K-8 elementary schools foster an educational environment encouraging educational best practices. Herman (2014) illustrated how Hough's "Elemiddle School" idea contributes to a greater likelihood of positive outcomes for early adolescent students: K-8 teachers are well-versed in utilizing student-centered practices such as teaming of student groups, planning as a group, individualizing instruction, and working with the same group of students all day. Eccles et al. (1991) reported factors such as greater teacher efficacy, better quality of teacher-student relationships, and greater student control in terms of decision making contribute to the advantages experienced by students attending K-8 schools. The ability of K-8 schools to employ a more appropriate educational context for early adolescents accords K-8 elementary school students a distinct advantage over their 6-8 middle school peers.

Herman (2014) attributed the recent movement, (i.e., return to K-8 schools) to several factors such as growing dissatisfaction with middle schools, research supporting a link between the 6-8 middle school configuration and lower academic achievement, and parental desire to maintain the elementary school setting as long as possible. With preliminary research showing improved student achievement, better standardized test scores, fewer behavior problems, and increased student motivation and engagement (Patton, 2005; Rockoff & Lockwood, 2010;

Yecke, 2006) for students attending K-8 elementary schools over students attending 6-8 middle schools, it is no wonder that the return has rapidly gained support. However, at the time of the present study, research centering on the impact of the K-8 school configuration was still in its infancy and lacked rigorous statistical analysis and empirical proof (Byrnes & Ruby, 2006). As Weiss and Kipnes (2006) explained, it is nearly impossible to disentangle district-level differences from school-level difference due to the fact that most school districts employ only one configuration to serve middle grade students. This study capitalized on the use of multiple school configurations in one large central Florida school district in an attempt to make meaningful contributions to the research, comparing K-8 and 6-8 school configurations on Grade 6, 7, and 8 student outcomes.

CHAPTER 3
METHODOLOGY

Introduction

The purpose of this research was to determine if a statistically significant difference exists in sixth-, seventh-, and eighth-grade student outcomes based on K-8 elementary school or 6-8 middle school configuration. Student outcomes that were examined include FSA scale scores, FCAT 2.0 DSS, number of out-of-school suspensions by student, and number of absences by student. If K-8 elementary schools and 6-8 middle schools produce different student outcomes, then school configuration may be one factor to consider when attempting to match student characteristics to environmental structure to promote student success. This chapter provides a detailed explanation of the research design, a description of the study participants, a description of data collection and data analysis techniques employed in the study, and an explanation of the instrumentation used in the study.

Research Questions

The following research questions guided this study:

1. To what extent, if any, is there a difference in FSA ELA and/or FSA Mathematics and/or FSA Algebra 1 EOC Examination scale scores among sixth-, seventh-, and eighth-grade students, disaggregated by gender and race, based on school configuration?

   $H_{1\text{-}0}$ - There is no statistical difference in FSA ELA and/or FSA Mathematics and/or FSA Algebra 1 EOC Examination scale scores for sixth-, seventh-, and eighth-grade students based on school.

Variables:

Independent: school configuration (K-8 elementary school, 6-8 middle school)

Dependent: FSA ELA scale scores, FSA mathematics scale scores, FSA Algebra 1 EOC Examination scale scores

Moderator: gender, race (Black, Hispanic, White, Other)

Statistical Tool--Two-way Analysis of Variance (ANOVA)

2. To what extent, if any, is there a difference in growth from fifth grade to sixth grade and seventh grade to eighth grade, disaggregated by gender and race, as evidenced by FSA ELA and/or Mathematics scale scores and FCAT 2.0 Reading and/or Mathematics DSS, for eighth-grade students based on school configuration?

$H_{2\text{-}0}$--There is no statistical difference in growth from fifth grade to sixth grade and seventh grade to eighth grade, as evidenced by FSA ELA and/or Mathematics scale scores and FCAT 2.0 Reading and/or Mathematics DSS, for school year 2015-2016 eighth-grade students based on school configuration.

Variables:

Independent: school configuration (K-8 elementary school, 6-8 middle school)

Dependent: FSA ELA scale scores, FSA Mathematics scale scores, FCAT 2.0 Reading DSS, FCAT 2.0 Mathematics DSS

Moderator: gender, race (Black, Hispanic, White, Other)

Statistical Tool--Two-way Analysis of Variance (ANOVA)

3. To what extent, if any, is there a difference in number of out-of-school suspensions, disaggregated by gender and race, for sixth-, seventh-, and eighth-grade students based on school configuration?

   $H_{3\text{-}0}$ - There is no statistical difference in the number of out-of-school suspensions between sixth-, seventh-, and eighth-grade students based on school configuration.

   Variables:

   Independent: school configuration (K-8 elementary school, 6-8 middle school)

   Dependent: number of out-of-school suspensions

   Moderator: gender, race (Black, Hispanic, White, Other)

   Statistical tool--Two-way Analysis of Variance (ANOVA)

4. To what extent, if any, is there a difference in number of absences, disaggregated by gender and race, for sixth-, seventh-, and eighth-grade students based on school configuration?

   $H_{4\text{-}0}$ - There is no statistical difference in the number of days absent between sixth-, seventh-, and eighth-grade students based on school configuration.

   Variables:

   Independent: school configuration (K-8 elementary school, 6-8 middle school)

   Dependent: number of days absent

   Moderator: gender, race (Black, Hispanic, White, Other)

   Statistical tool--Two-way Analysis of Variance (ANOVA)

Research Design

This study was a quantitative, ex-post facto, non-experimental research study designed to determine if a statistically significant difference exists in sixth-, seventh-, and eighth-grade student outcomes for students attending schools configured as K-8 elementary schools as compared to outcomes for students attending schools configured as 6-8 middle schools. A comparison of the means for student outcomes based on school configuration and disaggregated by gender and race indicated the use of two-way ANOVA to determine if a statistical difference exists between the outcomes for the different groups of students. For each research question, two separate two-way ANOVAs were conducted. The first two-way ANOVA was performed to analyze differences between same grade level groups based on school configuration with gender as a moderator variable. The second two-way ANOVA was used to analyze the difference between racial groups based on school configuration with race as a moderator variable.

All data were preexisting/archival data and were provided as a result of a public records request (Florida Statute 119, Article 1, section 24 of the Florida Constitution) by the large central Florida school district selected for the study. Data elements required for the study include school configuration (K-8 elementary or 6-8 middle school), grade level (6, 7, or 8), gender (male or female), race (Black, Hispanic, White, Other), standardized test scale scores (FSA scale score for ELA and/or Mathematics and/or Algebra 1 EOC Examination), number of out-of-school suspensions by student, and number of days absent by student. For students in Grades 6 and 7 during the 2015-2016 school year, all data are from the 2015-2016 academic year. For students in the eighth grade during the 2015-2016 academic year, in addition to the aforementioned data,

data regarding students 2014-2015 FSA scale scores for ELA and/or mathematics and 2012-2013 and 2013-2014 FCAT 2.0 DSS for Reading and/or Mathematics were also requested.

Participants

The study participants consisted of all sixth, seventh, and eighth graders attending the six demographically matched K-8 elementary schools and 6-8 middle schools in the selected large central Florida school district during the 2015-2016 school year. To participate, the sixth-, seventh-, and eighth-grade students must have participated in the 2015-2016 administration of the FSA test in ELA and/or the FSA test in mathematics and/or the FSA Algebra 1 EOC Examination. For Research Question 2, the eighth grade participants must have participated 2014-2015 and 2015-2016 administrations of the FSA tests in ELA and/or the FSA test Mathematics as well as the 2012-2013 and 2013-2014 administrations of the FCAT 2.0 in Reading and/or the FCAT 2.0 in mathematics.

Tables 4, 5, 7, 8, 10, and show the demographic composition as reported by the Florida Department of Education (as percentage of total school population) of each school selected for the study. The designation of each school indicates the pairing of each K-8 elementary school with a corresponding 6-8 middle school. For example, K-8ES-A and 6-8MS-A constitute a demographically matched K-8 elementary school and 6-8 middle school pair. Tables 6, 9, and 12 show the absolute difference in percentage composition by race/ethnic category for each pair of matched schools. It is worth noting that in selecting matched pairs of K-8 elementary schools and 6-8 middle schools, school demographic data was obtained from the Florida Department of Education, not the large central Florida school district selected for the study. Tables pertaining to each pair of matched schools are shown on a single page for the convenience of the reader.

Table 4

K-8ES-A Enrollment by Race: 2015-2016

Racial/Ethnic Group	Student Population %
White	18.8
Black or African American	17.2
Hispanic/Latino	58.1
Other	5.6

Source. Florida Department of Education, 2016e

Table 5

6-8MS-A Enrollment by Race: 2015-2016

Racial/Ethnic Group	Student Population %
White	18.9
Black or African American	14.4
Hispanic/Latino	60.2
Other	5.9

Source. Florida Department of Education, 2016e

Table 6

K-8ES-A and 6-8MS-A Demographic Comparison: 2015-2016

Racial/Ethnic Group	Absolute Difference Student Population %
White	0.1
Black or African American	2.8
Hispanic/Latino	2.1
Other	0.3

Source. Florida Department of Education, 2016e

Table 7

K-8ES-B Enrollment by Race: 2015-2016

Racial/Ethnic Group	Student Population %
White	64.2
Black or African American	2.8
Hispanic/Latino	24.6
Other	8.0

Source. Florida Department of Education, 2016e

Table 8

6-8MS-B Enrollment by Race: 2015-2016

Racial/Ethnic Group	Student Population %
White	52.7
Black or African American	5.2
Hispanic/Latino	37.5
Other	4.2

Source. Florida Department of Education, 2016e

Table 9

K-8ES-B and 6-8MS-B Demographic Comparison, 2015-2016

Racial/Ethnic Group	Absolute Difference Student Population %
White	11.5
Black or African American	2.4
Hispanic/Latino	12.9
Other	5.8

Source. Florida Department of Education, 2016

Table 10

K-8ES-C Enrollment by Race: 2015-2016

Racial/Ethnic Group	Student Population %
White	28.7
Black or African American	9.8
Hispanic/Latino	55.8
Other	4.7

Source. Florida Department of Education, 2016e

Table 11

6-8MS-C Enrollment by Race: 2015-2016

Racial/Ethnic Group	Student Population %
White	24.0
Black or African American	8.6
Hispanic/Latino	62.1
Other	4.7

Source. Florida Department of Education, 2016e

Table 12

K-8ES-C and 6-8MS-C Demographic Comparison: 2015-2016

Racial/Ethnic Group	Absolute Difference Student Population %
White	4.7
Black or African American	1.2
Hispanic/Latino	6.3
Other	0.0

Source. Florida Department of Education, 2016e

As shown in Tables 6, 9, and 12, the demographic match between the selected K-8 elementary schools and 6-8 middle schools varied in absolute difference between racial/ethnic groups. The matches between K-8ES-A and 6-8MS-A and K-8ES-C and 6-8MS-C were closer in absolute difference across all racial/ethnic groups than the match between K-8ES-B and 6-8MS-B. The differences in the ability to match each selected K-8 elementary school with a demographically similar 6-8 middle school was expected to affect the conclusions that could be drawn from the provided data.

The number and percentages of students enrolled in each configuration as compared to school configuration totals is shown disaggregated by grade level in Table 13. Table 14 displays students enrolled in each grade level as percentages of total grade level enrollments. The sample consisted of 4,724 students (n = 4724), with 27.77% (n = 1,312) of students attending a K-8 elementary school and 72.23% (n = 3,412) of students attending a 6-8 middle school.

Table 13

Students by Grade Level as Percentage of School Configuration Totals

	K-8 Elementary		6-8 Middle	
Grade	N	%	N	%
6	509	38.80	1,259	36.90
7	452	34.45	1,155	33.85
8	351	26.75	998	29.25
Total	1,312	100.00	3,412	100.00

Table 14

Students by Grade Level as Percentage of Grade Level Totals

	K-8 Elementary		6-8 Middle		Total	
Grade	N	%	N	%	N	%
6	509	28.79	1,259	71.21	1,768	100
7	452	28.13	1,155	71.87	1,607	100
8	351	26.02	998	73.98	1,349	100

Tables 15 and 16 present the percentages of students disaggregated by grade level and gender for the K-8 elementary school and 6-8 middle school configurations respectively.

Table 15

K-8 Elementary School by Gender as Percentage of Grade Level Totals

	Male		Female		Total	
Grade	N	%	N	%	N	%
6	268	52.65	241	47.35	509	100
7	241	53.42	211	46.58	452	100
8	190	54.13	161	45.87	351	100

Table 16

6-8 Middle School by Gender as Percentage of Grade Level Totals

	Male		Female		Total	
Grade	N	%	N	%	N	%
6	665	52.82	594	47.18	1,259	100
7	584	50.56	571	49.44	1,155	100
8	547	54.81	451	45.19	998	100

Tables 17 and 18 present the percentages of student disaggregated by grade level and race/ethnicity for the K-8 elementary school and 6-8 middle school configurations respectively.

Table 17

K-8 Elementary School by Race/Ethnicity as Percentage of Grade Level Totals

	Black		Hispanic		White		Other		Total	
Grade	N	%	N	%	N	%	N	%	N	%
6	53	10.41	238	46.76	192	37.72	26	5.11	509	100
7	44	9.73	224	49.56	150	33.19	34	7.52	452	100
8	44	12.54	205	58.40	87	24.79	15	4.27	351	100

Table 18

6-8 Middle School by Race/Ethnicity as Percentage of Grade Level Totals

	Black		Hispanic		White		Other		Total	
Grade	N	%	N	%	N	%	N	%	N	%
6	119	9.45	702	55.76	375	29.79	63	5.00	1,259	100
7	118	10.22	665	57.58	321	27.79	51	4.42	1,155	100
8	101	10.12	580	58.12	269	26.95	48	4.81	998	100

Instrumentation

The instruments used in this study to determine student academic achievement were the FSA ELA, FSA Mathematics, FSA Algebra 1 EOC Examination, FCAT 2.0 Reading, and FCAT 2.0 Mathematics. According to the FSA Portal, FCAT 2.0 was used to measure student achievement of the Next Generation Sunshine State Standards in reading, mathematics, and writing from 2011-2014. In 2015, the FCAT 2.0 was replaced by FSA tests in ELA and Mathematics and subject specific EOC Examinations (Florida Department of Education, 2015a).

> Assessment supports instruction and student learning, and the results help Florida's educational leadership and stakeholders determine whether the goals of the education system are being met. Assessment helps Florida determine whether it has equipped its students with the knowledge and skills they need to be ready for careers and college-level coursework (Florida Department of Education, 2016b, p. 1).

Florida Standards Assessment--English Language Art and Mathematics

FSA ELA and Mathematics were used to measure student achievement of Florida's educational standards during school years 2014-2015 and 2015-2016 (Florida Department of Education, 2016b). Scores for the 2015-2016 FSA ELA and Mathematics were reported as scale scores and achievement levels. According to Tan and Michel (2011), reporting standardized test scores as scale scores allow scores to be compared across different test forms. "Reported scale scores are obtained by statistically adjusting and converting raw scores onto a common scale to account for differences in difficulty across different forms" (Tan & Michel, 2011, p. 3). Corresponding achievement levels were then assigned to FSA scale score ranges in January 2016, under State Board Education Rule 6A-1.09422 (Florida Department of Education, 2016d). The Florida Department of Education (2015b) explained that by reporting achievement levels, stakeholders are able to make appropriate inferences based on student test scores in relation to cut scores. Scale score ranges and corresponding achievement levels were provided by the Florida Department of Education (2016d) as seen in Table 19.

Table 19

FSA ELA and Mathematics Scale Scores for Each Achievement Level

Assessment		Level 1	Level 2	Level 3	Level 4	Level 5
ELA	Grade 6	259-317	318-332	333-345	346-359	360-397
	Grade 7	267-317	318-332	333-345	346-359	360-397
	Grade 8	274-321	322-336	337-351	352-365	366-406
Mathematics	Grade 6	260-309	310-324	325-338	339-355	356-390
	Grade 7	269-315	316-329	330-345	346-359	360-391
	Grade 8	273-321	322-336	337-352	353-364	365-393

Source. Florida Department of Education, 2016d

Information pertaining to the validity and reliability of the 2014-2015 FSA is available in Volume 4 of the technical reports provided by the Florida Department of Education (2016c). For students in Grades 6-8, FSA tests in ELA and Mathematics were administered online with paper versions available to students with documentation supporting such accommodations.

A single administration of the FSA in ELA and mathematics dictated the use of internal consistency to measure FSA test reliability. Cronbach *alpha*, stratified *alpha*, and Feldt-Raju coefficients were computed to determine measures of internal consistency reliability with relevant results displayed in Tables 20 and 21. The Cronbach *alpha* coefficients ranged from 0.90 to 0.92 for ELA and 0.82 to 0.93 for Mathematics. The stratified *alpha* coefficients ranged from 0.88 to 0.92 for ELA and 0.82 to 0.93 for Mathematics. The Feldt-Raju coefficients were between 0.85 and 0.91 for ELA and 0.87 and 0.93 for Mathematics (Florida Department of Education, 2016c). According to Fraenkel, Wallen, and Hyun (2015), reliability levels of at least

.70 and higher are appropriate for research purposes. The results of the Cronbach *alpha*, stratified *alpha*, and the Feldt-Raju coefficients for the FSA ELA and Mathematics administered in 2015 were all above the 0.70 minimum recommended by Fraenkel, Wallen, and Hyun (2015).

Table 20

Internal Consistency Reliability of FSA: ELA 2015

Grade	Form	Cronbach *Alpha*	Stratified *Alpha*	Feldt-Raju
6	Online	0.92	0.92	0.91
	Accommodated	0.90	0.89	0.87
7	Online	0.90	0.91	0.89
	Accommodated	0.90	0.88	0.85
8	Online	0.92	0.92	0.90
	Accommodated	0.91	0.89	0.87

Source. Florida Department of Education, 2016c

Table 21

Internal Consistency Reliability of FSA: Mathematics 2015

Grade	Form	Cronbach *Alpha*	Stratified *Alpha*	Feldt-Raju
6	Online	0.92	0.92	0.93
	Accommodated	0.88		0.90*
7	Online	0.93	0.93	0.91
	Accommodated	0.90		0.90*
8	Online	0.87	0.87	0.87
	Accommodated	0.82	0.82	0.87

Note. *These values are based on the total test. Grades 5, 6, and 7 Mathematics accommodated forms did not have enough non-MC items to compute stratified *alpha* (Florida Department of Education, 2016c).

According to the Florida Department of Education (2016c), the FSA have been aligned with the Florida Standards which "are intended to implement higher standards, with the goal of challenging and motivating Florida's students to acquire stronger critical thinking, problem solving, and communications skills" (p. 27). The Florida Department of Education (2016c) defined content validity as "evidence is provided to show that test forms were constructed to measure the Florida Standards with a sufficient number of items targeting each area of the blueprint" (p. 2). In a 2015 study conducted by Alpine Learning Solutions and edCount LLC, the development process for FSA meet industry standards and "blueprints that were evaluated do reflect the Florida Standards in terms of overall content match" (p. 119). However, the same study cautioned against using FSA results in making decisions regarding individual students due to problems with the computer-based testing format. Rather, results are more appropriately used in aggregate in making group level decisions (Alpine Testing Solutions & edCount LLC, 2015).

Florida Standards Assessment--Algebra 1 End-of-Course Examination

According to the Florida Department of Education (2016a), "the first Florida Standards Assessment (FSA) End-of-Course administrations took place in spring 2015" (p. 1). Middle school students "will not take both the grade-level Florida Standards Mathematics and a Mathematics End-of-Course" Examination (Florida Department of Education, 2016a, p. 1). In lieu of FSA in mathematics scale scores, Research Questions 1 and 2 examined Algebra 1 EOC Examination scale scores for eighth-grade students enrolled in and having completed Algebra 1, Algebra 1 Honors, Algebra 1-B, Pre-AICE Mathematics 1, or IB Middle Years Program/Algebra 1 Honors during the 2015-2016 administration of standardized testing. The 2016 Algebra 1 EOC Examination was administered as computer-based test with paper and pencil versions available to students with supporting documentation of accommodations (Florida Department of Education, 2016f).

Both scale scores and performance/achievement levels were reported for the Algebra 1 EOC Examination (Florida Department of Education, 2016f). As with other FSA scale scores, Algebra 1 EOC Examination scale scores allow scores to be compared across different test forms (Tan & Michel, 2011). In January 2016, "Achievement level cut scores for FSA assessments [including the Algebra 1 EOC] were adopted in State Board of Education Rule 6A-1.09422, Florida Administrative Code" (Florida Department of Education, 2016a, p. 3). The Florida Department of Education (2016a) defined the following performance/achievement levels for the Algebra 1 EOC Examination: Level 1 (Inadequate)--"Highly likely to need substantial support for the next grade level"; Level 2 (Below Satisfactory)--"Likely to need substantial support for the next grade level"; Level 3 (Satisfactory)--"May need additional support for the next grade level"; Level 4 (Proficient)--"Likely to excel in the next grade"; Level 5 (Mastery)--"Highly likely to excel in the next grade" (2016a, p. 2). Scale score ranges and corresponding performance/achievement levels were provided by the Florida Department of Education as seen in Table 22.

Table 22

FSA Algebra 1 EOC Examination Scale Scores for Each Achievement Level

Assessment	Level 1	Level 2	Level 3	Level 4	Level 5
Algebra 1 EOC	425-486	487-496	497-517	518-531	532-575

Source. Florida Department of Education, 2016a

As with the FSA ELA and Mathematics, the Algebra 1 EOC Examination reliability was determined via a measure of internal consistency (Florida Department of Education, 2016c). Cronbach *alpha*, stratified *alpha*, and Feldt-Raju coefficients were computed to determine measure of internal consistency reliability with relevant results listed in Table 23. Cronbach *alpha* values ranged from 0.84 to 0.91 for the Algebra 1 EOC Examination. The stratified *alpha* coefficients ranged from 0.84 to 0.91 for the Algebra 1 EOC Examination. The Feldt-Raju coefficients ranged from 0.87 to 0.90 for the Algebra EOC Examination (Florida Department of Education, 2016c). The Cronbach *alpha*, stratified *alpha*, and Feldt-Raju internal consistency reliability coefficients for the Algebra 1 EOC exam all exceed the 0.70 threshold recommended by Frankel, Wallen, and Hyun (2015).

Table 23

Internal Consistency Reliability of FSA: Algebra 1 EOC Examination 2015

Form	Cronbach *Alpha*	Stratified *Alpha*	Feldt-Raju
Online--Core 1	0.91	0.91	0.90
Online--Core 2	0.91	0.90	0.89
Online--Core 3	0.91	0.91	0.89
Online--Core 4	0.91	0.91	0.89
Accommodated	0.84	0.84	0.87

Source. Florida Department of Education, 2016c

As a FSA, the Algebra 1 EOC Examination has been aligned with Florida Standards (2016c). The finding of the 2015 study conducted by Alpine Learning Solutions and edCount LLC (2015) were applicable to the Algebra 1 EOC Examination as well as all other FSAs. Although Alpine Learning Solutions and edCount LLC found that all FSAs, including the Algebra 1 EOC Examination, met industry standards for test development, they cautioned against the use of FSA results in making decisions regarding individual students.

Florida Comprehensive Assessment Test 2.0--Reading/Language Arts and Mathematics

According to the Florida Department of Education, the FCAT 2.0 in Reading/Language Arts and Mathematics were developed based on the 2007 Next Generation Sunshine State

Standards (2014c). The FCAT 2.0 Reading/Language Arts and Mathematics score reports included both developmental scale scores and achievement levels. "Developmental Scale Scores (DSS) allow for comparison of student academic progress over time in a particular subject by linking assessment results at adjacent grades" (Florida Department of Education, 2014c, p. 5). For the FCAT 2.0 Reading/Language Arts and Mathematics, developmental scale scores were "created using linking items--items that appeared identically on the assessments of adjacent grade levels--to relate the scores from one grade to those in the grades one grade level above and one grade level below it" (Florida Department of Education, 2012a, p. 1). Corresponding achievement levels were assigned to developmental scale score ranges for the FCAT 2.0 for Reading/Language Arts and Mathematics by the State Board of Education in December of 2011 (Florida Department of Education, 2014a). According to the Florida Board of Education (2014a), achievement levels "outline the specific student expectations at each grade and subject" (p. 1). Developmental scale score ranges and corresponding achievement level were provided by the Florida Department of Education as seen in Table 24 (2012b).

Table 24

FCAT 2.0 Reading/Language Arts and Mathematics Developmental Scale Scores for Each Achievement Level

Assessment		Level 1	Level 2	Level 3	Level 4	Level 5
Reading	Grade 5	161-199	200-215	216-229	230-245	246-277
	Grade 6	167-206	207-221	222-236	237-251	252-283
	Grade 7	171-212	213-227	228-242	243-257	258-289
	Grade 8	175-217	218-234	235-245	249-263	264-296
Mathematics	Grade 5	163-204	205-219	220-233	234-246	247-279
	Grade 6	170-212	213-226	227-239	240-252	253-284
	Grade 7	179-219	220-233	234-247	248-260	261-292
	Grade 8	187-228	229-240	241-255	256-267	268-298

Source. Florida Department of Education, 2014a

The development process for the FCAT 2.0 included all the necessary steps to meet or exceed industry standards for large-scale, criterion-referenced assessment development (Florida Department of Education, 2014c). According to the Florida Department of Education (2012c) the review of test items for validity and reliability was as follows:

> The DOE and test contractors review all test items during the item development process. Content specialists and copy editors review and edit items, judging them for overall quality and suitability for the tested grade level.
>
> Groups of Florida educators and citizens are convened to review the items for content characteristics and item specifications. This review focuses on validity and determines if an item is a valid measure of the designated NGSSS benchmark, as defined by the grade-level specifications for test items. Separate reviews for bias and sensitivity issues are also conducted.

> FCAT 2.0 items are field tested in Florida to ensure clarity of items before they count toward a student's score. In the event an item does not test well, it is either deleted or revised. Revised items will again require field testing prior to being scored (p. 9).

Item specifications for the FCAT 2.0 Reading/Language Arts and Mathematics have been delineated in the test item specifications manual. For example, when selecting text for the FCAT 2.0 Reading/Language Arts, specifications that must be considered are ratio of literary to informational text (varies by grade level), source of text (noncopyrighted or commissioned expressly for Florida), characteristics (well-written, authentic, cohesive, logically arranged, and stylistically consistent), content and vocabulary, text features (photographs, maps, charts, schedules, graphs), cultural diversity, reading level, and length (Florida Department of Education, 2012c). When selecting items for the FCAT 2.0 Mathematics, specification that must be considered are use of graphics, item style and format (clear, concise, appropriate vocabulary and sentence structure, appropriate use of italics and bold font), multiple choice length, point values, number of answer choices, nature of distractors, and gridded response format (Florida Department of Education, 2012a).

Data Collection

The purpose of this study was to determine if a statistically significant difference exists in student outcomes, as measured by standardized test scores, number of out-of-school suspensions, and number days absent, between students attending schools configured as K-8 elementary schools and students attending schools configured as 6-8 middle schools. Gathering data for this study involved requesting quantitative information from a large central Florida school district for students in Grades 6-8 attending six selected schools within the district. Data were requested via a public records request under Florida Statute 119, Article 1, section 24 of the Florida Constitution. Requested data were available in FOCUS, the data management software utilized by the selected school district. For each sixth-, seventh-, and eighth-grade student attending the schools selected for the study, the following quantitative data from the 2015-2016 school year were required: FSA ELA scale scores and/or FSA Mathematics scale scores and/or FSA Algebra 1 EOC Examination scale scores, number of out-of-school suspensions by student, and number of days absent by student. In addition, for students in the eighth grade during the 2015-2016 school year, FSA ELA and/or FSA Mathematics scale scores for the 2014-2015 school year and FCAT 2.0 Reading/Language Arts DSS and/or FCAT 2.0 Mathematics DSS for 2012-2013 and 2013-2014 school years were also required. In addition, the following demographic data fields that were requested for each sixth-, seventh-, and eighth-grade student attending the schools selected for the study included school attended, grade level, gender, and race/ethnicity. Student outcome data fields (test scores, number of absences, number of out-of-school suspension) served as the dependent variables for the research questions in this study. School configuration served as the independent variable for all research questions in this study. Gender and race served as the moderator variables in this study.

Consent for the study was obtained from the University of Central Florida Institutional Review Board, and a public records request was submitted to the large central Florida school district selected for the study. Both the school district and individual schools selected for the study were deidentified at the request of the school district. To protect student identity and maintain confidentiality, individual student data were also deidentified. Measures to deidentify district, school, and student data included the following: (a) the school district was referred to as a large central Florida school district; (b) individual schools selected for the study were referred to as K-8ES-A, K-8ES-B, K-8ES-C, 6-8MS-A, 6-8MS-B, and 6-8MS-C; and (c) individual students were assigned a unique number that was not traceable back to the student in place of student district identification numbers. Once data were received from the large central Florida school district, it was transferred to the software program Statistical Package for the Social Sciences (SPSS, version 23) for statistical analysis.

Data Analysis

To determine if a statistically significant difference exists in student outcomes for sixth-, seventh-, and eighth-grade students attending schools configured as K-8 elementary schools and outcomes for sixth-, seventh-, and eighth-grade students attending schools configured as 6-8 middle schools, two separate two-way ANOVA were utilized to address each research question. For all research questions, student data were analyzed by grade level. For example, FSA scale scores for sixth-grade students attending the selected K-8 elementary schools were compared to FSA scale scores sixth-grade students attending the selected 6-8 middle schools. Analysis of data in Research Question 2 required the determination of student growth scores by comparing scores for like tests in two consecutive years. For example, the fifth to sixth grade growth scores for the FCAT 2.0 Mathematics were determined by subtracting 2012-2013 FCAT 2.0 Mathematics DSS from 2013-2014 FCAT 2.0 Mathematics DSS for each student. To determine student growth from seventh to eighth grade on FSA Mathematics, the researcher subtracted the 2014-2015 FSA Mathematics scale scores from 2015-2016 FSA Mathematics scale score for each student.

According to Steinberg (2011), an analysis of variance (ANOVA) is appropriate if the researcher desires to determine the variance in means of more than two groups. An ANOVA is preferable to utilizing multiple *t* tests to determine differences between more than two groups, as each separate *t* test introduce its own Type 1 error. An ANOVA has the advantage of holding the Type 1 error level constant while simultaneously calculating the statistical difference between all groups (Steinberg, 2011).

The use of gender and race as moderator variables in this study indicated the use of two-way ANOVAs to determine if a statistically significant variance existed in group means for sixth-, seventh-, and eighth-grade outcomes for students attending K-8 elementary schools versus 6-8 middle schools. Gender and race were considered independently of each other in two separate two-way ANOVAs for each research question. Figures 1 and 2 contain design diagrams for each of these ANOVAS.

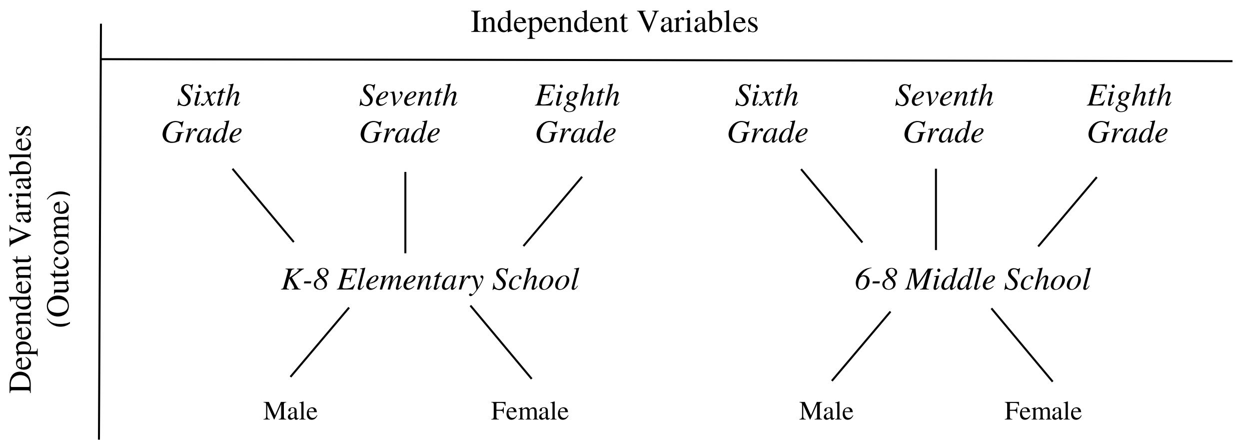


Figure 1. Experimental Design Diagram for Gender: Two-way ANOVA

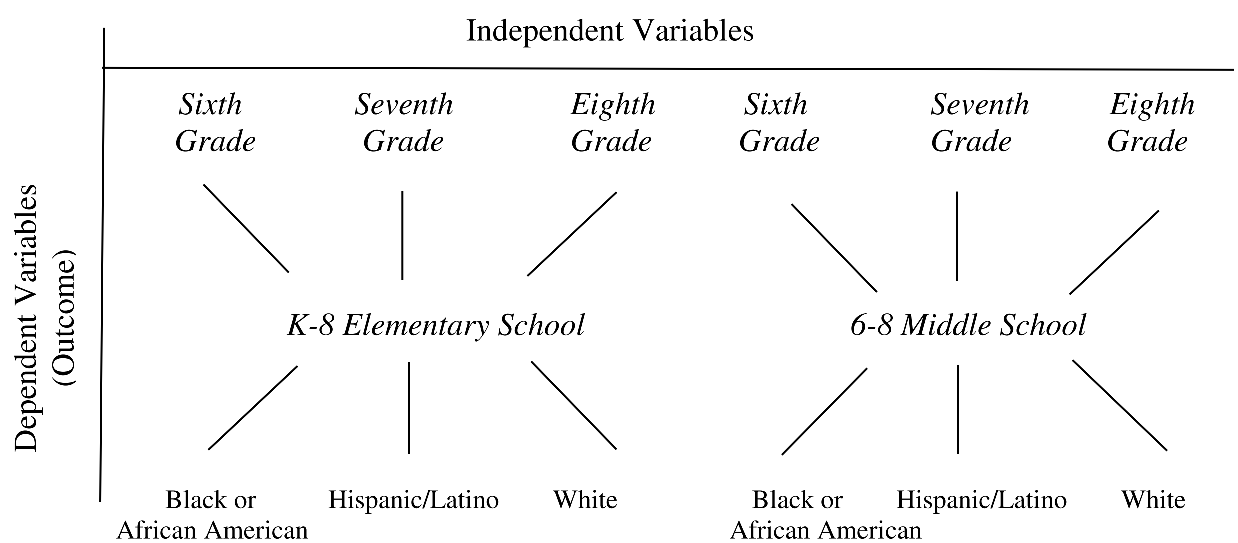


Figure 2. Experimental Design Diagram for Race: Two-way ANOVA

According to Steinberg (2011), two-way ANOVAs allow the researcher to determine the main effect (the effect of the independent variable on the dependent variable) and the interaction effect (the effect of the independent variable on the dependent variable as a function of the moderator variables). Possible main effects in this study are (a) effect of school configuration on student outcomes, (b) effect of race on student outcomes, and (c) effect of gender on student outcomes. Possible interaction effects in this study are the interaction of gender condition by school configuration condition and separately, the interactions of race condition by school configuration.

Table 25 contains summary information related to the design of the study. Displayed are the research questions, sources of data, analysis, and variables used in the study.

Table 25

Research Questions, Sources of Data, Variables, and Data Analysis

Research Question	Sources of Data	Variables	Data Analysis
To what extent, if any, is there a difference in FSA ELA and/or FSA Mathematics and/or FSA Algebra 1 EOC Examination scale scores among sixth-, seventh-, and eighth-grade students, disaggregated by gender and race, based on school configuration?	FSA scale scores--ELA, Mathematics, Algebra 1 EOC Examination	Dependent: FSA scale scores Independent: School configuration Moderator: Gender, Race	Two separate two-way ANOVAs 1) School configuration as independent variable and gender as moderator variable 2) School configuration as independent variable and race as moderator variable
To what extent, if any, is there a difference in growth from fifth grade to sixth grade and seventh grade to eighth grade, disaggregated by gender and race, as evidenced by FSA ELA and/or FSA Mathematics scale scores and FCAT 2.0 in Reading and/or Mathematics DSS, for eighth-grade students based on school configuration?	FSA--ELA, mathematics (2015-2016, 2014-2015) FCAT 2.0 DSS--Reading and mathematics (2013-2014, 2012-2013)	Dependent: FSA scale scores, FCAT 2.0 DSS Independent: School configuration Moderator: Gender, Race	Two separate two-way ANOVAs 1) School configuration as independent variable and gender as moderator variable 2) School configuration as independent variable and race as moderator variable
To what extent, if any, is there a difference, in number of out-of-school suspensions, disaggregated by gender and race, for sixth-, seventh-, and eighth-grade students based on school configuration?	Number of out-of-school suspensions by student	Dependent: Number of out-of-school suspensions Independent: School configuration Moderator: Gender, Race	Two separate two-way ANOVAs 1) School configuration as independent variable and gender as moderator variable 2) School configuration as independent variable and race as moderator variable
To what extent, if any, is there a difference in number of days absent among students, disaggregated by gender and race, for sixth-, seventh-, and eighth-grade students based on school configuration?	Number of days absent	Dependent: Number of days absent Independent: School configuration Moderator: Gender, Race	Two separate two-way ANOVAs 1) School configuration as independent variable and gender as moderator variable 2) School configuration as independent variable and race as moderator variable

Summary

Chapter 3 of this study provides information about the overall research design, study participants, data collection and analysis procedures utilized, and instrumentation used to generate standardized test score. Included in the information is an explanation for the selection of participating schools, reliability and validity statistics for the FSA ELA, FSA Mathematics, FSA Algebra 1 EOC Examination, FCAT 2.0 Reading/Language Arts, and FCAT 2.0 Mathematics, and the statistical test to be utilized in the statistical analysis of data.

CHAPTER 4
ANALYSIS OF DATA

Introduction

The focus of this study was to determine to what extent differences in sixth-, seventh-, and eighth-grade student outcomes (standardized test scores – yearly and growth between consecutive years, numbers of out-of-school suspensions, and number of days absent) existed based on school configuration with gender and race considered separately as moderator variables. Student outcomes were analyzed for sixth- seventh- and eighth-grade students attending three K-8 elementary schools and three 6-8 middle schools within a large central Florida school district. The selection of schools for the study was based on the ability to match each K-8 elementary school with a demographically similar 6-8 middle school. It is worth noting that in terms of both total Grade 6-8 student populations and individual grade level student populations, the number of students served by the selected K-8 elementary schools was smaller than the number of students served by the selected 6-8 middle schools (see Tables 13 and 14). Chapter 4 contains the results of the quantitative analysis of data to address the four research questions used to guide the study. Results are organized by research question with narratives and tables used to answer each of the research questions.

Research Question 1

To what extent, if any, is there a difference in FSA ELA and/or FSA Mathematics and/or FSA Algebra 1 EOC Examination scale scores among sixth-, seventh-, and eighth-grade students, disaggregated by gender and race, based on school configuration?

$H_{1\text{-}0}$ - There is no statistical difference in FSA ELA and/or FSA Mathematics and/or FSA Algebra 1 EOC Examination scale scores for sixth-, seventh-, and eighth-grade students based on school configuration.

Variables:

Independent: school configuration (K-8 elementary school, 6-8 middle school)

Dependent: FSA ELA scale scores, FSA Mathematics scale scores, FSA Algebra 1 EOC Examination scale scores

Moderator: gender, race (Black, Hispanic, White, Other)

Statistical Tool--Two-way Analysis of Variance (ANOVA)

The large central Florida school district selected for the study provided data regarding FSA ELA, FSA Mathematics, and FSA Algebra 1 EOC Examination scale scores. Student grade level, gender, and race/ethnicity information were also provided by the large central Florida school district. Two-way analyses of variance (ANOVAs) were conducted to determine if statistically significant differences exist in FSA ELA, FSA Mathematics, and FSA Algebra 1 EOC Examination scale scores for students in the same grade level attending schools configured as K-8 elementary schools and 6-8 middle schools. School configuration served as the independent variable; standardized test scale scores served as the dependent variables; and gender and race were considered separately as moderator variables. For Research Question 1, all two-way ANOVA tests were conducted utilizing an alpha level of .05. As seen in Appendix C, the distribution of FSA ELA, FSA Mathematics, and FSA Algebra 1 EOC Examination scale scores, as well as gender, race, and school configuration were sufficiently normally distributed for the purpose of conducting a two-way ANOVA (i.e., skew +/-2.0 and kurtosis +/-3.0) at all grade levels and for all standardized tests (Lomax & Hans-Vaughn, 2012). The only exception to the normal distribution was school configuration for eighth-grade students with reported FSA Algebra 1 EOC Examination scale scores. The assumption of homogeneity of error variance (Levene's test) was met for (a) FSA ELA, Grade 6, race as moderator variable ($p = .667$), (b) FSA Mathematics, Grade 6, race as moderator variable ($p = .164$), (c) FSA Mathematics, Grade 8, race as moderator variable ($p = .072$), (d) FSA Algebra 1 EOC Examination, Grade 7, race as moderator variable ($p = .205$), (e) FSA Algebra 1 EOC Examination, Grade 8, gender as moderator variable ($p = .488$), and (f) FSA Algebra 1 EOC Examination, Grade 8, race as moderator variable ($p = .549$). Review of Levene's test for equality of error of variance was violated for (a) FSA ELA, Grade 6, gender as moderator variable ($p = .004$), (b) FSA ELA, Grade 7, gender as moderator variable ($p = .034$), (c) FSA ELA, Grade 7, race as moderator variable ($p = .011$), (d) FSA ELA, Grade 8, gender as moderator variable ($p = .026$), (e) FSA ELA, Grade 8, race as moderator variable ($p < .001$), (f) FSA Mathematics, Grade 6, gender as moderator variable ($p = .036$), (g) FSA Mathematics, Grade 7, gender as moderator variable ($p < .001$), (h) FSA Mathematics, Grade 7, race as moderator variable ($p = .002$), (h) FSA Mathematics, Grade 8, gender as moderator variable ($p < .001$), 10) FSA Algebra 1 EOC Examination, Grade 7, gender as moderator variable ($p = .023$), indicating that the variance were not equal and caution is warranted in interpreting the two-way ANOVA results for these cases (Appendix C).

Grade 6, FSA ELA

Of the 1,768 sixth grade students, 1,660 (93.89%) students had reported FSA ELA scale scores with 479 (28.86%) of the 1,660 students attending K-8 elementary schools and 1,181 (71.14%) of the 1,660 students attending 6-8 middle schools. The 1,660 students comprised the sample of Grade six students with reported 2016 FSA ELA scale scores attending one of the schools selected for the study in the large central Florida district. Table 26 shows the distribution of school configuration for sixth-grade students with reported FSA ELA scale scores.

Table 26

Grade 6 Students With Reported FSA ELA Scale Scores by School Configuration

School Configuration	Frequency	Percentage
K-8 Elementary School	479	28.85
6-8 Middle School	1,181	71.14
Total	1,660	100.00

<u>Gender</u>

The first two-way ANOVA of FSA ELA scale scores utilized gender as a moderator variable. The distribution of students by gender and school configuration for sixth-grade students is shown in Table 27. In the K-8 elementary schools, 231 (48.23%) of the students were female and 248 (51.77%) of the students were male. In the 6-8 middle schools, 567 (48.01%) of the students were female, and 614 (51.99%) of the students were male. For the sample overall, 798 (48.07%) of the students were female and 862 (51.93%) of the students were male.

Table 27

Grade 6 Students With Reported FSA ELA Scale Scores by Gender and School Configuration

	Female		Male		Total	
School Configuration	N	%	N	%	N	%
K-8 Elementary School	231	48.23	248	51.77	479	100
6-8 Middle School	567	48.01	614	51.99	1,181	100
Total	798	48.07	862	51.93	1,660	100

Table 28 displays two-way ANOVA results for FSA ELA scale scores and school configuration with gender as a moderator variable for students in Grade 6. At an alpha level of .05, the interaction between school configuration and gender produced no statistically significant differences in FSA ELA scale scores for students in sixth grade, $F(1, 1656) = .103$, $p = .748$. From the two-way ANOVA results, the null hypothesis that the interaction between school configuration and gender has no significant effect on grade 6 FSA ELA scores was accepted. At an alpha level of .05, both gender, $F(1, 1656) = 27.182$, $p < .001$, and school configuration, $F(1, 1656) = 8.916$, $p = .003$, when considered separately, produced statistically significant differences in FSA ELA scale scores for students in Grade 6. These results indicated that the null hypotheses were rejected and school configuration and gender, considered separately, had a significant effect on Grade 6 FSA ELA scores.

Table 28

Two-way ANOVA Results for FSA ELA Scale Scores and School Configuration With Gender as Moderator Variable, Grade 6

Tests of Between-Subjects Effects

Dependent Variable: FSA ELA Scale Score 15-16

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	13409.676	1	13409.676	27.182	.000
School Configuration	4398.501	1	4398.501	8.916	.003
Gender * School Configuration	50.793	1	50.793	.103	.748
Error	816950.420	1656	493.328		
Corrected Total	836892.419	1659			

a. R Squared = .024 (Adjusted R Squared = .022)

Accepting the null hypotheses for the interaction between school configuration and gender and school configuration indicates that no significant difference exist is grade 6 FSA ELA scale scores due to the interaction between school configuration and gender. Rejecting the null hypotheses for school configuration and gender indicates that a significant difference exists in Grade 6 FSA ELA scores exist along school configuration and gender lines. The means and standard deviations for FSA ELA scale scores for students in Grade 6, separated by gender and school configuration, are shown in Table 29. Overall, female students had higher mean FSA ELA scale scores (n = 798, M = 327.56,) than male students (n = 862, M = 321.44). Sixth-grade students attending K-8 elementary schools had higher FSA ELA scale scores (n = 479, M = 326.94) than sixth-grade students attending 6-8 middle schools (n = 1181, M = 323.34).

Table 29

Grade 6 FSA ELA, 2015-2016, Means and Standard Deviations by Gender and School Configuration

Variable	Subgroup	Mean	Std. Deviation	N
Gender	Female	327.56	21.25	798
	Male	321.44	23.15	862
School Configuration	K-8 Elementary School	326.94	23.76	479
	6-8 Middle School	323.34	21.97	614
Total		324.38	22.46	1660

Race

The second two-way ANOVA of FSA ELA scale scores utilized race as a moderator variable. The distribution of students by race and school configuration for students in Grade 6 is shown in Table 30. In the K-8 elementary school configuration, 51 (10.65%) of the sixth-grade students were Black, 220 (45.93%) of the sixth-grade students were Hispanic, 184 (38.41%) of the sixth-grade students were White, and 24 (5.01%) of the students were classified as Other. In the 6-8 middle school configuration, 109 (9.23%) of the sixth-grade students were Black, 653 (55.29%) of the sixth-grade students were Hispanic, 359 (30.40%) of the sixth-grade students were White, and 60 (5.17%) of the sixth-grade students were classified as Other. Considering the sixth-grade sample as a whole, 160 (9.64%) of the students were Black, 873 (52.59%) of the students were Hispanic, 543 (32.71%) of the students were White, and 84 (5.06%) of the students were classified as Other.

Table 30

Grade 6 Students With Reported FSA ELA Scale Scores by Race and School Configuration

	Black		Hispanic		White		Other		Total	
School Configuration	N	%	N	%	N	%	N	%	N	%
K-8 Elementary School	51	10.65	220	45.93	184	38.41	24	5.01	479	100
6-8 Middle School	109	9.23	653	55.29	359	30.40	60	5.17	1181	100
Total	160	9.64	873	52.59	543	32.71	84	5.06	1660	100

Table 31 displays two-way ANOVA results for FSA ELA scale scores and school configuration with race as a moderator variable for students in Grade 6. According to the results of the two-way ANOVA, at an alpha level of .05, there was a statistically significant effect on FSA ELA scale scores for students in sixth grade due to the interaction between race and school configuration at, $F(1, 1652) = 4.519$, $p = .004$. The null hypothesis that the interaction between school configuration and race has no significant effect on Grade 6 FSA ELA scores was rejected. At an alpha level of .05, there was also a statistically significant difference in FSA ELA scale scores for students in sixth grade as a result of race, $F(1, 1652) = 30.688$, $p < .001$, and school configuration, $F(1, 1652) = 6.870$, $p = .009$, when the two factors were considered separately. The null hypotheses that school configuration and race, when considered separately, had no significant effect on Grade 6 FSA ELA scores were also rejected.

Table 31

Two-way ANOVA Results for FSA ELA Scale Scores and School Configuration With Race as Moderator Variable, Grade 6

Tests of Between-Subjects Effects					
Dependent Variable: FSA ELA Scale Score 15-16					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	3275.239	1	3275.239	6.870	.009
Race	43888.851	3	14629.617	30.688	.000
School Configuration * Race	6462.312	3	2154.104	4.519	.004
Error	787541.607	1652	476.720		
Corrected Total	836892.419	1659			

a. R Squared = .059 (Adjusted R Squared = .055)

Rejecting the null hypotheses indicates that significant differences does exist in Grade 6 FSA ELA scores along both school configuration and race lines. The means and standard deviations for FSA ELA scale scores for students in Grade 6 were separated by race and school configuration as shown in Table 32. When considering race and school configuration together, Black (*n* = 51, *M* = 323.63) and Hispanic (*n* = 220, *M* = 319.40) students had only slightly lower mean FSA ELA scale scores at K-8 elementary schools than Black (*n* = 109, *M* = 324.23) and Hispanic (*n* = 653, *M* = 320.26) students attending 6-8 middle schools. In contrast, White (*n* = 184, *M* = 335.52) and Other (*n* = 24, *M* = 337.25) students had higher mean FSA ELA scale scores at K-8 elementary schools than White (*n* = 359, *M* = 328.46) and Other (*n* = 60, *M* = 324.62) students attending 6-8 middle schools. When separated by race, sixth-grade students classified as White (*n* = 543, *M* = 330.85) had a higher mean FSA scale score than students classified as Other (*n* = 84, *M* = 328.23), Black (*n* = 160, *M* = 324.04), and Hispanic (*n* = 873, *M* = 320.04). Sixth-grade study participants attending K-8 elementary schools (*n* = 479, *M* =

326.94) had higher mean FSA ELA scale scores than sixth-grade study participants attending 6-8 middle schools (n = 1181, M = 323.34).

As can be seen in Figure 3, differences in mean Grade 6 FSA ELA scale scores based on school configuration and race are evident. Students classified as White and Other had higher mean grade 6 FSA ELA scale scores in the K-8 elementary school configuration and students classified as Back and Hispanic had higher mean grade 6 FSA ELA scale scores in the 6-8 middle school configuration. However, differences in grade 6 FSA ELA scale scores between configurations were larger for students classified as White and Other than for students classified as Black and Hispanic.

Table 32

Grade 6 FSAs ELA, 2015-2016, Means and Standard Deviations by Race and School Configuration

Dependent Variable: FSA ELA Scale Score 15-16				
School Configuration	Race	Mean	Std. Deviation	N
K-8 Elementary School	Black	323.63	20.852	51
	Hispanic	319.40	23.686	220
	White	335.52	21.564	184
	Other	337.25	21.752	24
	Total	326.94	23.755	479
6-8 Middle School	Black	324.23	20.679	109
	Hispanic	320.26	21.686	653
	White	328.46	21.625	359
	Other	324.62	21.284	60
	Total	323.34	21.838	1181
Total	Black	324.04	20.670	160
	Hispanic	320.04	22.196	873
	White	330.85	21.842	543
	Other	328.23	22.048	84
	Total	324.38	22.460	1660

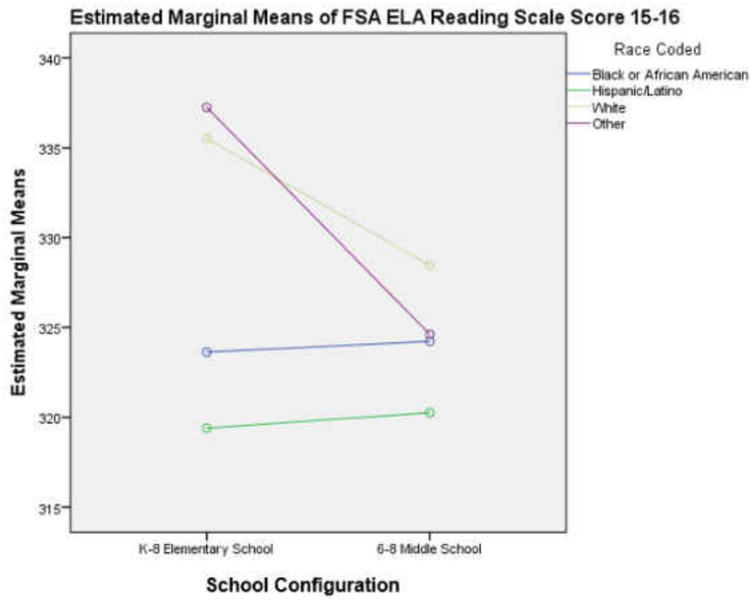


Figure 3. Grade 6, FSA ELA, School Configuration and Race

Grade 7, FSA ELA

Of the 1,607 Grade 7 students, 1,498 (93.22%) students had reported FSA ELA scale scores with 423 (28.24%) of the 1,498 students attending K-8 elementary schools and 1,075 (71.76%) of the 1,498 students attending 6-8 middle schools. The 1,498 Grade 7 students with reported 2016 FSA ELA scale scores comprised the sample of Grade 7 students in the large central Florida district attending one of the schools selected for the study. Table 33 shows the distribution of seventh-grade students with reported FSA ELA scale scores by school configuration.

Table 33

Grade 7 Students With Reported FSA ELA Scale Scores by School Configuration

School Configuration	Frequency	Percentage
K-8 Elementary School	423	28.24
6-8 Middle School	1075	71.76
Total	1498	100.00

<u>Gender</u>

The first two-way ANOVA of FSA ELA scale scores utilized gender as a moderator variable. The distribution of students by gender and school configuration for students in Grade 7 is shown in Table 34. The K-8 elementary schools reported FSA ELA scale scores for a total of 423 seventh-grade students, 199 (47.04%) female and 224 (52.96%) male. The 6-8 middle schools reported FSA ELA scale scores for a total of 1,075 seventh-grade students, 544 (50.60%) females and 531 (49.40%) males. The entire sample of seventh-grade students with reported FSA ELA scale scores consisted of 743 (49.60%) females and 755 (50.40%) males.

Table 34

Grade 7 Students With FSA ELA Scale Scores by Gender and School Configuration

	Female		Male		Total	
School Configuration	N	%	N	%	N	%
K-8 Elementary School	199	47.04	224	52.96	423	100
6-8 Middle School	544	50.60	531	49.40	1075	100
Total	743	49.60	755	50.40	1498	100

Table 35 displays two-way ANOVA results for FSA ELA scale scores and school configuration with gender as a moderator variable for students in Grade 7. At an alpha level of .05, the interaction between gender and school configuration produced no statistically significant difference in FSA ELA scale scores for seventh-grade students with reported FSA ELA scale scores, $F(1, 1494) = 1.217$, $p = .270$. From the two-way ANOVA results, the null hypothesis that the interaction between school configuration and gender has no significant effect on grade 7 FSA ELA scores was accepted. Both gender, $F(1, 1494) = 49.975$, $p < .00$, and school configuration, $F(1, 1494) = 8.082$, $p = .005$, considered separately, produced statistically significant differences in FSA ELA scale scores for students in seventh grade when considered at an alpha level of .05. These results indicated that the null hypotheses were rejected and school configuration and gender, considered separately, had a significant effect on Grade 7 FSA ELA scores.

Table 35

Two-way ANOVA Results for FSA ELA Scale Scores and School Configuration With Gender as Moderator Variable, Grade 7

Tests of Between-Subjects Effects

Dependent Variable: FSA ELA Scale Score 15-16

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	3584.566	1	3584.566	8.082	.005
Gender	22165.315	1	22165.315	49.975	.000
School Configuration * Gender	539.694	1	539.694	1.217	.270
Error	662631.617	1494	443.529		
Corrected Total	689878.850	1497			

a. R Squared = .039 (Adjusted R Squared = .038)

Rejecting the null hypotheses for school configuration and gender, when considered independently, indicates that a significant difference exists in Grade 7 FSA ELA scores exist along school configuration and gender lines. The means and standard deviations for FSA ELA scale scores for students in seventh grade are separated by gender and school configuration in Table 36. Overall, female students had higher mean FSA ELA scale scores (n = 743, M = 333.41) than male students (n = 755, M = 325.53). Seventh-grade students attending K-8 elementary schools had higher mean FSA ELA scale scores (n = 423, M = 331.67) than seventh-grade students attending 6-8 middle schools (n = 1075, M = 328.56).

Table 36

Grade 7 FSA ELA, 2015-2016, Means and Standard Deviations by Gender and School Configuration

Variable	Subgroup	Mean	Std. Deviation	N
Gender	Female	333.41	20.45	743
	Male	325.53	21.74	755
School Configuration	K-8 Elementary School	331.67	22.65	423
	6-8 Middle School	328.56	20.93	1075
Total		329.44	21.47	1498

Race

The second two-way ANOVA of FSA ELA scale scores utilized race as a moderator variable. Seventh-grade students with reported FSA ELA scale scores in the K-8 elementary school configuration consisted of 41 (9.69%) Black students, 210 (49.65%) Hispanic students, 139 (32.95%) White students, and 33 (7.80%) Other students. Seventh-grade students with reported FSA ELA scale scores in the 6-8 middle school configuration consisted of 104 (9.67%) Black or African American students, 620 (57.67%) Hispanic students, 306 (28.47%) White students, and 45 (4.19%) Other students. The distribution of seventh-grade students by race and school configuration is shown in Table 37.

Table 37

Grade 7 Students With Reported FSA ELA Scale Scores by Race and School Configuration

	Black		Hispanic		White		Other		Total	
School Configuration	N	%	N	%	N	%	N	%	N	%
K-8 Elementary School	41	9.69	210	49.65	139	32.95	33	7.80	423	100
6-8 Middle School	104	9.67	620	57.67	306	28.47	45	4.19	1075	100
Total	145	9.68	830	55.41	445	29.71	78	5.21	1498	100

Table 38 displays two-way ANOVA results for FSA ELA scale scores and school configuration with race as a moderator variable for students in Grade 7. At an alpha level of .05, the interaction between race and school configuration produced a statistically significant difference in FSA ELA scale scores between student groups, $F(1, 1490) = 5.906$, $p < .001$. The null hypothesis that the interaction between school configuration and race has no significant effect on grade 7 FSA ELA scores is rejected. The two-way ANOVA results also indicated a statistically significant difference in FSA ELA scale scores for seventh-grade students of different racial/ethnic groups, $F(1, 1490) = 22.734$, $p < .001$. The null hypothesis that race has no significant effect on grade 7 FSA ELA scores is also rejected. There was no statistical difference in FSA ELA scale scores for seventh-grade students attending K-8 elementary and students attending 6-8 middle schools based on school configuration, F(1, 1490) = 1.05, p = .304, at an alpha level of .05. The null hypothesis that school configuration, when considered independent of race, has no significant effect on grade 7 FSA ELA scores is accepted.

Table 38

Two-way ANOVA Results for FSA ELA Scale Scores and School Configuration With Race as Moderator Variable, Grade 7

Tests of Between-Subjects Effects

Dependent Variable: FSA ELA Reading Scale Score 15-16

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	464.375	1	464.375	1.055	.304
Race	30006.271	3	10002.090	22.734	.000
School Configuration * Race	7794.937	3	2598.312	5.906	.001
Error	655538.605	1490	439.959		
Corrected Total	689878.850	1497			

a. R Squared = .050 (Adjusted R Squared = .045)

Rejecting the null hypotheses that the interaction between school configuration and race and race considered independently, indicates that a significant difference in grade 7 FSA ELA scores exist when considering the interaction between school configuration and race as well as when considering race considered alone. The means and standard deviations for FSA ELA scale scores for students in Grade 7 are separated by race and school configuration in Table 39. When considering race and school configuration together, Black (n = 41, M = 322.90) and Hispanic (n = 210, M = 326.07) students attending K-8 elementary schools had lower mean FSA ELA scale scores than Black (n = 104, M = 329.11) and Hispanic (n = 210, M = 326.40) students attending 6-8 middle schools. It is important to note that the difference in mean FSA ELA scale scores is very small between Hispanic students attending K-8 elementary schools and Hispanic students attending 6-8 middle schools. White (n = 139, M = 341.12) and Other (n = 33, M = 338.33) students attending K-8 elementary schools had higher mean FSA ELA scale scores than White (n = 306, M = 331.95) and Other (n = 45, M = 334.04) students attending 6-8 middle schools. When separated by race, seventh-grade students classified as Other (n = 78, M = 335.86) had a higher mean FSA scale score than students classified as White (n = 445, M = 334.82), Black (n = 145, M = 327.35), and Hispanic (n = 830, M = 326.32).

As can be seen in Figure 4, differences in mean Grade 7 FSA ELA scale scores based on school configuration and race are evident. Students classified as Black and Hispanic had higher mean Grade 7 FSA ELA scale scores in the 6-8 middle school configuration. However, the differences between scale scores based on configuration was much larger for students classified as Black than for students classified as Hispanic. Students classified as White and Other had higher mean Grade 7 FSA ELA scale scores in the K-8 elementary school configuration. However, the differences between scale scores based on school configuration were much larger for students classified as White than for students classified as Other.

Table 39

Grade 7 FSA ELA, 2015-2016, Means and Standard Deviations by Race and School Configuration

Dependent Variable: FSA ELA Reading Scale Score 15-16				
School Configuration	Race	Mean	Std. Deviation	N
K-8 Elementary School	Black	322.90	21.717	41
	Hispanic	326.07	22.809	210
	White	341.12	19.632	139
	Other	338.33	19.474	33
	Total	331.67	22.652	423
6-8 Middle School	Black	329.11	18.840	104
	Hispanic	326.40	21.785	620
	White	331.95	19.344	306
	Other	334.04	20.320	45
	Total	328.56	20.929	1075
Total	Black	327.35	19.818	145
	Hispanic/	326.32	22.035	830
	White	334.82	19.873	445
	Other	335.86	19.952	78
	Total	329.44	21.467	1498

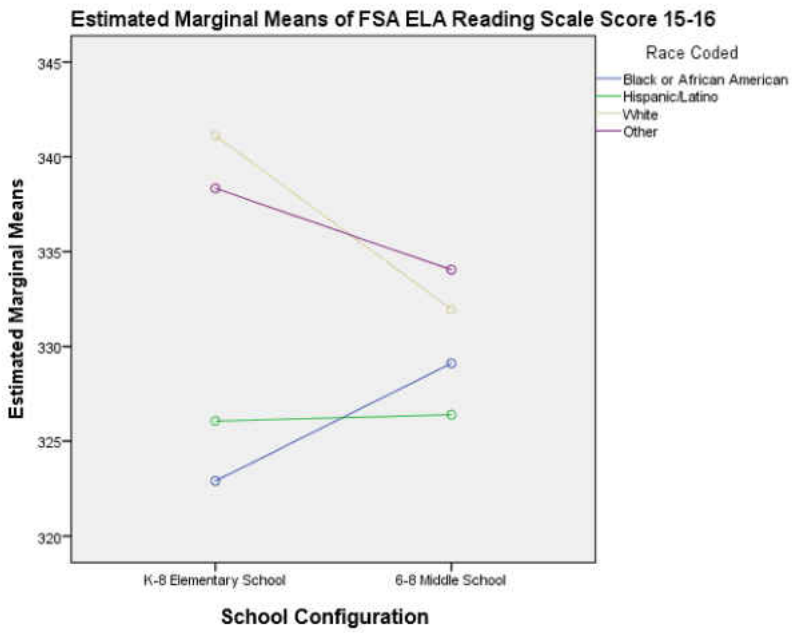


Figure 4. Grade 7, FSA ELA, School Configuration and Race

Grade 8, FSA ELA

Of the 1,349 eighth-grade students, 1245 (92.29%) students had reported FSA ELA scale scores with 318 (25.54%) of the 1245 students attending grade K-8 elementary schools and 927 (74.46%) of the 1245 students attending grade 6-8 middle schools. The 1,245 Grade 8 students with reported 2016 FSA ELA scale scores comprises the sample of Grade 8 students in the large central Florida district attending one of the schools selected for the study. The distribution of eighth-grade students with reported FSA ELA scale scores by school configuration is shown in Table 40.

Table 40

Grade 8 Students With Reported FSA ELA Scale Scores by School Configuration

School Configuration	Frequency	Percentage
K-8 Elementary School	318	25.5
6-8 Middle School	927	74.5
Total	1245	100.0

<u>Gender</u>

The first two-way ANOVA of FSA ELA scale scores employed gender as a moderator variable. The distribution of eighth-grade students by gender and school configuration is shown in Table 41. K-8 elementary school students in Grade 8 with reported FSA ELA scale scores consisted of 146 (45.91%) females and 172 (54.09%) males. 6-8 middle school students in Grade 8 with reported FSA ELA scale scores consisted on 422 (45.52%) females and 505 (54.48%) males. In the overall sample of eighth-grade students with reported FSA ELA scale scores, there were 568 (45.62%) females and 677 (54.38%) males.

Table 41

Grade 8 Students With Reported FSA ELA Scale Scores by Gender and School Configuration

	Female		Male		Total	
School Configuration	N	%	N	%	N	%
K-8 Elementary School	146	45.91	172	54.09	318	100
6-8 Middle School	422	45.52	505	54.48	927	100
Total	568	45.62	677	54.38	1245	100

Table 42 displays two-way ANOVA results for FSA ELA scale scores and school configuration with gender as a moderator variable for students in Grade 8. At an alpha level of

.05, the interaction between gender and school configuration produced no statistically significant difference in FSA ELA scale scores for students in eighth grade, F(1, 1241) = 1.471, p = .225. In addition, two-way ANOVA results at an alpha level of .05 did not indicate a statistically significant difference in FSA ELA scale scores for students in Grade 8 based on school configuration, F(1, 1241) = .052, p = .820. The null hypotheses for the interaction between school configuration and gender and school configuration considered independently were accepted. At an alpha level of .05, a statistically significant difference in FSA ELA scale scores for gender groups was evidenced by two-way ANOVA results, F(1, 1241) = 13.325, p < .001. The null hypothesis that there is no significant difference in Grade 8 FSA ELA scores based on gender was rejected.

Table 42

Two-way ANOVA Results for FSA ELA Scale Scores and School Configuration With Gender as Moderator Variable, Grade 8

Tests of Between-Subjects Effects

Dependent Variable: FSA ELA Scale Score 15-16

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	25.048	1	25.048	.052	.820
Gender	6448.748	1	6448.748	13.325	.000
School Configuration * Gender	712.084	1	712.084	1.471	.225
Error	600583.261	1241	483.951		
Corrected Total	612799.606	1244			

a. R Squared = .020 (Adjusted R Squared = .018)

Accepting the null hypotheses for the interaction between school configuration and gender and school configuration alone indicates that no significant difference exists is Grade 8

FSA ELA scores due to the interaction between school configuration and gender or school configuration alone. Rejecting the null hypothesis for gender indicates that significant differences exist in grade 8 FSA ELA scores due to gender. The means and standard deviations for FSA ELA scale scores for students in Grade 8 are separated by gender in Table 43. Overall, female students had a higher mean and smaller standard deviation of FSA ELA scale scores (n=568, M=338.03, SD=21.435) than male students (n=677, M=331.94, SD=22.454).

Table 43

Grade 8 FSA ELA, 2015-2016, Means and Standard Deviations by Gender

Gender	Mean	Std. Deviation	N
Female	338.03	21.44	568
Male	331.94	22.45	677
Total	334.72	22.20	1245

Race

The second two-way ANOVA of FSA ELA scale scores employed race as a moderator variable. Eighth-grade students with reported FSA ELA scale scores in the K-8 elementary school configuration consisted of 32 (10.06%) Black students, 187 (58.81%) Hispanic students, 84 (26.42%) White students, and 15 (4.72%) Other students. Eighth-grade students with reported FSA ELA scale scores in the 6-8 middle school configuration consisted of 94 (10.14%) Black students, 544 (58.68%) Hispanic students, 249 (26.86%) White students, and 40 (4.31%) Other students. The distribution of students by race and school configuration is shown in Table 44.

Table 44

Grade 8 Students With Reported FSA ELA Scale Scores by Race and School Configuration

School Configuration	Black		Hispanic		White		Other		Total	
	N	%	N	%	N	%	N	%	N	%
K-8 Elementary School	32	10.06	187	58.81	84	26.42	15	4.72	318	100
6-8 Middle School	94	10.14	544	58.68	249	26.86	40	4.31	927	100
Total	126	10.12	731	58.71	333	26.75	55	4.42	1245	100

Table 45 displays two-way ANOVA results for FSA ELA scale scores and school configuration with race as a moderator variable for students in Grade 8. At an alpha level of .05, the two-way ANOVA results did not indicate a statistically significant difference in FSA ELA scale scores due to the interaction between race and school configuration, $F(1, 1237) = 1.209$, $p = .305$. There was no statistical difference in FSA ELA scale scores for eighth-grade students attending K-8 elementary and students attending 6-8 middle schools based on school configuration at the alpha level of .05, $F(1, 1237) = .065$, $p = .798$. The null hypotheses for the interaction between school configuration and race and school configuration considered independently were both accepted. The two-way ANOVA results, at an alpha level of .05, indicated a statistically significant difference in FSA ELA scale scores for eighth-grade students of different racial/ethnic groups, $F(1, 1237) = 12.802$, $p < .001$. The null hypothesis that there is no significant difference in Grade 8 FSA ELA scores based on race was rejected.

Table 45

Two-way ANOVA Results for FSA ELA Scale Scores and School Configuration With Race as Moderator Variable, Grade 8

Tests of Between-Subjects Effects

Dependent Variable: FSA ELA Reading Scale Score 15-16

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	31.335	1	31.335	.065	.798
Race	18407.425	3	6135.808	12.802	.000
School Configuration * Race	1738.891	3	579.630	1.209	.305
Error	592886.030	1237	479.293		
Corrected Total	612799.606	1244			

a. R Squared = .032 (Adjusted R Squared = .027)

Accepting the null hypotheses for the interaction between school configuration and race and school configuration alone indicates that no significant difference exists in Grade 8 FSA ELA scores due to school configuration. Rejecting the null hypothesis for race indicates that significant differences exist in Grade 8 FSA ELA scores due to race. The means and standard deviations for FSA ELA scale scores for students in Grade 8 are separated by race in Table 46. When separated by race, eighth-grade students classified as White (n = 333, M = 340.35) had a higher mean FSA scale score than students classified as Other (n = 55, M = 339.76), Black (n = 126, M = 334.42), and Hispanic (n = 731, M = 331.82).

Table 46

Grade 8 FSA ELA, 2015-2016, Means and Standard Deviations

Dependent Variable: FSA ELA Scale Score 15-16			
Race	Mean	Std. Deviation	N
Black	334.42	20.168	126
Hispanic	331.82	23.317	731
White	340.35	19.718	333
Other	339.76	18.186	55
Total	334.72	22.195	1245

Grade 6, FSA Mathematics

Of the 1,768 sixth-grade students attending the six schools selected for the study, 1,673 (94.63%) students had reported FSA Mathematics scale scores with 484 (28.93%) of the 1,673 students attending grade K-8 elementary schools and 1,189 (71.07%) of the 1,673 students attending 6-8 middle schools. The 1,673 Grade 6 students with reported 2016 FSA Mathematics scale scores comprised the sample of Grade 6 students in the large central Florida district attending one of the schools selected for the study. The distribution of sixth-grade students with reported FSA Mathematics scale scores by school configuration is shown in Table 47.

Table 47

Grade 6 Students With Reported FSA Mathematics Scale Scores by School Configuration

School Configuration	Frequency	Percentage
K-8 Elementary School	484	28.93
6-8 Middle School	1189	71.07
Total	1673	100.00

Gender

The first two-way ANOVA of FSA Mathematics scale scores utilized gender as a moderator variable. The selected K-8 schools served 484 sixth-grade students with reported FSA Mathematics scale scores, 231 (47.72%) female and 253 (52.27%) male. The selected 6-8 middle schools served 1,189 sixth-grade students with reported FSA Mathematics scale scores, 568 (47.77%) female and 621 (52.23%) male. The total sample of sixth-grade students with reported FSA Mathematics scale scores consisted of 1,673 students, 799 (47.76%) female and 874 (52.24%) male. The distribution of sixth-grade students with reported FSA Mathematics scale scores by gender and school configuration is shown in Table 48.

Table 48

Grade 6 Students With Reported FSA Mathematics Scale Scores by Gender and School Configuration

	Female		Male		Total	
School Configuration	N	%	N	%	N	%
K-8 Elementary School	231	47.72	253	52.27	484	100
6-8 Middle School	568	47.77	621	52.23	1189	100
Total	799	47.76	874	52.24	1673	100

Table 49 displays two-way ANOVA results for FSA Mathematics scale scores and school configuration with gender as a moderator variable for students in Grade 6. At an alpha level of .05, the interaction between gender and school configuration produced no statistically significant difference in FSA Mathematics scale scores between student groups, $F(1, 1669) = .136$, $p = .712$. The null hypothesis that no significant differences in Grade 6 FSA Mathematics scale scores exist due the interaction between school configuration and gender was accepted. However, results of the two-way ANOVA at an alpha level of .05 indicate that both school configuration, F(1, 1669) = 11.282, p = .001, and gender, F(1, 1669) = 6.889, p = .009, when considered separately, result in a statistically significant difference in FSA Mathematics scale scores between groups of students. The null hypotheses that no significant differences exist in Grade 6 FSA Mathematics scale scores exist due to school configuration and gender, when considered separately, were rejected.

Table 49

Two-way ANOVA Results for FSA Mathematics Scale Scores and School Configuration With Gender as Moderator Variable, Grade 6

Tests of Between-Subjects Effects

Dependent Variable: FSA Mathematics Scale Score 15-16

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	5441.557	1	5441.557	11.282	.001
Gender	3322.772	1	3322.772	6.889	.009
School Configuration * Gender	65.671	1	65.671	.136	.712
Error	805019.719	1669	482.337		
Corrected Total	815121.680	1672			

a. R Squared = .012 (Adjusted R Squared = .011)

Accepting the null hypotheses for the interaction between school configuration and gender indicated that no significant difference existed in Grade 6 FSA Mathematics scale scores due to the interaction between school configuration and gender. Rejecting the null hypotheses for school configuration and gender indicates that a significant difference exists in Grade 6 FSA Mathematics scale scores exist along school configuration and gender lines. The means and standard deviations for FSA Mathematics scale scores for students in Grade 6 are separated by gender and school configuration as shown in Table 50. Overall, female students had a higher mean and smaller standard deviation of FSA Mathematics scale scores (n = 799, M = 322.32) than male students (n = 874, M = 319.03). Sixth-grade students attending K-8 elementary schools had a higher mean of FSA Mathematics scale scores (n = 484, M = 323.44) than sixth-grade students attending 6-8 middle schools (n = 1189, M = 319.44).

Table 50

Grade 6 FSA Mathematics, 2015-2016, Means and Standard Deviations by Gender and School Configuration

Dependent Variable: FSA Mathematics Scale Score 15-16				
Variables	Subgroup	Mean	Std. Deviation	N
Gender	Female	322.32	20.48	799
	Male	319.03	23.35	874
School Configuration	K-8 Elementary School	323.44	22.77	484
	6-8 Middle School	319.44	21.70	1189
Total		320.60	22.08	1673

<u>Race</u>

The second two-way ANOVA of FSA Mathematics scale scores utilized race as a moderator variable. The distribution of sixth-grade students by race and school configuration is shown in Table 51. In the K-8 elementary school configuration, 51 (10.54%) of the sixth-grade students were Black, 223 (46.07%) of the sixth-grade students were Hispanic, 186 (38.43%) of the sixth-grade students were White, and 24 (4.96%) of the students were classified as Other. In the 6-8 middle school configuration, 111 (9.34%) of the sixth-grade students were Black, 659 (55.42%) of the sixth-grade students were Hispanic, 359 (30.19%) of the sixth-grade students were White, and 60 (5.05%) of the sixth-grade students were classified as Other. Considering the sixth-grade sample as a whole, 162 (9.68%) of the students were Black, 882 (52.72%) of the students were Hispanic, 545 (32.58%) of the students were White, and 84 (5.02%) of the students were classified as Other.

Table 51

Grade 6 Students With Reported Florida Standards Mathematics Scale Scores by Race and School Configuration

School Configuration	Black		Hispanic		White		Other		Total	
	N	%	N	%	N	%	N	%	N	%
K-8 Elementary School	51	10.54	223	46.07	186	38.43	24	4.96	484	100
6-8 Middle School	111	9.34	659	55.42	359	30.19	60	5.05	1189	100
Total	162	9.68	882	52.72	545	32.58	84	5.02	1673	100

Table 52 displays two-way ANOVA results for FSA Mathematics scale scores and school configuration with race as a moderator variable for students in Grade 6. At an alpha level of .05, the two-way ANOVA results did indicate a statistically significant difference in FSA Mathematics scale scores due to the interaction between race and school configuration, $F(1, 1665) = 2.624$, $p = .049$. The null hypothesis that no significant differences exist in Grade 6 FSA Mathematics scale scores due the interaction between school configuration and race was rejected. Two-way ANOVA results, at an alpha level of .05, did indicate a statistically significant difference in FSA Mathematics scale scores for sixth-grade students of different racial/ethnic groups, $F(1, 1665) = 30.023$, $p < .001$. The null hypothesis that no significant difference exists in Grade 6 FSA Mathematics scale scores due to race was also rejected. There was no statistical difference in FSA Mathematics scale scores for sixth-grade students attending K-8 elementary and students attending 6-8 middle schools based on school configuration, F(1, 1665) = 3.562, p = .059. The null hypothesis that no significant differences exist in FSA Mathematics scale scores due to school configuration was accepted.

Table 52

Two-way ANOVA Results for FSA Mathematics Scale Scores and School Configuration With Race as Moderator Variable, Grade 6

Tests of Between-Subjects Effects

Dependent Variable: FSA Mathematics Scale Score 15-16

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	1638.658	1	1638.658	3.562	.059
Race	41439.022	3	13813.007	30.023	.000
School Configuration * Race	3621.648	3	1207.216	2.624	.049
Error	766027.714	1665	460.077		
Corrected Total	815121.680	1672			

a. R Squared = .060 (Adjusted R Squared = .056)

Accepting the null hypothesis for school configuration alone indicates that there is no significant difference in FSA Mathematics scale scores due to school configuration. Rejecting the null hypotheses for the interaction between school configuration and race and race alone indicates that there exists a significant difference in Grade 6 FSA Mathematics scale scores for different racial groups along school configuration lines. The means and standard deviations for FSA Mathematics scale scores for students in Grade 6 are separated by race as shown in Table 53. When considering the interaction between race and school configuration, students classified as Black attending K-8 elementary schools (n = 51, M = 316.21) had lower mean FSA

Mathematics scale scores than students classified as Black attending 6-8 middle schools (*n* = 111, *M* = 319.22). For White, Hispanic, and Other sixth-grade students, FSA Mathematics scale score means where lower for students attending 6-8 middle school than for students of the same race/ethnicity attending K-8 elementary schools.

As can be seen in Figure 5, differences in Grade 6 FSA ELA Mathematics scale scores based on school configuration and race are evident. For students classified as White and Other, mean Grade 6 FSA Mathematics scale scores were higher in the K-8 elementary school configuration. Students classified as Hispanic also had higher mean Grade 6 FSA Mathematics scale scores in the K-8 elementary school configuration, but differences in mean scale scores between configurations were smaller for students classified as Hispanic than for students classified as White or Other. For students classified as Black, mean Grade 6 FSA Mathematics scale scores were higher in the 6-8 middle school configuration.

Table 53

Grade 6 FSA Mathematics, 2015-2016, Means and Standard Deviations by Race and School Configuration

Dependent Variable: FSA Mathematics Scale Score 15-16

School Configuration	Race	Mean	Std. Deviation	N
K-8 Elementary School	Black	316.12	17.065	51
	Hispanic	317.55	20.832	223
	White	331.62	24.050	186
	Other	330.38	19.053	24
	Total	323.44	22.766	484
6-8 Middle School	Black	319.22	21.207	111
	Hispanic	316.11	21.772	659
	White	325.15	20.391	359
	Other	322.32	22.378	60
	Total	319.44	21.697	1189
Total	Black	318.24	19.995	162
	Hispanic	316.47	21.536	882
	White	327.36	21.903	545
	Other	324.62	21.679	84
	Total	320.30	22.080	1673

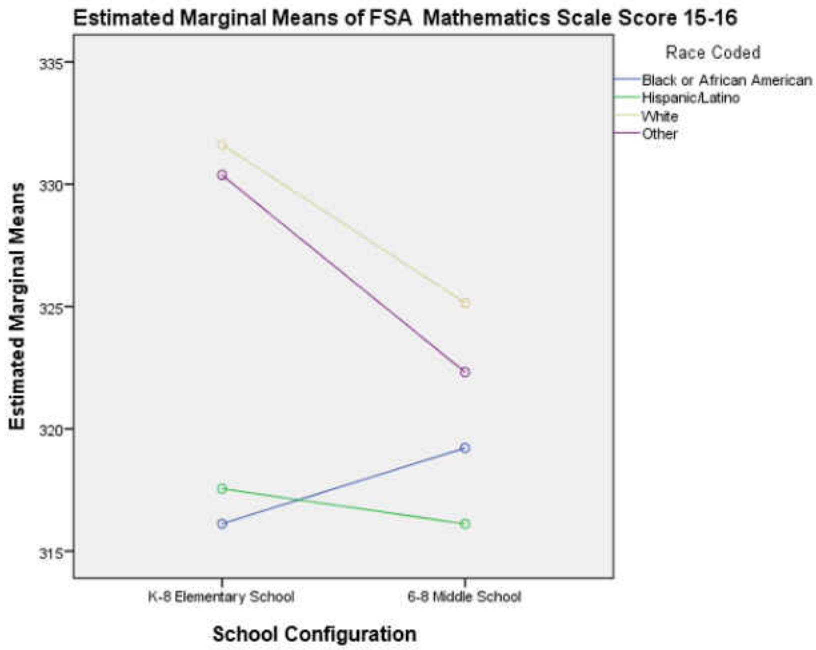


Figure 5. Grade 6, FSA Mathematics, School Configuration and Race

Grade 7, FSA Mathematics

Of the 1,607 seventh-grade students attending the six schools selected for the study, 1,506 (93.71%) students had reported FSA Mathematics scale scores with 423 (28.09%) of the 1,506 students attending grade K-8 elementary schools and 1,083 (71.91%) of the 1506 students attending grade 6-8 middle schools. The 1,506 Grade 7 students with reported 2016 FSA Mathematics scale scores comprises the sample of Grade 7 students in the large central Florida district attending one of the schools selected for the study. Table 54 shows the distribution of seventh-grade students with reported FSA Mathematics scale scores by school configuration.

Table 54

Grade 7 Students With Reported FSA Mathematics Scale Scores by School Configuration

School Configuration	Frequency	Percentage
K-8 Elementary School	423	28.09
6-8 Middle School	1083	71.91
Total	1506	100.00

<u>Gender</u>

The first two-way ANOVA of FSA Mathematics utilized gender as a moderator variable. The distribution of seventh-grade students by gender and school configuration is shown in Table 55. The overall sample of seventh-grade students with reported FSA Mathematics scale scores was composed of 1,506 students, 744 (49.40%) female and 762 (50.60%) male. Seventh-grade students with reported FSA Mathematics scale scores attending the selected K-8 elementary schools totaled 423 students, 200 (47.28%) female and 223 (52.72%) male. Seventh-grade students with reported FSA Mathematics scale scores attending the selected 6-8 middle schools totaled 1,083 students, 544 (50.23%) female and 539 (49.77%) male.

Table 55

Grade 7 Students With Reported FSA Mathematics Scale Scores by Gender and School Configuration

	Female		Male		Total	
School Configuration	N	%	N	%	N	%
K-8 Elementary School	200	47.28	223	52.72	423	100
6-8 Middle School	544	50.23	539	49.77	1083	100
Total	744	49.40	762	50.60	1506	100

Table 56 displays two-way ANOVA results for FSA Mathematics scale scores and school configuration with gender as a moderator variable for students in Grade 7. At an alpha level of .05, the interaction between gender and school configuration produced a statistically significant difference in FSA Mathematics scale scores, $F(1, 1502) = 4.990$, $p = .026$. The results of the two-way ANOVA at an alpha level of .05 indicate that both school configuration, $F(1, 1502) = 12.336$, $p < .001$, and gender, $F(1, 1502) = 12.653$, $p < .001$, when considered separately, resulted in a statistically significant difference in FSA Mathematics scale scores between groups of students. The null hypotheses for the interaction between school configuration and gender, and school configuration and gender, when considered separately, for Grade 7 FSA Mathematics scale scores were rejected.

Table 56

Two-way ANOVA Results for FSA Mathematics Scale Scores and School Configuration With Gender as Moderator Variable, Grade 7

Tests of Between-Subjects Effects

Dependent Variable: FSA Mathematics Scale Score 15-16

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	7572.036	1	7572.036	12.336	.000
Gender	7766.398	1	7766.398	12.653	.000
School Configuration * Gender	3062.827	1	3062.827	4.990	.026
Error	921923.369	1502	613.797		
Corrected Total	936942.563	1505			

a. R Squared = .016 (Adjusted R Squared = .014)

Rejecting the null hypotheses indicates that significant differences do exist in Grade 6 FSA Mathematics scale scores due to the interaction between school configuration and gender and school configuration and gender considered separately. The means and standard deviations for FSA Mathematics scale scores for students in Grade 7 are separated by gender and school configuration in Table 57. Seventh-grade females attending K-8 elementary schools (*n* = 200, *M* = 339.32,) had higher mean FSA Mathematics scale scores than seventh-grade females attending 6-8 middle schools (*n* = 544, *M* = 331.15). Seventh-grade males attending K-8 elementary schools (*n* = 223, *M* = 331.09) had higher mean FSA Mathematics scale scores than males attending 6-8 middle schools (*n* = 539, *M* = 329.27). Overall, female students had higher mean FSA Mathematics scale scores (*n* = 744, *M* = 333.35) than male students (*n* = 762, *M* = 329.80). Seventh-grade students attending K-8 elementary schools had higher mean FSA Mathematics scale scores (*n* = 423, *M* = 334.98) than seventh-grade students attending 6-8 middle schools (*n* = 1083, *M* = 330.21).

As can be seen in Figure 6, differences in mean Grade 7 FSA Mathematics scale scores based on school configuration and gender are evident. Differences in mean Grade 7 FSA Mathematics scale scores based on school configuration were larger for female students than for male students.

Table 57

Grade 7 FSA Mathematics, 2015-2016, Means and Standard Deviations by Gender and School Configuration

Dependent Variable: FSA Mathematics Scale Score 15-16				
School Configuration	Gender	Mean	Std. Deviation	N
K-8 Elementary School	Female	339.32	27.824	200
	Male	331.09	27.978	223
	Total	334.98	28.175	423
6-8 Middle School	Female	331.15	22.920	544
	Male	329.27	23.959	539
	Total	330.21	23.451	1083
Total	Female	333.35	24.585	744
	Male	329.80	25.197	762
	Total	331.55	24.951	1506

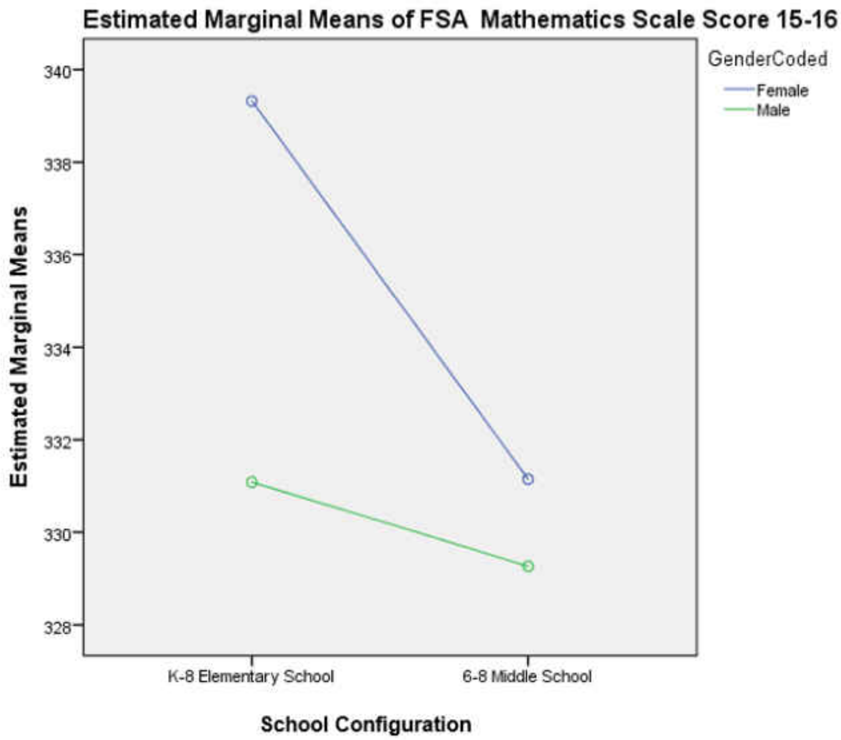


Figure 6. Grade 7, FSA Mathematics, School Configuration and Gender

<u>Race</u>

The second two-way ANOVA of FSA Mathematics scale scores utilized race as a moderator variable. The K-8 elementary schools selected for the study had a total of 423 students with reported FSA Mathematics scale scores, 41 (9.69%) Black or African American, 210 (49.65%) Hispanic, 138 (32.62%) White, and 34 (8.04%) Other. The 6-8 middle schools selected for the study had a total of 1,083 students with reported FSA Mathematics scales scores, 104 (9.60%) Black or African American, 629 (58.08%) Hispanic, 304 (28.07%) White, and 80 (5.31%) Other. Overall, the school selected for the study had a total of 1,506 students with reported FSA Mathematics scale scores, 145 (9.63%) Black or African American, 839 (55.71%)

Hispanic, 442 (29.35%) White, and 80 (5.31%) Other. The distribution of students by race and school configuration is shown in Table 58.

Table 58

Grade 7 Students With Reported FSA Mathematics Scale Scores by Race and School Configuration

School Configuration	Black		Hispanic		White		Other		Total	
	N	%	N	%	N	%	N	%	N	%
K-8 Elementary School	41	9.69	210	49.65	138	32.62	34	8.04	423	100
6-8 Middle School	104	9.60	629	58.08	304	28.07	46	4.25	1083	100
Total	145	9.63	839	55.71	442	29.35	80	5.31	1506	100

Table 59 displays two-way ANOVA results for FSA Mathematics scale scores and school configuration with race as a moderator variable for students in Grade 7. Results of the two-way ANOVA at an alpha level of .05 results indicate a statistically significant difference in FSA Mathematics scale scores due to the interaction between race and school configuration, $F(1, 1498) = 9.184$, $p < .001$. The null hypothesis that no significant differences exist in Grade 7 FSA Mathematics scale scores due the interaction between school configuration and race was rejected. A statistically significant difference in FSA Mathematics scale scores between racial/ethnic groups is also indicated by the two-way ANOVA at an alpha level of .05, $F(1, 1498) = 37.216$, $p < .001$. The null hypothesis that no significant difference exists in Grade 7 FSA Mathematics scale scores due to race was also rejected. No statistically significant difference was found in FSA Mathematics scale scores was reported as a result of school configuration at an alpha level of .05, $F(1, 1498) = 2.025$, $p = .155$. The null hypothesis that no significant differences exist in Grade 7 FSA Mathematics scale scores due to school configuration was accepted.

Table 59

Two-way ANOVA Results for FSA Mathematics Scale Scores and School Configuration With Race as Moderator Variable, Grade 7

Tests of Between-Subjects Effects

Dependent Variable: FSA Mathematics Scale Score 15-16

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	1167.833	1	1167.833	2.025	.155
Race	64392.434	3	21464.145	37.216	.000
School Configuration * Race	15891.273	3	5297.091	9.184	.000
Error	863964.406	1498	576.745		
Corrected Total	936942.563	1505			

a. R Squared = .078 (Adjusted R Squared = .074)

Accepting the null hypothesis for school configuration alone indicates that there is no significant difference in Grade 7 FSA Mathematics scale scores due to school configuration. Rejecting the null hypotheses for the interaction between school configuration and race and race alone indicates that there exists a significant difference in Grade 7 FSA Mathematics scale scores for different racial groups along school configuration lines. The means and standard deviations for FSA Mathematics scale scores for students in Grade 7 are separated by race and school configuration in Table 60. When considering race and school configuration together, Black students attending K-8 elementary schools (n = 41, M = 318.37) had lower mean FSA Mathematics scale scores than Black students attending 6-8 middle schools (n = 104, M = 328.10). White (n = 138, M = 348.70), Hispanic (n = 210, M = 327.80), and Other (n = 34, M =

343.68) students attending K-8 elementary schools had higher mean FSA Mathematics scale scores than White (*n* = 304, *M* = 335.54), Hispanic (*n* = 629, *M* = 327.53) and Other (*n* = 46, *M* = 336.46) students attending 6-8 middle schools. When separated by race, seventh-grade students classified as White (*n* = 442, *M* = 339.64) had higher mean FSA scale score than students classified as Other (*n* = 80, *M* = 339.52), Hispanic (*n* = 839, *M* = 327.60), and Black (*n* = 145, *M* = 325.34).

As can be seen in Figure 7, differences in mean Grade 7 FSA Mathematics scale scores based on school configuration and race are evident. For students classified as White, Other, and Hispanic, all three groups had higher Grade 7 FSA Mathematics scales in the K-8 elementary school configuration. However, the difference in mean scale scores between the two configurations was larger for students classified as White than for students classified as Other and much larger than for students classified as Hispanic. In fact, the difference in Grade 7 mean FSA Mathematics scale scores was quite small for students classified as Hispanic. For students classified as Black, differences in mean Grade 7 FSA Mathematics scale scores based on school configuration were in between in size for those for students classified as White or Other, with the 6-8 middle school configuration producing better outcomes for students classified as Black.

Table 60

Grade 7 FSA Mathematics, 2015-2016, Means and Standard Deviations by Race and School Configuration

Dependent Variable: FSA Mathematics Scale Score 15-16

School Configuration	Race	Mean	Std. Deviation	N
K-8 Elementary School	Black	318.37	26.555	41
	Hispanic	327.80	27.315	210
	White	348.70	23.990	138
	Other	343.68	25.421	34
	Total	334.98	28.175	423
6-8 Middle School	Black	328.10	22.052	104
	Hispanic	327.53	24.214	629
	White	335.54	21.232	304
	Other	336.46	23.459	46
	Total	330.21	23.451	1083
Total	Black	325.34	23.729	145
	Hispanic/Latino	327.60	25.010	839
	White	339.64	22.930	442
	Other	339.52	24.420	80
	Total	331.55	24.951	1506

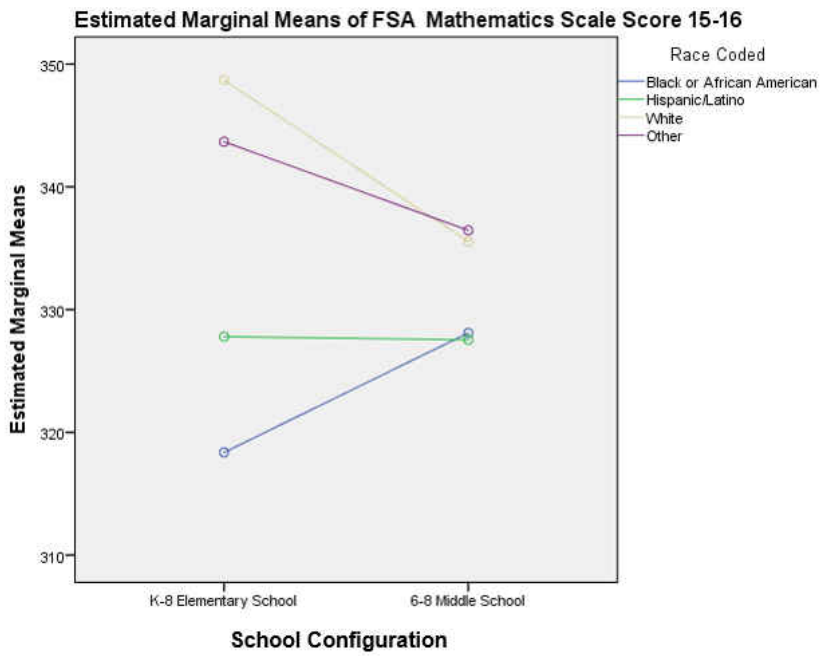


Figure 7. Grade 7, FSA Mathematics, School Configuration and Race

Grade 8, FSA Mathematics

Of the 1,349 eighth-grade students attending the six schools selected for the study, 1,222 (90.59%) students had reported FSA Mathematics scale scores with 312 (25.53%) of the 1,222 students attending Grade K-8 elementary schools and 910 (74.47%) of the 1,222 students attending 6-8 middle schools. The 1,222 students with reported 2016 FSA Mathematics scale scores comprised the sample of Grade 8 students in the large central Florida district attending one of the schools selected for the study. Table 61 shows the distribution of eighth-grade students with reported FSA Mathematics scale scores by school configuration.

Table 61

Grade 8 Students With Reported FSA Mathematics Scale Scores by School Configuration

School Configuration	Frequency	Percentage
K-8 Elementary School	312	25.53
6-8 Middle School	910	74.47
Total	1222	100.00

Gender

The first two-way ANOVA of FSA Mathematics scale scores utilized gender as a moderator variable. The distribution of students by gender and school configuration is shown in Table 62. In the K-8 elementary schools, 142 (45.51%) of the students were female, and 170 (54.49%) of the students were male. In the 6-8 middle schools, 411 (45.16%) of the students were female and 499 (54.84%) of the students were male. For the overall sample, 553 (45.25%) of the students were female, and 669 (54.75%) of the students were male.

Table 62

Grade 8 Students With Reported FSA Mathematics Scale Scores by Gender and School Configuration

	Female		Male		Total	
School Configuration	N	%	N	%	N	%
K-8 Elementary School	142	45.51	170	54.49	312	100
6-8 Middle School	411	45.16	499	54.84	910	100
Total	553	45.25	669	54.75	1222	100

Table 63 displays two-way ANOVA results for FSA Mathematics scale scores and school configuration with gender as a moderator variable for students in Grade 8. At an alpha level of

.05, the interaction between gender and school configuration produced no statistically significant difference in FSA Mathematics scale scores between student groups, $F(1, 1218) = 2.676$, $p = .102$. The two-way ANOVA results also indicated that no statistically significant difference exists in FSA Mathematics scale scores between student groups based on school configuration, $F(1, 1218) = 1.783$, $p = .182$, or gender, $F(1, 1218) = 1.165$, $p = .281$, at an alpha level of .05. The null hypotheses for school configuration and gender, when considered together and independently, were accepted.

Table 63

Two-way ANOVA Results for FSA Mathematics Scale Scores and School Configuration With Gender as Moderator Variable, Grade 8

Tests of Between-Subjects Effects

Dependent Variable: FSA Mathematics Scale Score 15-16

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	838.788	1	838.788	1.783	.182
Gender	547.932	1	547.932	1.165	.281
School Configuration * Gender	1258.685	1	1258.685	2.676	.102
Error	572991.637	1218	470.436		
Corrected Total	577092.072	1221			

a. R Squared = .007 (Adjusted R Squared = .005)

<u>Race</u>

The second two-way ANOVA of FSA Mathematics scale scores utilized race as a moderator variable. The distribution of students by race and school configuration is shown in Table 64. In the K-8 elementary school configuration, 34 (10.90%) of the eighth-grade students were Black, 185 (59.29%) of the eighth-grade students were Hispanic, 79 (25.32%) of the eighth-grade students were White, and 14 (4.49%) of the students were classified as Other. In the 6-8 middle school configuration, 91 (10.00%) of the eighth-grade students were Black, 537 (59.01%) of the eighth-grade students were Hispanic, 245 (26.92%) of the eighth-grade students were White, and 37 (4.07%) of the eighth-grade students were classified as Other. Considering the eighth-grade sample as a whole, 125 (10.23%) of the students were Black, 722 (59.08%) of the students were Hispanic, 324 (26.51%) of the students were White, and 51 (4.17%) of the students were classified as Other.

Table 64

Grade 8 Students With Reported FSA Mathematics Scale Scores by Race and School Configuration

School Configuration	Black		Hispanic		White		Other		Total	
	N	%	N	%	N	%	N	%	N	%
K-8 Elementary School	34	10.90	185	59.29	79	25.32	14	4.49	312	100
6-8 Middle School	91	10.00	537	59.01	245	26.92	37	4.07	910	100
Total	125	10.23	722	59.08	324	26.51	51	4.17	1222	100

Table 65 displays two-way ANOVA results for FSA Mathematics scale scores and school configuration with race as a moderator variable for students in Grade 8. At the alpha level of .05, the two-way ANOVA results indicated that the interaction between race and school configuration produced no statistically significant difference in FSA Mathematics scale scores between groups, $F(1, 1214) = 1.609$, $p = .186$. The null hypothesis for the interaction between school configuration and race was accepted. School configuration, when considered separately from race, also produced no statistically significant difference in FSA Mathematics scale scores between student groups at an alpha level of .05, $F(1, 1214) = .344$, $p = .558$. The null hypothesis for race was also accepted. However, when race was considered separately, the two-way ANOVA, at an alpha level of .05, indicated a statistically significant difference in FSA mathematics scale scores between student groups, $F(1, 1212) = 13.669$, $p < 0.001$. The null hypothesis that no significant difference exists in Grade 8 FSA Mathematics scale scores was rejected.

Table 65

Two-way ANOVA Results for FSA Mathematics Scale Scores and School Configuration With Race as Moderator Variable, Grade 8

Tests of Between-Subjects Effects

Dependent Variable: FSA Mathematics Scale Score 15-16

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	157.584	1	157.584	.344	.558
Race	18803.989	3	6267.996	13.669	.000
School Configuration * Race	2212.813	3	737.604	1.609	.186
Error	556699.556	1214	458.566		
Corrected Total	577092.072	1221			

a. R Squared = .035 (Adjusted R Squared = .030)

Accepting the null hypotheses for the interaction between school configuration and race and school configuration, considered independently, indicates that no significant difference exists in Grade 8 FSA Mathematics scale scores due to school configuration. Rejecting the null hypothesis for race indicates that a significant difference exists in Grade 8 FSA Mathematics scale scores due to race. The means and standard deviations for FSA Mathematics scale scores for students in Grade 8 are separated by race in Table 66. When separated by race, eighth-grade students classified as White (n = 324, M = 343.06) had a higher mean FSA Mathematics scale score than students classified as Other (n = 51, M = 341.22), Hispanic (n = 722, M = 334.78), and Black (n = 125, M = 333.84).

Table 66

Grade 8 FSAs Mathematics, 2015-2016, Means and Standard Deviations by Race and School Configuration

Dependent Variable: FSA Mathematics Scale Score 15-16			
Race	Mean	Std. Deviation	N
Black	333.84	22.061	125
Hispanic	334.78	22.164	722
White	343.06	19.582	324
Other	341.22	20.538	51
Total	337.15	21.740	1222

Grade 6, FSA Algebra 1 EOC Examination

No students in sixth grade at the selected schools had reported FSA Algebra 1 EOC Examination scale scores.

Grade 7, FSA Algebra 1 EOC Examination

Of the 1,607 seventh-grade students attending the six schools selected for the study, 18 (1.12%) students had reported FSA Algebra 1 EOC Examination scale scores with three (16.7%) of the 18 students attending K-8 elementary schools and 15 (83.3%) of the 18 students attending 6-8 middle schools. The 18 Grade 7 students with reported 2016 FSA Algebra 1 EOC Examination scale scores comprised the sample of Grade 7 students in the large central Florida district attending one of the schools selected for the study. The distribution of eighth-grade students with reported FSA Mathematics scale scores by school configuration is shown in Table 67.

Table 67

Grade 7 Students With Reported FSA Algebra 1 EOC Examination Scale Scores by School Configuration

School Configuration	Frequency	Percentage
K-8 Elementary School	3	16.7
6-8 Middle School	15	83.3
Total	18	100.0

Gender

The first two-way ANOVA of FSA Algebra 1 EOC Examination scale scores utilized gender as a moderator variable. The distribution of students by gender and school configuration is shown in Table 68. In the K-8 elementary schools, none of the students was female and three (100.00%) of the students were male. In the 6-8 middle schools, 12 (80.00%) of the students were female, and three (20.00%) of the students were male. For the overall sample, 12 (66.67%) of the students were female, and six (33.33%) of the students were male.

Table 68

Grade 7 Students With Reported FSA Algebra 1 EOC Examination Scale Scores by Gender and School Configuration

	Female		Male		Total	
School Configuration	N	%	N	%	N	%
K-8 Elementary School	0	0.00	3	100.00	3	100
6-8 Middle School	12	80.00	3	20.00	15	100
Total	12	66.67	6	33.33	18	100

Table 69 displays two-way ANOVA results for FSA Algebra 1 EOC Examination scale scores and school configuration with gender as a moderator variable for students in Grade 7. At an alpha level of .05, the two-way ANOVA results indicated that no statistically significant difference existed in FSA Algebra 1 EOC Examination scale scores between student groups based school configuration, $F(1, 15) = .197$, $p = .663$, or gender, $F(1, 15) = .813$, $p = .381$. For Grade 7 FSA Algebra 1 EOC Examination scale scores, the null hypotheses for the interaction between school configuration and gender and school configuration and gender considered independently were accepted. Hence, no significant differences exist in FSA Algebra 1 EOC Examination scale scores due to the interaction between school configuration and gender or school configuration and gender considered separately.

Table 69

Two-way ANOVA Results for FSA Algebra 1 EOC Examination Scale Scores and School Configuration With Gender as Moderator Variable, Grade 7

Tests of Between-Subjects Effects

Dependent Variable: FSA Algebra 1 EOC Examination Scale Score 15-16

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	60.167	1	60.167	.197	.663
Gender	248.067	1	248.067	.813	.381
School Configuration*Gender	.000	0	.	.	.
Error	4576.333	15	305.089		
Corrected Total	5347.611	17			

a. R Squared = .144 (Adjusted R Squared = .030)

Race

The second two-way ANOVA of FSA Mathematics scale scores utilized race as a moderator variable. The distribution of students by race and school configuration is shown in Table 70. In the K-8 elementary school configuration, two (66.67%) of the seventh-grade students were Hispanic and one (33.33%) of the seventh-grade students was White. In the 6-8 middle school configuration, one (6.67%) of the seventh-grade students was Black or African American, six (40.00%) of the seventh-grade students were Hispanic, and eight (53.33%) of the seventh-grade students were White. Considering the seventh-grade sample as a whole, one (5.56%) of the students was Black or African American, eight (44.44%) of the students were Hispanic, and nine (50.00%) of the students were White.

Table 70

Grade 7 Students With Reported FSA Algebra 1 EOC Examination Scale Scores by Race and School Configuration

	Black		Hispanic		White		Other		Total	
School Configuration	N	%	N	%	N	%	N	%	N	%
K-8 Elementary School	0	0.00	2	66.67	1	33.33	0	0.00	3	100
6-8 Middle School	1	6.67	6	40.00	8	53.33	0	0.00	15	100
Total	1	5.56	8	44.44	9	50.00	0	0.00	18	100

Table 71 displays two-way ANOVA results for FSA Algebra 1 EOC Examination scale scores and school configuration with race as a moderator variable for students in Grade 7. At an alpha level of .05, the interaction between school configuration and race did produce a statistically significant difference in FSA Algebra 1 EOC Examination scale scores, $F(1, 13) = 8.062$, $p = .014$. The null hypothesis for the interaction between school configuration and race was rejected. When race was considered separately, the two-way ANOVA, indicated a statistically significant difference in FSA Algebra 1 EOC Examination scale scores between student groups, $F(1, 13) = 8.019$, $p = .005$. The null hypothesis for race was also rejected. School configuration, when considered separately from race, produced no statistically significant difference in FSA Algebra 1 EOC Examination scale scores between student groups at an alpha level of .05, $F(1, 13) = .200$, $p = .662$. The null hypothesis for school configuration was accepted.

Table 71

Two-way ANOVA Results for FSA Algebra 1 EOC Examination Scale Scores and School Configuration With Race as Moderator Variable, Grade 7

Tests of Between-Subjects Effects

Dependent Variable: FSA Algebra 1 EOC Examination Scale Score 15-16

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	33.164	1	33.164	.200	.662
Race	2661.175	2	1330.588	8.019	.005
School Configuration*Race	1337.815	1	1337.815	8.062	.014
Error	2157.208	13	165.939		
Corrected Total	5347.611	17			

a. R Squared = .597 (Adjusted R Squared = .472)

Rejecting the null hypothesis for the interaction between school configuration and race indicate a significant difference exists in Grade 7 FSA Algebra 1 EOC Examination scale scores due to the interaction between school configuration and race. Rejecting the null hypothesis for race indicates that a significant difference exists in Grade 7 FSA Algebra 1 EOC Examination scale scores due to race alone. Accepting the null hypothesis for school configuration indicates that no significant difference exists in Grade 7 FSA Algebra 1 EOC Examination scale scores due to school configuration alone. The means and standard deviations for FSA Algebra 1 EOC Examination scale scores for students in Grade 7 are separated by race and school configuration in Table 72. The White student (n = 1, M = 557.00) attending a K-8 elementary school had a higher FSA Algebra 1 EOC Examination scale score than the White students (n = 8, M = 536.38) attending the 6-8 middle schools. The Hispanic students (n = 2, M = 498.00) attending the K-8 elementary schools had a lower mean FSA Algebra 1 EOC Examination scale score than the

Hispanic students (n = 6, M = 526.33) attending the 6-8 middle schools. Regardless of school configuration, White students (n = 9, M = 538.67) had higher mean FSA Algebra 1 EOC Examination scale scores than Hispanic students (n = 8, M = 519.25).

As can be seen in Figure 8, the differences in mean Grade 7 FSA Algebra 1 EOC Examination scale scores based on school configuration was larger for students classified as Hispanic than for students classified as White. However, the extremely small sample size limits the conclusions that can be drawn from the Grade 7 FSA Algebra 1 EOC mean scale scores.

Table 72

Grade *7 FSA Algebra 1 EOC Examination, 2015-2016, Means and Standard Deviations by Race and School Configuration*

Dependent Variable: FSA Mathematics Scale Score 15-16

School Configuration	Race	Mean	Std. Deviation	N
K-8 Elementary School	Black	NA	NA	0
	Hispanic	498.00	9.899	2
	White	557.00		1
	Other	NA	NA	0
	Total	517.67	34.775	3
6-8 Middle School	Black	533.00		1
	Hispanic	526.33	12.372	6
	White	536.38	13.596	8
	Other	NA	NA	0
	Total	532.13	13.109	15
Total	Black	533.00		1
	Hispanic	519.25	17.186	8
	White	538.67	14.457	9
	Other	NA	NA	0
	Total	529.72	17.736	18

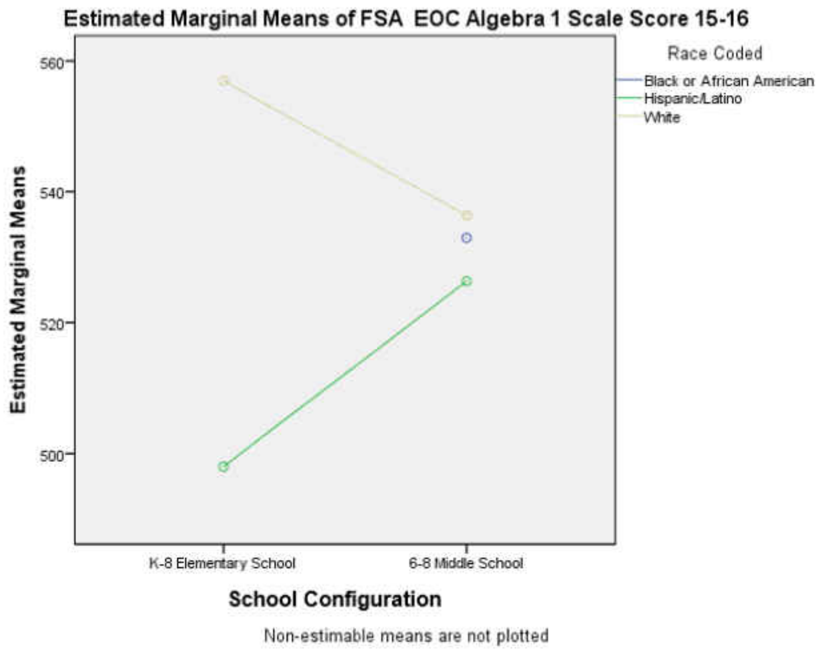


Figure 8. Grade *8*. Grade 7, FSA Algebra 1 EOC Examination, School Configuration and Race

Grade 8, FSA Algebra 1 EOC Examination

Of the 1,349 eighth-grade students attending the six selected schools, 121 students had reported FSA Algebra 1 EOC Examination scale scores with 10 (8.3%) of the 121 students attending K-8 elementary schools and 111 (91.7%) of the 121 students attending 6-8 middle schools. The 121 Grade 8 students with reported 2016 FSA Algebra 1 EOC Examination scale scores comprised the sample of Grade 8 students in the large central Florida district attending one of the schools selected for the study. The distribution of eighth-grade students with reported FSA Algebra 1 EOC Examination scale scores by school configuration is shown in Table 73.

Table 73

Grade 8 Students With Reported FSA Algebra 1 EOC Examination Scale Scores by School Configuration

School Configuration	Frequency	Percentage
K-8 Elementary School	10	8.26
6-8 Middle School	111	91.74
Total	121	100.00

Gender

The first two-way ANOVA of FSA Algebra 1 EOC Examination scale scores utilized gender as a moderator variable. The distribution of students by gender and school configuration is shown in Table 74. In the K-8 elementary schools, six (60.00%) of the students were female and four (40.00%) of the students were male. In the 6-8 middle schools, 63 (56.76%) of the students were female and 48 (43.24%) of the students were male. For the overall sample, 69 (57.02%) of the students were female and 52 (42.98%) of the students were male.

Table 74

Grade 8 Students With Reported FSA Algebra 1 EOC Examination Scale Scores by Gender and School Configuration

	Female		Male		Total	
School Configuration	N	%	N	%	N	%
K-8 Elementary School	6	60.00	4	40.00	10	100
6-8 Middle School	63	56.76	48	43.24	111	100
Total	69	57.02	52	42.98	121	100

Table 75 displays two-way ANOVA results for FSA Algebra 1 EOC Examination scale scores and school configuration with gender as a moderator variable for students in Grade 8. At an alpha level of .05, the two-way ANOVA results did not indicate that a statistically significant difference exists in FSA Algebra 1 EOC Examination scale due to the interaction between school configuration and gender, $F(1, 117) = .322$, $p = .572$. ANOVA results also indicated that no statistically significant difference existed in FSA Algebra 1 EOC Examination scale scores based on gender, $F(1, 117) = .556$, $p = .457$. The null hypotheses for the interaction between school configuration and gender and gender alone were accepted. Two-way ANOVA results did indicate that a statistically significant difference exists in FSA Algebra 1 EOC Examination scale scores based on school configuration, $F(1, 117) = 9.953$, $p = .002$. The null hypothesis for gender was rejected. Results of skew and kurtosis tests indicated that the independent variable (school configuration) violated the assumption of normality of distribution (skew = -3.053, kurtosis = 7.447). Based on the box-and-whisker plots, the researcher removed one outlier (ID 2816) and re-ran the two-way ANOVA with gender as the moderator variable. Removing the outlier did not change the result of the two-way ANOVA with gender as a moderator variable.

Table 75

Two-*way ANOVA Results for FSA Algebra 1 EOC Examination Scale Scores and School Configuration With Gender as Moderator Variable, Grade 8*

Tests of Between-Subjects Effects

Dependent Variable: FSA Algebra 1 EOC Score 15-16

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	2555.434	1	255.434	9.953	.002
Gender	142.779	1	142.779	.556	.457
School Configuration * Gender	82.641	1	82.641	.322	.572
Error	30039.937	117	256.752		
Corrected Total	33047.289	120			

a. R Squared = .091 (Adjusted R Squared = .068)

Accepting the null hypotheses indicate no significant difference exists in FSA Algebra 1 EOC Examination scale scores due to the interaction between school configuration and gender or gender alone. Rejecting the null hypothesis for school configuration indicates a significant difference does exist in FSA Algebra 1 EOC Examination scores due to school configuration. The means and standard deviations for FSA Algebra 1 EOC Examination scale scores for students in Grade 8 are separated by school configuration as shown in Table 76. Eighth-grade students attending K-8 elementary schools had higher mean FSA Algebra 1 EOC Examination scale scores (n = 10, M = 533.50) than eighth-grade students attending 6-8 middle schools (n = 111, M = 515.84).

Table 76

Grade 8 FSA Algebra 1 EOC Examination, 2015-2016, Means and Standard Deviations by Gender and School Configuration

School Configuration	Mean	Std. Deviation	N
K-8 Elementary School	533.50	21.593	10
6-8 Middle School	515.84	15.371	111
Total	517.30	16.595	121

Race

The second two-way ANOVA of FSA Algebra 1 EOC Examination scale scores utilized race as a moderator variable. The distribution of students by race and school configuration is shown in Table 77. In the K-8 elementary school configuration, none of the eighth-grade students were Black, four (40.00%) of the eighth-grade students were Hispanic, six (60.00%) of the eighth-grade students were White, and none of the students were classified as Other. In the 6-8 middle school configuration, 14 (12.61%) of the eighth-grade students were Black, 58 (47.93%) of the eighth-grade students were Hispanic, 39 (32.23%) of the eighth-grade students were White, and 10 (8.26%) of the eighth-grade students were classified as Other. Considering the eighth-grade sample as a whole, 14 (11.57%) of the students were Black, 58 (47.93%) of the students were Hispanic, 39 (32.23%) of the students were White, and 10 (8.26%) of the students were classified as Other.

Table 77

Grade 8 Students With Reported FSA Algebra 1 EOC Examination Scale Scores by Race and School Configuration

School Configuration	Black		Hispanic		White		Other		Total	
	N	%	N	%	N	%	N	%	N	%
K-8 Elementary School	0	0.00	4	40.00	6	60.00	0	0.00	10	100.00
6-8 Middle School	14	12.61	54	48.65	33	29.73	10	9.01	111	100.00
Total	14	11.57	58	47.93	39	32.23	10	8.26	121	100.00

Table 78 displays two-way ANOVA results for FSA Algebra 1 EOC Examination scale scores and school configuration with race as a moderator variable for students in Grade 8. At the alpha level of .05, the two-way ANOVA results indicated that the interaction between race and school configuration produced a statistically significant difference in FSA Algebra 1 EOC Examination scale scores between group, $F(1, 115) = 10.493$, $p = .002$. School configuration, when considered separately from race, also produced a statistically significant difference in FSA Algebra 1 EOC Examination scale scores between student groups, $F(1, 115) = .8.204$, $p = .005$. When race was considered separately, the two-way ANOVA indicated a statistically significant difference in FSA Algebra 1 EOC Examination scale scores between student groups, $F(1, 115) = 5.650$, $p = .001$. The null hypotheses were rejected for the interaction between school configuration and race and school configuration and race considered separately. Based on the box-and-whisker plots, the researcher removed one outlier (ID 2816) and re-ran the two-way ANOVA with race as the moderator variable. Removing the outlier did not change the result of the two-way ANOVA with gender as a moderator variable.

Table 78

Two-way ANOVA Results for FSA Algebra 1 EOC Examination Scale Scores and School Configuration With Race as Moderator Variable, Grade 8

Tests of Between-Subjects Effects

Dependent Variable: FSA Mathematics Scale Score 15-16

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	1875.843	1	1875.843	8.204	.005
Race	3875.807	3	1291.936	5.650	.001
School Configuration * Race	2399.413	1	2399.413	10.493	.002
Error	26296.241	115	228.663		
Corrected Total	33047.289	120			

a. R Squared = .204 (Adjusted R Squared = .171)

Rejecting the null hypotheses means that a significant difference does exist in FSA Algebra 1 EOC Examination scale scores due to the interaction between school configuration and race and school configuration and race considered independently. The means and standard deviations for FSA Mathematics scale scores for students in Grade 8 are separated by race and school configuration in Table 79. When considering school configuration and race together, White students (n = 6, M = 548.00) attending K-8 elementary schools had higher mean FSA Algebra 1 EOC Examination scale scores than White students (n = 33, M = 516.52) attending 6-8 middle schools. Hispanic students (n = 4, M = 511.75) attending K-8 elementary schools had lower mean FSA Algebra 1 EOC Examination scale scores than Hispanic students (n = 54, M = 513.69) attending 6-8 middle schools. When considering school configuration only, students attending K-8 elementary schools (n = 10, M = 533.10) had higher FSA Algebra 1 EOC Examination scale scores than students attending 6-8 middle schools (n = 111, M = 515.84). In both school configurations, White students had higher mean FSA Algebra 1 EOC Examination scale scores than Hispanic students. In the 6-8 middle school configuration, White students had lower mean FSA Algebra 1 EOC Examination scale scores than Black or Other students.

As can be seen in Figure 9, the differences in mean FSA Algebra 1 EOC Examination scale scores based on school configuration was larger for students classified as White than for students classified as Hispanic. However, the small sample size limited the conclusions that can be drawn from the Grade 8 FSA Algebra 1 EOC mean scale scores.

Table 79

Grade 8 FSA Algebra 1 EOC, 2015-2016, Means and Standard Deviations by Race and School Configuration

School Configuration	Race	Mean	Std. Deviation	N
K-8 Elementary School	Black	NA	NA	0
	Hispanic	511.75	14.454	4
	White	548.00	9.121	6
	Other	NA	NA	0
	Total	533.50	21.593	10
6-8 Middle School	Black	518.00	18.140	14
	Hispanic	513.69	16.461	54
	White	516.52	11.563	33
	Other	522.20	16.109	10
	Total	515.84	15.371	111
Total	Black	518.00	18.140	14
	Hispanic	513.55	16.223	58
	White	521.36	15.999	39
	Other	522.20	16.109	10
	Total	517.30	16.595	121

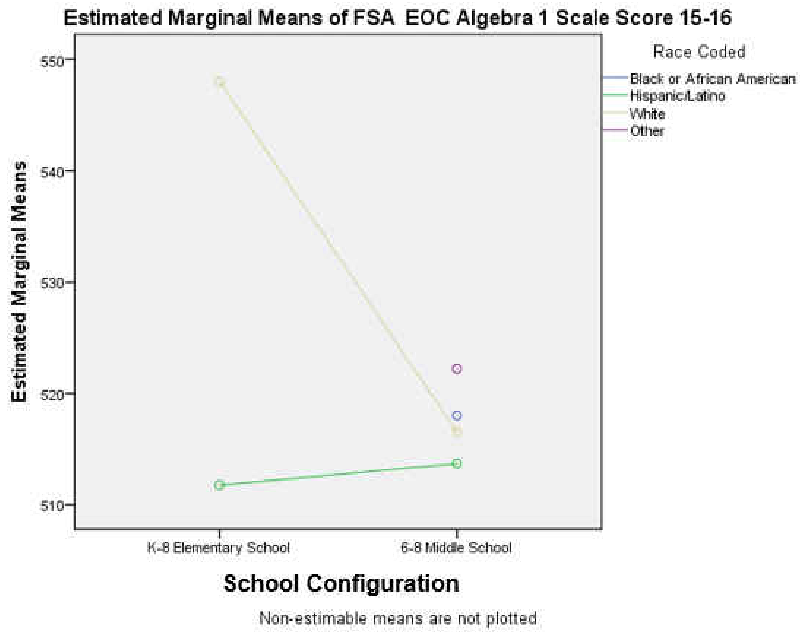


Figure 9. Grade 8, FSA Algebra 1 EOC Examination, School Configuration and Race

<u>Research Question 2</u>

To what extent, if any, is there a difference in growth, from fifth grade to sixth grade and seventh grade to eighth grade, disaggregated by gender and race, as evidenced by Florida Standard Assessments in English and Language Arts and/or Mathematics scale scores and Florida Comprehensive Assessment Tests 2.0 in Reading and/or Mathematics developmental scale scores, for eighth-grade students based on school configuration (K-8 elementary school versus 6-8 middle school)?

$H_{2\text{-}0}$ - There is no statistical difference in growth, from fifth grade to sixth grade and seventh grade to eighth grade, as evidenced by Florida Standard Assessments in English and Language Arts and/or mathematics scale scores and Florida Comprehensive. Assessment Tests 2.0 in

Reading and/or Mathematics developmental scale scores, for school year 2015-2016 eighth-grade students based on school configuration.

Variables:

Independent: school configuration (K-8 elementary school versus 6-8 middle school)

Dependent: FSA ELA growth, FSA Mathematics growth, Florida Comprehensive Assessment Test 2.0 Reading growth, Florida Comprehensive Assessment Test 2.0 Mathematics growth

Moderator: gender, race (Black, Hispanic, White, Other)

Statistical Tool--Two-way Analysis of Variance (ANOVA)

The large central Florida school district selected for the study provided data regarding 2015-2016 FSA scale scores for ELA and Mathematics, 2014-2015 FSA scale scores for ELA and Mathematics, 2013-2014 FCAT 2.0 Reading and Mathematics DSS, and 2012-2013 FCAT 2.0 Reading and Mathematics DSS for eighth graders attending the six selected K-8 elementary and 6-8 middle schools. Student grade level, gender, and race/ethnicity information was also provided by the large central Florida school district.

Two-way ANOVAs were conducted to determine if a statistically significant difference existed in growth as measured by subtracting 2015-2016 and 2014-2015 FSA ELA scale scores and subtracting 2015-2016 and 2014-2015 FSA Mathematics scale scores. Additional two-way ANOVAs were conducted to determine if a statistically significant difference existed in growth as measured by subtracting 2013-2014 and 2012-2013 FCAT 2.0 Reading DSS and subtracting 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS for eighth-grade students attending schools configured as K-8 elementary schools and 6-8 middle schools. School configuration served as the independent variable; growth as measured by subtracting consecutive years of standardized testing scores served as the dependent variables; and gender and race were considered separately as moderator variables. For Research Question 2, all two-way ANOVA tests were conducted with an alpha level of .05.

As seen in Appendix D, the distribution of FSA ELA growth, FSA Mathematics growth, and FCAT 2.0 Reading growth, as well as gender, and race were sufficiently normally distributed for the purpose of conducting a two-way ANOVA (i.e., skew +/-2.0 and kurtosis +/-3.0) (Lomax & Hans-Vaughn, 2012). The only exceptions to the normal distribution were in the FCAT 2.0 Reading growth (skew = -1.005, kurtosis = 9.177) and FCAT 2.0 Mathematics growth (skew = 3.075, kurtosis = 49.851). Two two-way ANOVAs, one with gender as the moderator variable and one with race as the moderator variable, were conducted, both including and excluding identified outliers to determine the effect of the outliers on determinations of statistical significance. The assumption of homogeneity of error variance (Levene's test) was met for (a) FSA ELA growth, race as moderator variable (p = .521), (b) FSA Mathematics growth, gender as moderator variable (p = .138), and (c) FCAT 2.0 Mathematics growth, race as moderator variable (p = .635). Review of Levene's test for equality of error of variance was violated for (a) FSA ELA growth, gender as moderator variable (p = .038), (b) FSA Mathematics growth, race as moderator variable (p = .013), and (c) FCAT 2.0 Mathematics growth, gender as moderator variable (p = .034) indicating that the variances were not equal and caution is warranted in interpreting the two-way ANOVA results for these cases (Appendix D).

Growth as Measured by 2015-2016 and 2014-2015 FSA ELA

Of 1,349 eighth-grade students attending the six selected schools, 1,009 (74.80%) had reported 2015-2016 and 2014-2015 FSA ELA scale scores, allowing calculation of an FSA ELA growth score. Table 80 displays the distribution of students with 2015-2016 and 2014-2015 FSA ELA scale scores by school configuration. The K-8 elementary school configuration served 225 (22.30%) of the 1,009 students, and the 6-8 middle school configuration served 784 (77.70%) of the 1,009 students.

Table 80

Students With Reported 2015-2016 and 2014-2015 FSA ELA Scale Scores by School Configuration

School Configuration	Frequency	Percentage
K-8 Elementary School	225	22.30
6-8 Middle School	784	77.70
Total	1009	100.0

Gender

Table 81 shows the distribution of eighth-grade students with 2015-2016 and 2014-2015 FSA ELA scale scores by gender and school configuration. In the K-8 elementary school configuration, 111 (49.33%) of the students were female and 114 (50.67%) of the students were male. In the 6-8 middle school configuration, 354 (45.15%) of the students were female and 430 (54.85%) of the students were male. The sample of students with 2015-2016 and 2014-2015 FSA ELA scale scores consisted of 465 (46.09%) female students and 544 (53.91%) male students.

Table 81

Students With Reported 2015-2016 and 2014-2015 FSA ELA Scale Scores by Gender and School Configuration

	Female		Male		Total	
School Configuration	N	%	N	%	N	%
K-8 Elementary School	111	49.33	114	50.67	225	100
6-8 Middle School	354	45.15	430	54.85	784	100
Total	465	46.09	544	53.91	1009	100

The results of a two-way ANOVA with school configuration as the independent variable, FSA ELA growth score as the dependent variable, and gender as a moderator variable are shown in Table 82. At the alpha level of 0.05, the results of the two-way ANOVA indicated that interaction between school configuration and gender produced no statistically significant difference in FSA ELA growth, $F(1,1005) = .086$, $p = .769$. School configuration, $F(1,1005) = 3.187$, $p = .075$, and gender, $F(1,1005) = .417$, $p = .519$, when considered independently, also produced no statistically significant difference in FSA ELA growth between student groups at an alpha level of 0.05. The null hypotheses were accepted for the interaction between school configuration and gender and school configuration and gender separately. Therefore, no significant difference exists in FSA ELA growth due to the interaction between school configuration and gender or school configuration and gender considered independently.

Table 82

Two-way ANOVA Results for FSA ELA Growth and School Configuration With Gender as Moderator Variable

Tests of Between-Subjects Effects

Dependent Variable: FSA ELA Growth

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	453.634	1	453.634	3.187	.075
Gender	59.291	1	59.291	.417	.519
School Configuration * Gender	12.295	1	12.295	.086	.769
Error	143029.705	1005	142.318		
Corrected Total	143538.955	1008			

a. R Squared = .004 (Adjusted R Squared = .001)

<u>Race</u>

Table 83 shows the distribution of eighth grade students with 2015-2016 and 2014-2015 FSA ELA scale scores by race and school configuration. Students with 2015-2016 and 2014-2015 FSA ELA scale scores attending K-8 elementary schools consisted of 21 (9.33%) Black, 136 (60.44%) Hispanic, 57 (25.33%) White, and 11 (4.89%) Other students. Students with 2015-2016 and 2014-2015 FSA ELA scale scores attending 6-8 middle schools consisted of 83 (10.59%) Black, 445 (56.76%) Hispanic. 220 (28.06%) White, and 36 (4.59%) Other students. Overall, students with 2015-2016 and 2014-2015 FSA ELA growth scores consisted of 104 (10.31%) Black, 581 (57.87%) Hispanic, 227 (22.50%) White, and 47 (4.66%) Other.

Table 83

Students With Reported 2015-2016 and 2014-2015 FSA ELA Scale Scores by Race and School Configuration

School Configuration	Black		Hispanic		White		Other		Total	
	N	%	N	%	N	%	N	%	N	%
K-8 Elementary School	21	9.33	136	60.44	57	25.33	11	4.89	225	100.00
6-8 Middle School	83	10.59	445	56.76	220	28.06	36	4.59	784	100.00
Total	104	10.31	581	57.58	227	22.50	47	4.66	1009	100.00

The results of a two-way ANOVA with school configuration as the independent variable, FSA ELA growth as the dependent variable, and race as a moderator variable are shown in Table 84. The interaction between school configuration and race produced no statistically significant differences in FSA ELA growth scores, $F(1,1001) = .871$, $p = .456$. Considered separately, school configuration, $F(1,1001) = 2.008$, $p = .149$, and race, $F(1,1001) = .681$, $p = .563$, produced no statistically significant differences in FSA ELA growth scores at an alpha level of .05. The null hypotheses were accepted for the interaction between school configuration and race and school configuration and race separately. Therefore, no significant differences exist in FSA ELA growth due to the interaction between school configuration and race or school configuration and race considered independently.

Table 84

Two-way ANOVA Results for FSA ELA Growth and School Configuration With Race as Moderator Variable

Tests of Between-Subjects Effects

Dependent Variable: FSA ELA Growth

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	296.959	1	296.959	2.088	.149
Race	290.698	3	96.899	.681	.563
School Configuration * Race	371.584	3	123.861	.871	.456
Error	142334.193	1001	142.192		
Corrected Total	143538.955	1008			

a. R Squared = .008 (Adjusted R Squared = .001)

Growth as Measured by 2015-2016 and 2014-2015 FSA Mathematics

Of 1,349 eighth-grade students attending the six selected schools, 1,015 (75.24%) had reported 2015-2016 and 2014-2015 FSA Mathematics scale scores. Table 85 displays the distribution of students with 2015-2016 and 2014-2015 FSA Mathematics by school configuration. A total of 228 (22.46%) of the students with reported 2015-2016 and 2014-2015 FSA Mathematics scale scores attended K-8 elementary schools and 787 (77.54%) of the students with reported 2015-2016 and 2014-2015 FSA Mathematics scale scores attended 6-8 middle schools.

Table 85

Students With Reported 2015-2016 and 2014-2015 FSA Mathematics Scale Scores by School Configuration

School Configuration	Frequency	Percentage
K-8 Elementary School	228	22.46
6-8 Middle School	787	77.54
Total	1015	100.00

<u>Gender</u>

Table 86 shows the distribution of eighth-grade students with 2015-2016 and 2014-2015 FSA Mathematics scale scores by gender and school configuration. In the K-8 elementary school configuration, 112 (49.12%) of the students were female and 116 (50.88%) of the students were male. In the 6-8 middle school configuration, 357 (45.36%) of the students were female and 430 (54.64%) of the students were male. The sample of students with 2015-2016 and 2014-2015 FSA ELA scale scores consisted of 469 (46.21%) female students and 546 (53.79%) male students.

Table 86

Students With Reported 2015-2016 and 2014-2015 FSA Mathematics Scale Scores by Gender and School Configuration

	Female		Male		Total	
School Configuration	N	%	N	%	N	%
K-8 Elementary School	112	49.12	116	50.88	228	100
6-8 Middle School	357	45.36	430	54.64	787	100
Total	469	46.21	546	53.79	1015	100

The results of a two-way ANOVA with school configuration as the independent variable, FSA Mathematics growth as the dependent variable, and gender as a moderator variable are shown in Table 87. The results of the two-way ANOVA indicated that interaction between school configuration and gender produced no statistically significant difference in FSA Mathematics growth, $F(1,1011) = .075$, $p = .784$. School configuration, when considered independently of gender, also produced no statistically significant difference in FSA Mathematics growth between student groups, $F(1,1011) = .002$, $p = .961$. The null hypotheses for the interaction between school configuration and gender and school configuration alone were accepted. Gender, when considered independently of school configuration, produced a statistically significant difference in FSA Mathematics growth between student groups, $F(1,1011) = 7.872$, $p = .005$. The null hypothesis for gender was rejected.

Table 87

Two-way ANOVA Results for FSA Mathematics Growth and School Configuration With Gender as Moderator Variable

Tests of Between-Subjects Effects

Dependent Variable: FSA Mathematics Growth

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	.397	1	.397	.002	.961
Gender	1303.257	1	1303.257	7.872	.005
School Configuration * Gender	12.412	1	12.412	.075	.784
Error	167380.357	1011	165.559		
Corrected Total	169064.315	1014			

a. R Squared = .010 (Adjusted R Squared = .007)

Accepting the null hypotheses indicate that no significant difference exists in FSA Mathematics growth due to the interaction between school configuration and gender or school configuration alone. However, a significant difference exists in FSA Mathematics growth due to gender and the null hypothesis was rejected for gender considered independently. The means and standard deviations for FSA Mathematics growth for students in Grade 8 are separated by gender, as shown in Table 88. Female students (n = 467, M = 14.03) had higher mean FSA Mathematics growth than male students (n = 546, M = 11.46).

Table 88

FSA Mathematics Growth, Means and Standard Deviations by Gender

Variable	Subgroup	Mean	Std. Deviation	N
Gender	Female	14.03	12.985	469
	Male	11.46	12.741	546
Total		12.65	12.912	1015

Race

Table 89 shows the distribution of eighth grade students with 2015-2016 and 2014-2015 FSA Mathematics scale scores by race and school configuration. Of the 228 students served by the K-8 elementary schools, 20 (8.77%) were Black, 139 (60.96%) were Hispanic, 57 (25.00%) were White, and 12 (5.26%) were Other. Of the 787 students served by the 6-8 middle schools, 84 (10.67%) were Black, 447 (56.80%) were Hispanic, 221 (28.08%) were White, and 35 (4.45%) were Other. The sample of 1,015 students consisted of 104 (10.25%) Black, 586 (57.73%) Hispanic, 278 (27.39%) White, and 47 (4.63%) Other students.

Table 89

Students With Reported 2015-2016 and 2014-2015 FSA Mathematics Scale Scores by Race and School Configuration

School Configuration	Black		Hispanic		White		Other		Total	
	N	%	N	%	N	%	N	%	N	%
K-8 Elementary School	20	8.77	139	60.96	57	25.00	12	5.26	228	100.00
6-8 Middle School	84	10.67	447	56.80	221	28.08	35	4.45	787	100.00
Total	104	10.25	586	57.73	278	27.39	47	4.63	1015	100.00

The results of a two-way ANOVA with school configuration as the independent variable, FSA Mathematics growth as the dependent variable, and race as a moderator variable are shown in Table 90. The two-way ANOVA results indicated that the interaction between school configuration and race produced no statistically significant differences in FSA Mathematics growth, $F(1,1007) = 1.702$, $p = .165$. Additionally, both school configuration, $F(1,1007) = 2.080$, $p = .150$, and race, $F(1,1007) = .651$, $p = .582$, each considered independently, produced no statistically significant differences in FSA Mathematics growth between student groups. The null hypotheses were accepted for the interaction between school configuration and race and school configuration and race separately. Therefore, no significant difference exist in FSA Mathematics growth due to the interaction between school configuration and race or school configuration and race considered independently.

Table 90

Two-way ANOVA Results for FSA Mathematics Growth and School Configuration with Race as Moderator Variable

Tests of Between-Subjects Effects					
Dependent Variable: FSA Mathematics Growth					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	346.653	1	346.653	2.080	.150
Race	325.626	3	108.542	.651	.582
School Configuration * Race	850.963	3	283.654	1.702	.165
Error	167862.166	1007	166.695		
Corrected Total	169064.315	1014			

a. R Squared = .007 (Adjusted R Squared = .000)

Growth: 2013-2014 and 2013-2012 Florida Comprehensive Assessment Test 2.0 Reading

Of the 1,349 eighth-grade students attending the six selected schools, 781 (57.89%) had reported 2013-2014 and 2012-2013 FCAT 2.0 Reading DSS, allowing calculation of an FCAT 2.0 Reading growth score. Table 91 displays the distribution of students with 2013-2014 and 2012-2013 FCAT 2.0 Reading DSS by school configuration. The K-8 elementary school configuration served 169 (21.64%) of the 781 students, and the 6-8 middle school served 612 (85.24%) of the 781 students.

Table 91

Students With Reported 2013-2014 and 2012-2013 FCAT 2.0 Reading DSS by School Configuration

School Configuration	Frequency	Percentage
K-8 Elementary School	169	21.64
6-8 Middle School	612	85.24
Total	781	100.00

Gender

Table 92 shows the distribution of eighth-grade students with 2013-2014 and 2012-2013 FCAT 2.0 Reading FSA DSS by gender and school configuration. In the K-8 elementary school configuration, 80 (47.34%) of the students were female, and 89 (52.66%) of the students were male. In the 6-8 middle school configuration, 283 (46.24%) of the students were female, and 329 (53.76%) of the students were male. The sample of students with 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS scores consisted of 363 (46.48%) female students and 418 (53.52%) male students.

Table 92

Students With Reported 2013-2014 and 2012-2013 FCAT 2.0 Reading DSS by Gender and School Configuration

	Female		Male		Total	
School Configuration	N	%	N	%	N	%
K-8 Elementary School	80	47.34	89	52.66	169	100.00
6-8 Middle School	283	46.24	329	53.76	612	100.00
Total	363	46.48	418	53.52	781	100.00

The results of a two-way ANOVA with school configuration as the independent variable, FCAT 2.0 Reading growth as the dependent variable, and gender as a moderator variable are shown in Table 93. An alpha level of .05, the results of the two-way ANOVA indicated that the interaction between gender and school configuration produced no statistically significant difference in FCAT 2.0 Reading growth, $F(1,777) = 2.444$, $p = .118$. The null hypothesis for the interaction between school configuration and gender was accepted. Gender, considered independently, also produced no statistically significant difference in FCAT 2.0 Reading growth between groups, F(1,777) = 2.245, p = .134. The null hypothesis for gender was also accepted. School configuration, when considered independently, produced a statistically significant difference in mean FCAT 2.0 Reading growth, F(1,777) = 4.111, p = .043, at an alpha of .05. The null hypothesis for school configuration was rejected. Based on the box-and-whisker plots, the researcher removed seven outliers (see Appendix D for outlier information) and re-ran the two-way ANOVA with gender as the moderator variable. Removing the outliers did not change the result of the statistical significance of the two-way ANOVA.

Table 93

Two-way ANOVA Results for FCAT 2.0 Reading Growth and School Configuration With Gender as Moderator Variable

Tests of Between-Subjects Effects

Dependent Variable: FCAT 2.0 Reading Growth

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	618.896	1	618.896	4.111	.043
Gender	337.962	1	337.926	2.245	.134
School Configuration * Gender	367.923	1	367.923	2.444	.118
Error	116973.246	777	150.545		
Corrected Total	118097.995	780			

a. R Squared = .010 (Adjusted R Squared = .006)

Accepting the null hypotheses indicate no significant difference exist in FCAT 2.0 Reading growth due to the interaction between school configuration and gender or gender alone. A significant difference exists in FCAT 2.0 Reading growth due gender and the null hypothesis for gender was rejected. As shown in Table 94, the means and standard deviations for FCAT 2.0 Reading growth for students in Grade 8 are separated by school configuration. Students who attended K-8 elementary schools (n = 169, M = 9.50) had higher FCAT 2.0 Reading growth scores than students who attended 6-8 middle schools (n = 612, M = 7.24).

Table 94

FCAT 2.0 Reading Growth, Means and Standard Deviations by School Configuration

	Subgroup	Mean	Std. Deviation	N
School Configuration	K-8 Elementary School	9.50	11.539	169
	6-8 Middle School	7.24	12.473	612
Total		7.73	12.305	781

<u>Race</u>

Table 95 shows the distribution of eighth-grade students with 2013-2014 and 2012-2013 FCAT 2.0 Reading FSA DSS by race and school configuration. Students with 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS attending K-8 elementary schools consisted of five (3.03%) Black, 107 (64.85%) Hispanic, 46 (27.88%) White, and seven (4.24%) Other students. Students with 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS attending 6-8 middle schools consisted of 62 (10.51%) Black, 331 (56.10%) Hispanic, 172 (29.15%) White, and 25 (4.24%) Other students. Overall, students with 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS consisted of 67 (15.30%) Black, 438 (58.01%) Hispanic, 218 (28.87%) White, and 32 (4.24%) Other.

Table 95

Students With Reported 2013-2014 and 2012-2013 FCAT 2.0 Reading DSS by Race and School Configuration

	Black		Hispanic		White		Other		Total	
School Configuration	N	%	N	%	N	%	N	%	N	%
K-8 Elementary School	5	3.03	107	64.85	46	27.88	7	4.24	165	100.00
6-8 Middle School	62	10.51	331	56.10	172	29.15	25	4.24	590	100.00
Total	67	15.30	438	58.01	218	28.87	32	4.24	755	100.00

The results of a two-way ANOVA with school configuration as the independent variable, FCAT 2.0 Reading growth as the dependent variable, and race as a moderator variable are shown in Table 96. The interaction between school configuration and race produced no statistically significant differences in FCAT 2.0 Mathematics growth scores, $F(1,747) = 1.562$, $p = .197$. Considered separately, school configuration, $F(1,747) = .281$, $p = .596$, and race, $F(1,747) = .414$, $p = .835$, produced no statistically significant differences in FCAT 2.0 Mathematics growth scores at an alpha level of .05. The null hypotheses were accepted for the interaction between school configuration and race and school configuration and race separately. Therefore, no significant difference existed in FCAT 2.0 Reading growth due to the interaction between school configuration and race or school configuration and race considered independently. Based on the box-and-whisker plots, the researcher removed seven outliers (see Appendix D for outlier information) and re-ran the two-way ANOVA with race as the moderator variable. Removing the outliers did not change the result of the statistical significance of the two-way ANOVA.

Table 96

Two-way ANOVA Results for FCAT 2.0 Reading Growth and School Configuration With Race as Moderator Variable

Tests of Between-Subjects Effects

Dependent Variable: FCAT 2.0 Reading Growth

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	41.568	1	41.568	.281	.596
Race	127.268	3	42.423	.286	.835
School Configuration * Race	693.846	3	231.282	1.562	.197
Error	110637.013	747	148.108		
Corrected Total	113181.8860	754			

a. R Squared = .022 (Adjusted R Squared = .013)

Growth: 2013-2014 and 2012-2013 Florida Comprehensive Assessment Test 2.0 Mathematics

Of the 1,349 eighth-grade students attending the six selected schools, 706 (52.34%) had reported 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS scores, allowing calculation of an FCAT 2.0 Mathematics growth score. Table 97 displays the distribution of students with 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS scores by school configuration. The K-8 elementary school configuration served 140 (19.83%) of the 706 students, and the 6-8 middle school configuration served 566 (80.17%) of the 706 students.

Table 97

Students With Reported 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS by School Configuration

School Configuration	Frequency	Percentage
K-8 Elementary School	140	19.83
6-8 Middle School	566	80.17
Total	706	100.0

Gender

Table 98 shows the distribution of eighth-grade students with 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS by gender and school configuration. In the K-8 elementary school configuration, 65 (46.43%) of the students were female and 75 (53.57%) of the students were male. In the 6-8 middle school configuration, 257 (45.41%) of the students were female, and 309 (54.59%) of the students were male. The sample of students with 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS scores consisted of 322 (45.61%) female students and 384 (54.39%) male students.

Table 98

Students With Reported 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS by Gender and School Configuration

	Female		Male		Total	
School Configuration	N	%	N	%	N	%
K-8 Elementary School	65	46.43	75	53.57	140	100
6-8 Middle School	257	45.41	309	54.59	566	100
Total	322	45.61	384	54.39	706	100

The results of a two-way ANOVA with school configuration as the independent variable, FCAT Mathematics 2.0 growth as the dependent variable, and gender as a moderator variable are shown in Table 99. At the alpha level of 0.05, the results of the two-way ANOVA indicated that interaction between school configuration and gender produced no statistically significant difference in FCAT 2.0 Mathematics growth, $F(1,702) = .052$, $p = .819$. School configuration, $F(1,702) = .323$, $p = .570$, and gender, $F(1,702) = .001$, $p = .975$, when considered independently, also produced no statistically significant difference in FCAT 2.0 Mathematics growth between student groups at an alpha level of 0.05. The null hypotheses were accepted for the interaction between school configuration and gender and school configuration and gender separately. Therefore, no significant difference exists in FCAT 2.0 Reading growth due to the interaction between school configuration and gender or school configuration and gender considered independently. Results of skew and kurtosis tests indicated that the dependent variable (FCAT 2.0 Mathematics growth) violated the assumption of normality of distribution (skew = 3.075, kurtosis = 49.851). Based on the box-and-whisker plots, the researcher removed 15 outliers (see Appendix D for outlier information) and re-ran the two-way ANOVA with gender as the moderator variable. Removing the outlier did not change the result of the statistical significance of the two-way ANOVA.

Table 99

Two-way ANOVA Results for FCAT 2.0 Mathematics Growth and School Configuration With Gender as Moderator Variable

Tests of Between-Subjects Effects

Dependent Variable: FCAT 2.0 Mathematics Growth

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	134.372	1	134.372	.323	.570
Gender	.405	1	.405	.001	.975
School Configuration * Gender	21.833	1	21.833	.052	.819
Error	292131.058	702	416.141		
Corrected Total	292286.884	705			

a. R Squared = .001 (Adjusted R Squared = -.004)

Race

Table 100 shows the distribution of eighth-grade students with 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS by race and school configuration. Students with 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS attending K-8 elementary schools consisted of 17 (12.14%) Black, 77 (55.00%) Hispanic, 38 (27.14%) White, and 8 (5.71%) Other students. Students with 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS attending 6-8 middle schools consisted of 55 (9.72%) Black, 298 (52.65%) Hispanic. 185 (32.69%) White, and 28 (4.95%) Other students. Overall, students with 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS consisted of 72 (10.20%) Black, 375 (53.12%) Hispanic, 223 (31.59%) White, and 36 (5.10%) Other.

Table 100

Students With Reported 2013-2014 and 2012-2013 FCAT 2.0 Mathematics DSS by Race and School Configuration

	Black		Hispanic		White		Other		Total	
School Configuration	N	%	N	%	N	%	N	%	N	%
K-8 Elementary School	17	12.14	77	55.00	38	27.14	8	5.71	140	100.00
6-8 Middle School	55	9.72	298	52.65	185	32.69	28	4.95	566	100.00
Total	72	10.20	375	53.12	223	31.59	36	5.10	706	100.00

The results of a two-way ANOVA with school configuration as the independent variable, FCAT 2.0 Mathematics growth as the dependent variable, and race as a moderator variable are shown in Table 101. The interaction between school configuration and race produced no statistically significant differences in FCAT 2.0 Mathematics growth scores, $F(1,698) = .356$, $p =$

.785). Considered separately, school configuration, F(1,698) = .569, p = .451, and race, F(1,698) = .414, p = .743, produced no statistically significant differences in FCAT 2.0 Mathematics growth scores at an alpha level of .05. The null hypotheses were accepted for the interaction between school configuration and race and school configuration and race separately. Therefore, no significant difference exist in FCAT 2.0 Mathematics growth due to the interaction between school configuration and race or school configuration and race considered independently. Based on the box-and-whisker plots, the researcher removed 15 outliers (see Appendix D for outlier information) and re-ran the two-way ANOVA with race as the moderator variable. Removing the outliers did not change the result of the statistical significance of the two-way ANOVA.

Table 101

Two-way ANOVA Results for FCAT 2.0 Mathematics Growth and School Configuration With Race as Moderator Variable

Tests of Between-Subjects Effects

Dependent Variable: FSA ELA Growth

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	237.489	1	237.489	.569	.451
Race	517.715	3	172.572	.414	.743
School Configuration * Race	445.298	3	148.433	.356	.785
Error	291248.546	698	417.262		
Corrected Total	292286.884	705			

a. R Squared =.004 (Adjusted R Squared = -.006)

Research Question 3

To what extent, if any, is there a difference in number of out-of-school suspensions, disaggregated by gender and race for sixth-, seventh-, and eighth-grade students based on school configuration?

$H_{3\text{-}0}$ - There is no statistical difference in the number of out-of-school suspensions between sixth-, seventh-, and eighth-grade students based on school configuration.

Variables:

Independent: school configuration (K-8 elementary school versus 6-8 middle school)

Dependent: number of out-of-school suspensions

Moderator: gender, race (Black, Hispanic, White, Other)

Statistical tool--Two-way Analysis of Variance (ANOVA)

The large central Florida school district selected for the study provided data regarding the number of out-of-school suspensions by students for all sixth-, seventh-, and eighth-grade students attending the six schools selected for the study. Student grade level, gender, and race/ethnicity information were also provided by the large central Florida school district. A two-way analysis of variance (ANOVA) was conducted to determine if a statistically significant difference existed in number of out-of-school suspensions for students in the same grade level attending schools configured as K-8 elementary schools and 6-8 middle schools. School configuration served as the independent variable; number of out-of-school suspensions served as the dependent variable; and gender and race were considered separately as moderator variables. For Research Question 3, all two-way ANOVA tests were conducted utilizing an alpha level of .05. As shown in Appendix E, the distribution of gender, race, and school configuration were sufficiently normally distributed for the purpose of conducting a two-way ANOVA (i.e., skew +/-2.0 and kurtosis +/-3.0) at all grade levels (Lomax & Hans-Vaughn, 2012). Violations to skew and kurtosis occurred as all three grade levels in the distribution of the number of out-of-school suspensions. Review of Levene's test for equality of error of variance was violated for a number of OSS at all grade levels and for both moderator variables, indicating that the variances were not equal. Caution is warranted in interpreting the two-way ANOVA results for these cases (Appendix E).

Grade 6, Out-of-School Suspensions

The six schools selected for the study reported a total of 1,768 students in Grade 6, and all students had reported data regarding number of out-of-school suspensions. The distribution of sixth-grade students by school configuration is shown in Table 14. A total of 509 (28.79%) of the sixth-grade study participants attended a K-8 elementary school during the 2015-2016 school year, and 1,259 (71.21%) of the sixth-grade study participants attended a 6-8 middle school during the 2015-2016 school year.

Gender

The first two-way ANOVA of number of out-of-school suspensions utilized gender as a moderator variable. The distribution of students by gender and school configuration is shown in Table 102. In the K-8 elementary schools, 241 (47.35%) of the students were female, and 268 (52.65%) of the students were male. In the 6-8 middle schools, 594 (47.17%) of the students were female, and 665 (52.82%) of the students were male. For the sample overall, 835 (47.23%) of the students were female, and 933 (52.77%) of the students were male.

Table 102

Grade 6 by Gender and School Configuration

	Female		Male		Total	
School Configuration	N	%	N	%	N	%
K-8 Elementary School	241	47.35	268	52.65	509	100
6-8 Middle School	594	47.18	665	52.82	1259	100
Total	835	47.23	933	52.77	1768	100

Table 103 displays two-way ANOVA results for number of out-of-school suspensions and school configuration with gender as a moderator variable for students in Grade 6. At an alpha level of .05, the interaction between gender and school configuration produced a statistically significant difference in number of out-of-school suspensions between student groups, F(1, 1768) = 5.670, p = .017. Both gender, F(1, 1768) = 28.861, p < .01, and school configuration, F(1, 1784) = 27.349, p < .01, considered separately, also indicated a statistically significant difference in number of out-of-school suspensions for students in Grade 6. The null hypotheses for the interaction between school configuration and gender and school configuration and gender separately were rejected. Based on the box-and-whisker plots, the researcher removed 24 outliers (see Appendix E for outlier information) and re-ran the two-way ANOVA with gender as the moderator variable. Removing the outliers did not change the result of the ANOVA with respect to statistically significant differences between student groups.

Table 103

Two-way ANOVA Results for Number of Out-of-School Suspension With Gender as Moderator Variable, Grade 6

Tests of Between-Subjects Effects

Dependent Variable: number of OSS

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	15.532	1	15.532	27.349	.000
Gender	16.391	1	16.391	28.861	.000
School Configuration * Gender	3.220	1	3.220	5.670	.017
Total	1137.000	1768			
Corrected Total	1049.642	1767			

a. R Squared = .046 (Adjusted R Squared = .044)

Rejecting the null hypotheses indicate a significant difference does exist in number of OSS for students in Grade 6 due to the interaction between school configuration and gender and school configuration and gender considered separately. The means and standard deviations for number of OSS for students in Grade 6, separated by gender and school configuration, are shown in Table 104. The interaction between school configuration and gender shows that males (*n* = 933, *M* = .34) had a higher mean number of OSS than females (*n* = 835, *M* = .09) regardless of school configuration. In addition, both males and females had a higher mean number of OSS in the 6-8 middle school configuration (males: *n* = 665, *M* = .43, females: *n* = 594, *M* = .12) than the K-8 elementary school configuration (males: *n* = 268, *M* = .13, females: *n* = 241, *M* = .01). As seen in Figure 10, the difference in mean number of OSS, based on school configuration, was much larger for females than for males.

Table 104

Number of OSS, Means and Standard Deviations by Gender and School Configuration, Grade 6

Dependent Variable: Number of OSS

School Configuration	Gender	Mean	Std. Deviation	N
K-8 Elementary School	Female	.01	.091	241
	Male	.13	.567	268
	Total	.07	.420	509
6-8 Middle School	Female	.12	.495	594
	Male	.43	1.076	665
	Total	.28	.866	1259
Total	Female	.09	.423	835
	Male	.34	.967	933
	Total	.22	.771	1768

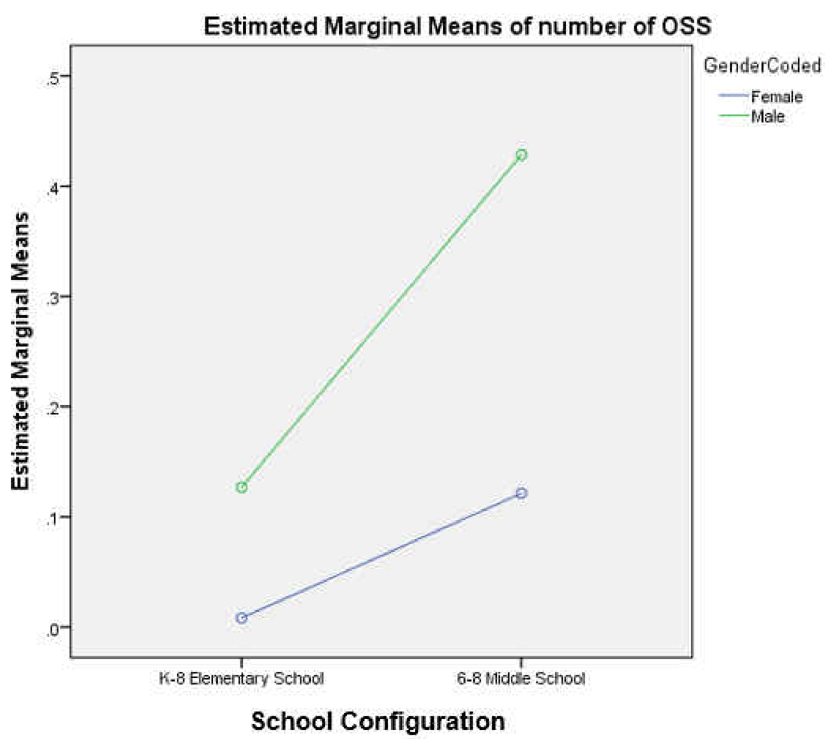


Figure 10. Grade 6, Number of OSS, School Configuration and Gender

Race

The second two-way ANOVA of number of out-of-school suspensions utilized race as a moderator variable. The distribution of students by race and school configuration is shown in Table 105. In the K-8 elementary school configuration, 53 (10.41%) of the sixth-grade students were Black, 238 (46.76%) of the sixth-grade students were Hispanic, 192 (37.72%) of the sixth-grade students were White, and 26 (5.11%) of the students were classified as Other. In the 6-8 middle school configuration, 119 (9.45%) of the sixth-grade students were Black, 702 (55.76%) of the sixth-grade students were Hispanic, 375 (29.79%) of the sixth-grade students were White, and 63 (5.00%) of the sixth-grade students were classified as Other. Considering the sixth-grade sample as a whole, 172 (9.73%) of the students were Black, 940 (53.17%) of the students were Hispanic, 567 (32.07%) of the students were White, and 89 (5.03%) of the students were classified as Other.

Table 105

Grade 6 by Race and School Configuration

	Black		Hispanic		White		Other		Total	
School Configuration	N	%	N	%	N	%	N	%	N	%
K-8 Elementary School	53	10.41	238	46.76	192	37.72	26	5.11	509	100
6-8 Middle School	119	9.45	702	55.76	375	29.79	63	5.00	1259	100
Total	172	9.73	940	53.17	567	32.07	89	5.03	1768	100

Table 106 displays two-way ANOVA results for number of out-of-school suspensions and school configuration with race as a moderator variable for students in Grade 6. The interaction between race and school configuration produced no statistically significant difference in number of out-of-school suspensions between student groups, $F(1,1760) = .608$, $p = .610$, at an alpha level of .05. There was also no statistically significant difference as a result of race on number of out-of-school suspensions when race was considered separately from school configuration, $F(1,1760) = 2.322$, $p = .073$. The null hypotheses were accepted for the interaction between school configuration and race and race alone. The results of the two-way ANOVA did indicate a statistically significant difference in number of out-of-school suspensions between student groups based on school configuration, $F(1, 1760) = 14.501$, $p < .001$. The null hypothesis for school configuration alone is rejected. Based on the box-and-whisker plots, the researcher removed 24 outliers (see Appendix E for outlier information) and re-ran the two-way ANOVA with race as the moderator variable. Removing the outliers did not change the result of the statistical significance of the interaction between school configuration and race or school configuration considered independently. The ANOVA with outliers excluded indicated a statistical significance difference in mean number of OSS when race was considered separately, $F(1,1736) = 3.561$, $p = .014$. Further analysis of the outliers revealed that 17 of the outliers were students at schools configured as 6-8 middle schools. In addition, 12 of the outliers were students classified as White. The 6-8 middle school configuration was indicated in contributing to the upper outliers in regards to number of OSS.

Table 106

Two-way ANOVA Results for Number of Out-of-School Suspensions, Grade 6

Tests of Between-Subjects Effects

Dependent Variable: Number of OSS

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Race	4.059	3	1.353	2.322	.073
School Configuration	8.449	1	8.449	14.501	.000
Race * School Configuration	1.062	3	.354	.608	.610
Error	1025.557	1760	.583		
Corrected Total	1049.642	1767			

a. R Squared = .023 (Adjusted R Squared = .019)

By accepting the null hypothesis, no significant differences were determined to exist in number of OSS for Grade 6 students due to the interaction between school configuration and race or race alone. Rejecting the null hypothesis for school configuration, when considered independently of race, indicates that a significant difference exists in number of OSS for Grade 6 students due to school configuration. The means and standard deviations for number of OSS for students in Grade 6, separated by school configuration, are shown in Table 107. Grade 6 students who attended 6-8 middle schools (n = 1259, M = .28) had a higher mean number of OSS than Grade 6 students who attended K-8 elementary schools (n = 509, M = .07).

Table 107

Number of OSS, Means and Standard Deviations by School Configuration, Grade 6

School Configuration	Mean	Std. Deviation	N
K-8 Elementary School	.07	.420	509
6-8 Middle School	.28	.866	1259
Total	.22	.771	1768

Grade 7, Out-of-School Suspensions

The six schools selected for the study reported a total of 1,607 students in Grade 7, and all students had reported data regarding number of out-of-school suspensions. Table 14 shows the distribution of seventh graders by school configuration. The K-8 elementary schools served 452 (28.13%) of the seventh-grade sample during the 2015-2016 school year. The 6-8 middle schools served 1,155 (71.87%) of the seventh-grade sample during the 2015-2016 school year.

Gender

The first two-way ANOVA of number of out-of-school suspensions utilized gender as a moderator variable. The distribution of students by gender and school configuration is shown in Table 108. In the K-8 elementary schools, 211 (46.68%) of the students were female, and 241 (53.32%) of the students were male. In the 6-8 middle schools, 571 (49.44%) of the students were female, and 584 (50.56%) of the students were male. For the sample overall, 782 (48.66%) of the students were female, and 825 (51.34%) of the students were male.

Table 108

Grade 7 by Gender and School Configuration

	Female		Male		Total	
School Configuration	N	%	N	%	N	%
K-8 Elementary School	211	46.68	241	53.32	452	100
6-8 Middle School	571	49.44	584	50.56	1155	100
Total	782	48.66	825	51.34	1607	100

Table 109 displays two-way ANOVA results for number of OSS and school configuration with gender as a moderator variable for students in Grade 7. The interaction between gender and school configuration produced no statistically significant difference in number of out-of-school suspensions between student groups, $F(1, 1603) = 1.357$, $p = .244$. The null hypothesis for an effect due to the interaction between school configuration and gender was accepted. However, both gender, $F(1, 1603) = 20.963$, $p < .01$, and school configuration, $F(1, 1603) = 9.491$, $p = .002$, considered separately, produced statistically significant differences in number of out-of-school suspensions for students in Grade 7. The null hypotheses for an effect based on school configuration and gender, when each is considered independently, were rejected. Based on the box-and-whisker plots, the researcher removed 25 outliers (see Appendix E for outlier information) and re-ran the two-way ANOVA with gender as the moderator variable. With the outliers removed, the ANOVA results indicated that interaction between gender and school configuration produced a significant difference in number of OSS between student groups, $F(1,1578) = 7.601$, $p = .006$. Excluding the outliers did not change the ANOVA results for school configuration and gender, each considered separately.

Table 109

Two-way ANOVA Results for Number of Out-of-School Suspension With Gender as Moderator Variable, Grade 7

Tests of Between-Subjects Effects

Dependent Variable: number of OSS

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	6.510	1	6.510	9.491	.002
Gender	14.378	1	14.378	20.963	.000
School Configuration * Gender	.931	1	.931	1.357	.244
Error	1099.438	1603	.686		
Corrected Total	1128.577	1606			

a. R Squared = .026 (Adjusted R Squared = .024)

Rejection of the null hypotheses indicate a significant difference does exist in number of OSS for students in Grade 7 due to school configuration and gender. The means and standard deviations for number of OSS for students in Grade 6, separated by gender and school configuration, are shown in Table 110. Seventh-grade students attending K-8 elementary schools (n = 452, M = .12) had a lower mean number of OSS than seventh-grade students attending 6-8 middle schools (n = 1,155, M = .26). Seventh-grade female students (n = 782, M = .10) had a lower mean number of OSS than seventh-grade male students (n = 825, M = .33).

Table 110

Number of OSS, Means and Standard Deviations by Gender and School Configuration, Grade 7

Dependent Variable: Number of OSS

School Configuration	Gender	Mean	Std. Deviation	N
K-8 Elementary School	Female	.04	.215	211
	Male	.20	.651	241
	Total	.12	.503	452
6-8 Middle School	Female	.13	.611	571
	Male	.39	1.153	584
	Total	.26	.935	1155
Total	Female	.10	.535	782
	Male	.33	1.035	825
	Total	.22	.838	1607

<u>Race</u>

The second two-way ANOVA of number of OSS and school configuration utilized race as a moderator variable. The distribution of students by race and school configuration is shown in Table 111. In the K-8 elementary school configuration, 44 (9.73%) of the seventh-grade students were Black, 224 (45.56%) of the seventh-grade students were Hispanic, 150 (33.19%) of the seventh-grade students were White, and 34 (57.52%) of the students were classified as Other. In the 6-8 middle school configuration, 118 (10.22%) of the seventh-grade students were Black, 665 (57.58%) of the seventh-grade students were Hispanic, 321 (27.79%) of the seventh-grade students were White, and 51 (4.42%) of the seventh-grade students were classified as Other. Considering the seventh-grade sample as a whole, 162 (10.08%) of the students were Black, 889 (55.32%) of the students were Hispanic, 471 (29.31%) of the students were White, and 85 (5.29%) of the students were classified as Other.

Table 111

Grade 7 by Race and School Configuration

School Configuration	Black N	Black %	Hispanic N	Hispanic %	White N	White %	Other N	Other %	Total N	Total %
K-8 Elementary School	44	9.73	224	49.56	150	33.19	34	7.52	452	100
6-8 Middle School	118	10.22	665	57.58	321	27.79	51	4.42	1155	100
Total	162	10.08	889	55.32	471	29.31	85	5.29	1607	100

Table 112 displays two-way ANOVA results for number of out-of-school suspensions and school configuration with race as a moderator variable for students in Grade 7. The interaction between race and school configuration produced no statistically significant difference in number of out-of-school suspensions between student groups, $F(1,1599) = 1.106$, $p = .345$. Race, $F(1,1599) = 1.408$, $p = .239$, and school configuration, $F(1,1599) = 1.247$, $p = .264$, considered separately, also produced no statistically significant difference in number of out-of-school suspension between student groups. The null hypotheses were accepted indicating that no significant difference exist in number of OSS for students in Grade 7 based on school configuration or race or the interaction between school configuration and race. Based on the box-and-whisker plots, the researcher removed 25 outliers (see Appendix E for outlier information) and re-ran the two-way ANOVA with gender as the moderator variable. With the outliers removed, the ANOVA results indicated a statistically significant difference in number of OSS based on school configuration, $F(1,1574) = 7.977$, $p = .005$, with Grade 7 students attending 6-8 middle schools having a larger mean number of OSS than same grade students attending K-8 elementary schools. Closer examination of the excluded outliers shows that all 12 upper outliers were students in the 6-8 middle school configuration, while all 13 lower outliers were students in the K-8 elementary school configuration. In addition, upper outliers were predominately Hispanic (7 out of 12 outliers), while lower outliers were predominately White (6 out of 13 outliers). Outlier analysis revealed that Hispanic students at schools configured as 6-8 middle schools have a relatively larger number of OSS as compared to other student groups. In addition, White students at school configured as 6-8 middle schools have a lower number of OSS as compared to other student groups.

Table 112

Two-way ANOVA Results for Number of Out-of-School Suspensions, Grade 7

Tests of Between-Subjects Effects

Dependent Variable: number of OSS

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	.872	1	.872	1.247	.264
Race	2.952	3	.984	1.408	.239
School Configuration * Race	2.320	3	.773	1.106	.345
Error	1117.863	1599	.699		
Corrected Total	1128.577	1606			

a. R Squared = .009 (Adjusted R Squared = .005)

Grade 8, Out-of-School Suspensions

The six schools selected for the study reported a total of 1,349 students in Grade 8, and all students had reported data regarding number of out-of-school suspensions. Table 14 shows the distribution of eighth graders by school configuration. The K-8 elementary schools served

351 (26.02%) of the eighth-grade sample during the 2015-2016 school year. The 6-8 middle schools served 998 (73.98%) of the eighth-grade sample during the 2015-2016 school year.

Gender

The first two-way ANOVA of number of out-of-school suspensions utilized gender as a moderator variable. Table 113 shows the distribution of students by gender and school configuration.

Table 113

Grade 8 by Gender and School Configuration

	Female		Male		Total	
School Configuration	N	%	N	%	N	%
K-8 Elementary School	161	45.87	190	54.13	351	100
6-8 Middle School	451	45.19	547	54.81	998	100
Total	612	45.37	737	54.63	1349	100

Table 114 displays two-way ANOVA results for number of out-of-school suspensions and school configuration with gender as a moderator variable for students in Grade 8. The interaction between gender and school configuration indicated a statistically significant difference in number of out-of-school suspensions at the .05 significance level, $F(1, 1345) = 5.262$, $p = .022$. In addition, both gender, $F(1, 1345) = 15.728$, $p < .01$, and school configuration, $F(1, 135) = 8.554$, $p < .004$, considered separately, produced statistically significant differences in number of out-of-school suspensions for students in Grade 8. The null hypotheses for the interaction between school configuration and gender and school configuration and gender considered separately were rejected. Based on the box-and-whisker plots, the researcher removed 21 outliers (see Appendix E for outlier information) and re-ran the two-way ANOVA with gender as the moderator variable. Excluding the outliers had no effect on the results of the two-way ANOVA at an alpha level of .05.

Table 114

Two-way ANOVA Results for Number of Out-of-School Suspension With Gender as Moderator Variable, Grade 8

Tests of Between-Subjects Effects

Dependent Variable: number of OSS

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	8.964	1	8.964	15.728	.000
School Configuration	4.875	1	4.875	8.554	.004
Gender * School Configuration	2.999	1	2.999	5.262	.022
Error	766.547	1345	.570		
Corrected Total	794.227	1348			

a. R Squared = .035 (Adjusted R Squared = .033)

Rejecting the null hypotheses indicate a significant difference does exist in number of OSS for students in Grade 8 due to the interaction between school configuration and gender and school configuration and gender considered separately. The means and standard deviations for number of OSS for students in Grade 8, separated by gender and school configuration, are shown in Table 115. Both female and male students attending K-8 elementary schools had a lower mean number of OSS than their same grade counterparts attending 6-8 middle schools. Males attending K-8 elementary schools (n = 190, M = .18) had a lower mean number of OSS than males attending 6-8 middle schools (n = 547, M = .30). In both configurations, males had a higher mean number of OSS than female students. As shown in Figure 11, the difference in mean number of OSS based on school configuration was much larger for female students than for male students.

Table 115

Number of OSS Means and Standard Deviations by Gender and School Configuration, Grade 8

Dependent Variable: Number of OSS

School Configuration	Gender	Mean	Std. Deviation	N
K-8 Elementary School	Female	.11	.532	161
	Male	.18	.537	190
	Total	.15	.535	351
6-8 Middle School	Female	.14	.543	451
	Male	.43	.989	547
	Total	.30	.831	998
Total	Female	.13	.540	612
	Male	.37	.901	737
	Total	.26	.768	1349

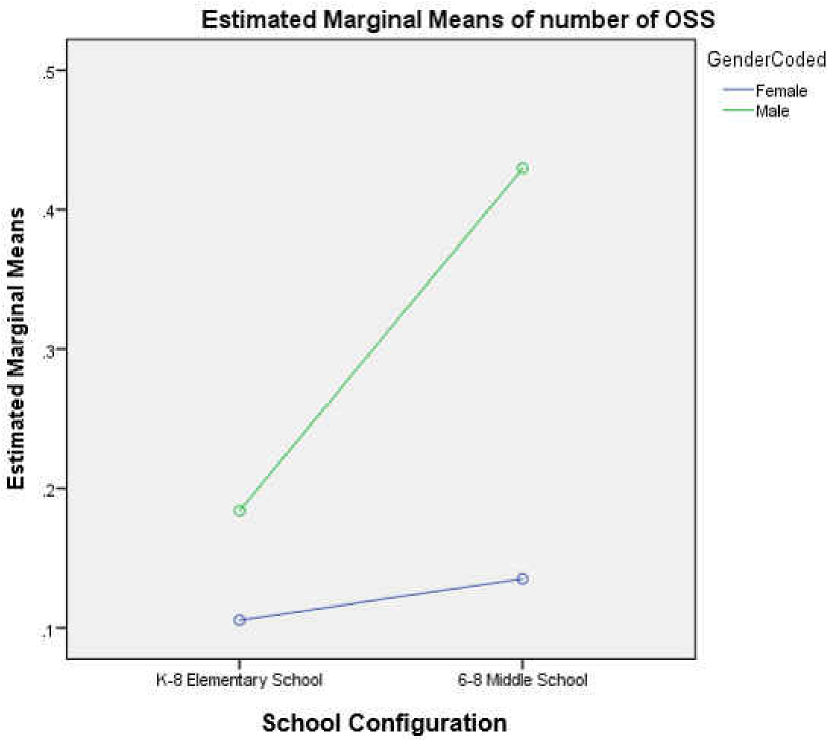


Figure 11. Grade 8, Number of OSS, School Configuration and Gender

<u>Race</u>

The second two-way ANOVA of number of out-of-school suspensions utilized race as a moderator variable. The distribution of students by race and school configuration is shown in Table 116. In the K-8 elementary school configuration, 44 (12.54%) of the eighth-grade students were Black, 205 (58.40%) of the eighth-grade students were Hispanic, 87 (24.79%) of the eighth-grade students were White, and 15 (4.27%) of the students were classified as Other. In the 6-8 middle school configuration, 101 (10.12%) of the eighth-grade students were Black, 580 (58.12%) of the eighth-grade students were Hispanic, 269 (26.95%) of the eighth-grade students were White, and 48 (4.81%) of the eighth-grade students were classified as Other. Considering the eighth-grade sample as a whole, 145 (10.75%) of the students were Black, 785 (58.19%) of the students were Hispanic, 356 (26.39%) of the students were White, and 63 (4.67%) of the students were classified as Other.

Table 116

Grade 8 by Race and School Configuration

School Configuration	Black N	Black %	Hispanic N	Hispanic %	White N	White %	Other N	Other %	Total N	Total %
K-8 Elementary School	44	12.54	205	58.40	87	24.79	15	4.27	351	100
6-8 Middle School	101	10.12	580	58.12	269	26.95	48	4.81	998	100
Total	145	10.75	785	58.19	356	26.39	63	4.67	1349	100

Table 117 displays two-way ANOVA results for number of out-of-school suspensions and school configuration with race as a moderator variable for students in Grade 8. The interaction between race and school configuration produced no statistically significant difference in number of out-of-school suspensions between student groups, $F(1, 1341) = .210$, $p = .890$. School configuration, considered separately from race, also produced no statistically significant difference in number of out-of-school suspensions between student groups, $F(1, 1341) = 2.895$, $p = .089$. The null hypotheses for the interaction between school configuration and race and school configuration alone were accepted. Race, considered separately from school configuration, was indicated in producing statistically significant differences in number of out-of-school suspensions between student groups, $F(1, 1341) = 4.086$, $p < .01$. The null hypothesis for race was rejected. Based on the box-and-whisker plots, the researcher removed 21 outliers (see

Appendix E for outlier information) and re-ran the two-way ANOVA with gender as the moderator variable. Excluding the outliers had no effect of the results of the two-way ANOVA at an alpha level of .05.

Table 117

Two-way ANOVA Results for Number of Out-of-School Suspensions, Grade 8

Tests of Between-Subjects Effects

Dependent Variable: Number of OSS

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	1.684	1	1.684	2.895	.089
Race	7.131	3	2.377	4.086	.007
School Configuration * Race	.366	3	.122	.210	.890
Error	780.145	1341	.582		
Corrected Total	794.227	1348			

a. R Squared = .018 (Adjusted R Squared = .013)

Rejecting the null hypothesis for race indicates that a significant difference exists in number of OSS for students in Grade 8 due to race. The means and standard deviations for number of OSS for students are separated by race in Table 118. Students classified as Black (*n* = 145, *M* = .44) had a larger mean number of OSS than students classified as Hispanic, (*n* = 785, *M* = .26), White (*n* = 356, *M* = .20) and Other (*n* = 63, *M* = .11).

Table 118

Number of OSS, Means and Standard Deviations by Race

Race	Mean	Std. Deviation	N
Black	.44	.978	145
Hispanic	.26	.794	785
White	.20	.634	356
Other	.11	.444	63
Total	.26	.768	1349

Research Question 4

To what extent, if any, is there a difference in number of absences, disaggregated by gender and race for sixth-, seventh-, and eighth-grade students based on school configuration.

$H_{4\text{-}0}$ - There is no statistical difference in the number of days absent between sixth-, seventh-, and eighth-grade students based on school configuration (K-8 elementary school versus 6-8 middle school).

Variables:

Independent: school configuration (K-8 elementary school versus 6-8 middle school)?

Dependent: number of days absent

Moderator: gender, race (Black, Hispanic, White)

Statistical tool--Two-way Analysis of Variance (ANOVA)

The large central Florida school district selected for the study provided data regarding the number days absent per student for all sixth-, seventh-, and eighth-grade students attending the six schools selected for the study. Student grade level, gender, and race/ethnicity information was also provided by the large central Florida school district. A two-way analysis of variance

(ANOVA) was conducted to determine if a statistically significant difference existed in number of days absent for students in the same grade level attending schools configured as K-8 elementary schools and 6-8 middle schools. School configuration served as the independent variable; number of days absent served as the dependent variable; and gender and race were considered separately as moderator variables. For Research Question 4, all two-way ANOVA tests were conducted utilizing an alpha level of .05. As seen in Appendix F, the distribution of gender, race, and school configuration were sufficiently normally distributed for the purpose of conducting a two-way ANOVA (i.e., skew +/-2.0 and kurtosis +/-3.0) at all grade levels (Lomax & Hans-Vaughn, 2012). Violations to skew and kurtosis occurred at all three grade levels in the distribution of the number of absences. Review of Levene's test for equality of error of variance was violated for number of absences at both Grades 7 and 8 with gender and race as moderator variables, indicating that the variances were not equal and caution is warranted in interpreting the two-way ANOVA results for these cases (Appendix F).

Grade 6, Number of Days Absent

The six schools selected for the study reported a total of 1,768 students in Grade 6, and all students had reported data regarding number of days absent. Table 14 shows the distribution of sixth-grade students by school configuration.

Gender

The first two-way ANOVA of number of days absent utilized gender as a moderator variable. Table 95 shows the distribution of students by gender and school configuration for students in Grade 6.

Table 119 displays two-way ANOVA results for number of days absent and school configuration with gender as a moderator variable for students in Grade 6. The interaction between gender and school configuration produced no statistically significant difference in number of days absent between student groups, $F(1, 1764) = .380$, $p = .538$. School configuration, when considered separately from gender, also did not produce statistically significant differences in number of days absent between student groups, $F(1, 1764) = 1.639$, $p = .201$. The null hypotheses for the interaction between school configuration and gender and school configuration alone were accepted. However, gender, considered separately from school configuration, produced statistically significant differences in number of days absent for students in Grade 6, $F(1, 1764) = 7.039$, $p < .008$. The null hypothesis for differences in number of days absent for students in Grade 6 was rejected. Based on the box-and-whisker plots, the researcher removed 24 outliers (see Appendix F for outlier information) and re-ran the two-way ANOVA with gender as the moderator variable. Excluding the outliers had no effect of the results of the two-way ANOVA at an alpha level of .05.

Table 119

Two-way ANOVA Results for Number of Days Absent With Gender as Moderator Variable, Grade 6

Tests of Between-Subjects Effects

Dependent Variable: Days Absent YTD

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	102.503	1	102.503	1.639	.201
Gender	440.184	1	440.184	7.039	.008
School Configuration * Gender	23.755	1	23.755	.380	.538
Total	232823.000	1768			
Corrected Total	111081.914	1767			

a. R Squared = .007 (Adjusted R Squared = .005)

Rejecting the null hypothesis for gender indicates that a significant difference exists in number of days absent for students in Grade 6 due to gender. The means and standard deviations for number of days absent for students in Grade 6 are separated by gender in Table 120. Grade 6 male students (*n* = 933, *M* = 8.87) had a higher mean number of days absent than Grade 6 female students (*n* = 835, *M* = 7.66).

Table 120

Number of Days Absent YTD, Means and Standard Deviations by Gender, Grade 6

Gender	Mean	Std. Deviation	N
Female	7.66	7.696	835
Male	8.87	8.092	933
Total	8.30	7.929	1768

Race

The second two-way ANOVA of number of days absent utilized race as a moderator variable. The distribution of students in Grade 6 by race and school configuration is shown in Table 98.

Table 121 displays two-way ANOVA results for number of days absent and school configuration with race as a moderator variable for students in Grade 6. At an alpha level of .05, the interaction between race and school configuration produced no statistically significant difference in number of days absent between student groups, $F(1, 1760) = .690$, $p = .558$. There was also no statistically significant difference as a result of race, $F(1, 1760) = 2.552$, $p = .054$, or school configuration, $F(1, 1760) = 3.598$, $p = .058$, considered separately, or number of days absent. The null hypotheses were accepted and no significant differences were found to exist in number of days absent for students in Grade 6 due to school configuration or race or the interaction between school configuration and race. Based on the box-and-whisker plots, the researcher removed 24 outliers (see Appendix F for outlier information) and re-ran the two-way ANOVA with race as the moderator variable. With the outliers excluded and an alpha level of .05, a statistically significant difference was indicated in number of days absent when considering race independently, $F(1, 1736) = 5.561$, $p = .001$. Further examination of outliers showed that of the 24 outliers, 10 were students classified as Hispanic and 10 were students classified as White. In addition, 17 of the outliers attended a 6-8 middle school. Outlier analysis revealed that students who attended schools configured as 6-8 middle schools and were classified as White or Hispanic had higher mean number of days absent than other student groups.

Table 121

Two-way ANOVA Results for Number of Days Absent, Grade 6

Tests of Between-Subjects Effects

Dependent Variable: Days Absent YTD

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Race	478.930	3	159.643	2.552	.054
School Configuration	225.072	1	225.072	3.598	.058
Race * School Configuration	129.534	3	43.178	.690	.558
Error	110098.208	1760	62.556		
Corrected Total	111081.914	1767			

a. R Squared = .009 (Adjusted R Squared = .005)

Grade 7, Number of Days Absent

The six schools selected for the study reported a total of 1,607 students in Grade 7, and all students had reported data regarding number of days absent. Table 14 shows the distribution of seventh-grade students by school configuration.

Gender

The first two-way ANOVA of number of days absent utilized gender as a moderator variable. Table 100 shows the distribution of students by gender and school configuration for students in Grade 7.

Table 122 displays two-way ANOVA results for number of days absent and school configuration with gender as a moderator variable for students in Grade 7. The interaction between gender and school configuration produced no statistically significant difference in number of days absent between student groups, F(1, 1603) = .253, p = .615. Gender, when considered separately from school configuration, also provided no statistically significant difference in number of days absent between student groups, $F(1, 1603) = .082$, $p = .774$. The null hypotheses for effects due to the interaction between school configuration and gender and gender alone were accepted. School configuration, at the .05 significance level, did provided a statistically significant difference in number of days absent between student groups, $F(1, 1603) = 4.994$, $p = .026$. The null hypothesis of an effect due to school configuration was rejected. Based on the box-and-whisker plots, the researcher removed 16 outliers (see Appendix F for outlier information) and re-ran the two-way ANOVA with gender as the moderator variable. Exclusion of outliers did not change the results of the two-way ANOVA.

Table 122

Two-way ANOVA Results for Number of Days Absent With Gender as Moderator Variable, Grade 7

Tests of Between-Subjects Effects

Dependent Variable: Days Absent YTD

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	349.288	1	349.288	4.994	.026
Gender	5.744	1	5.744	.082	.774
School Configuration * Gender	17.714	1	17.714	.253	.615
Error	112111.530	1603	69.939		
Corrected Total	112471.479	1606			

a. R Squared = .003 (Adjusted R Squared = .001)

Rejecting the null hypothesis for school configuration indicates significant differences exist in number of days absent for students in Grade 7 due to differences in school configuration. The means and standard deviations for number of days absent for students in Grade 7 are separated by school configuration in Table 123. Seventh graders attending K-8 elementary schools (*n* = 452, *M* = 8.45) had lower mean number of absences than seventh graders attending 6-8 middle schools (*n* = 584, *M* = 9.47).

Table 123

Number *of Days Absent YTD, Means and Standard Deviations by School Configuration, Grade 7*

School Configuration	Mean	Std. Deviation	N
K-8 Elementary School	8.45	7.933	452
6-8 Middle School	9.47	8.386	584
Total	9.18	8.369	1607

<u>Race</u>

The second two-way ANOVA of FSA ELA utilized race as a moderator variable. Table 103 shows the distribution of students by race and school configuration for students in Grade 7.

Table 124 displays two-way ANOVA results for number of days absent and school configuration with race as a moderator variable for students in Grade 7. The interaction between race and school configuration produced no statistically significant difference in number of days absent between student groups, $F(1,1599) = 1.777$, $p = .150$. At an alpha level of .05, school configuration, considered separately from race, also produced no statistically significant difference in number of days absent between student groups, $F(1,1599) = 2.209$, $p = .137$. The null hypotheses for the interaction between school configuration and race and school configuration alone were accepted. Race, when considered separately from school configuration, did indicate a statistically significant difference in number of days absent between student groups, $F(1,1599) = 5.214$, $p < .001$. The null hypothesis for race was rejected. Based on the box-and-whisker plots, the researcher removed 16 outliers (see Appendix F for outlier information) and re-ran the two-way ANOVA with race as the moderator variable. The results of the two-way ANOVA, at an alpha level of .05 and with outliers excluded, indicated a statistically significant difference exists in number of days absent due to the interaction between school configuration and race, $F(1,1583) = 2.692$, $p = .045$. Further examination of the outliers revealed that 13 of the 16 outliers attended a school configured as a 6-8 middle school. In addition, 10 of the outliers were students classified as Hispanic and five of the outliers were students classified as White. Outlier analysis revealed that students classified as Hispanic and attending a school configured as a 6-8 middle school had a higher mean number of days absent than other student groups.

Table 124

Two-*way ANOVA Results for Number of Days Absent, Grade 7*

Tests of Between-Subjects Effects

Dependent Variable: Days Absent YTD

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	152.415	1	152.415	2.209	.137
Race	1079.093	3	359.698	5.214	.001
School Configuration * Race	367.765	3	122.588	1.777	.150
Error	110305.865	1599	68.984		
Corrected Total	112471.479	1606			

a. R Squared = .019 (Adjusted R Squared = .015)

Rejecting the null hypothesis indicates that there exists a significant difference in number of days absent along racial groups for Grade 7 students. The means and standard deviations for number of days absent for students in seventh grade are separated by race as displayed in Table 125. Students classified as White (*n* = 471, *M* = 9.73) and Hispanic (*n* = 889, *M* = 9.52) had a higher mean number of days absent YTD than students classified as Black (*n* = 162, *M* = 6.9) and Other (*n* = 85, *M* = 6.86).

Table 125

Number of Days Absent, Means and Standard Deviations by Race

Race	Mean	Std. Deviation	N
Black	6.9	7.150	162
Hispanic	9.52	8.635	889
White	9.73	8.383	471
Other	6.86	6.463	85
Total	9.18	8.369	1607

Grade 8, Number of Days Absent

The six schools selected for the study reported a total of 1,349 students in Grade 8 and all students had reported data regarding number of days absent. Table 14 shows the distribution of eighth-grade students by school configuration.

<u>Gender</u>

The first two-way ANOVA of number of days absent utilized gender as a moderator variable. Table 105 shows the distribution of students by gender and school configuration for students in Grade 8.

Table 126 displays two-way ANOVA results for number of days absent and school configuration with gender as a moderator variable for students in Grade 8. At an alpha level of

.05, the interaction between gender and school configuration indicated no statistically significant difference in number of days absent, F(1,1345) = .541, p = .462. In addition, both gender, F(1,1345) = .005, p = .942, and school configuration, F(1,1345) = 2.850, p = .092, when considered independently, indicated no statistically significant differences in number of days absent between groups for students in Grade 8. The null hypotheses were accepted indicating there was no difference in number of days absent for students in Grade 6 due to school configuration or race or the interaction between the two. Based on the box-and-whisker plots, the researcher removed 19 outliers (see Appendix F for outlier information) and re-ran the two-way ANOVA with race as the moderator variable. Removing outliers had no effect on the results of the two-way ANOVA with gender as the moderator variable.

Table 126

Two-way ANOVA Results for Number of Days Absent with Gender as Moderator Variable, Grade 8

Tests of Between-Subjects Effects

Dependent Variable: Days Absent YTD

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	.389	1	.389	.005	.942
School Configuration	208.309	1	208.309	2.850	.092
Gender * School Configuration	39.571	1	39.571	.541	.462
Error	98303.227	1345	73.088		
Corrected Total	98576.617	1348			

a. R Squared = .003 (Adjusted R Squared = .001)

Race

The second two-way ANOVA of number of days absent utilized race as a moderator variable. Table 108 shows the distribution of students by race and school configuration for students in Grade 8.

Table 127 displays two-way ANOVA results for number of days absent and school configuration with race as a moderator variable for students in Grade 8. The interaction between race and school configuration produced no statistically significant difference in number of days absent between student groups, $F(1,1341) = .290$, $p = .833$. School configuration, $F(1,1341) = 2.235$, $p = .135$, considered separately from race, also produced no statistically significant difference in number of days absent between student groups at an alpha level of .05. The null hypotheses for the interaction between school configuration and race and school configuration were accepted. Race, considered separately from school configuration, was indicated in producing statistically significant differences in number of days absent between student groups at the .05 significance level, $F(1,1341) = 3.214$, $p = .022$. The null hypothesis for race was rejected. Based on the box-and-whisker plots, the researcher removed 19 outliers (see Appendix F for outlier information) and re-ran the two-way ANOVA with race as the moderator variable. Removing outliers had no effect on the results of the two-way ANOVA with gender as the moderator variable.

Table 127

Two-way ANOVA Results for Number of Days Absent, Grade 8

Tests of Between-Subjects Effects

Dependent Variable: Days Absent YTD

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	162.359	1	162.359	2.235	.135
Race	700.499	3	233.500	3.214	.022
School Configuration * Race	63.252	3	21.084	.290	.833
Error	97427.671	1341	72.653		
Corrected Total	98576.617	1348			

a. R Squared = .012 (Adjusted R Squared = .006)

Rejecting the null hypothesis for race indicates that a significant difference exists in number of days absent for students in Grade 8 due to race. The means and standard deviations for number of days absent for students in eighth grade are separated by race and are shown in Table 128. Students classified as White (*n* = 785, *M* = 10.20) and Hispanic (*n* = 785, *M* = 10.06) had a higher mean number of days absent YTD than students classified as Black (*n* = 145, *M* = 7.66) and Other (*n* = 8.48, *M* = 10.482).

Table 128

Number of Days Absent YTD, Means and Standard Deviations by Race, Grade 8

School Configuration	Mean	Std. Deviation	N
Black	7.66	7.774	145
Hispanic	10.06	8.590	785
White	10.20	8.279	356
Other	8.48	10.482	63
Total	9.76	8.551	1349

Table 129 displays the variables, data analysis information, and indicates if the null hypotheses was rejected for each research question. In Table 129 under the subheading "Gender as Moderator" the following key was utilized: "I" stands for an effect due to the interaction between school configuration and gender, "SC" stands for an effect due to differences in school configurations, and "G" stands for an effect due to differences in student gender. Under the subheading "Race as Moderator" in Table 129, the following key was utilized: "I" stands for an effect due to the interaction between school configuration and race, "SC" stands for an effect due to differences in school configurations, and "R" stands for an effect due to differences in student race. An "X" indicates that the null hypothesis was rejected based on the results of the two-way ANOVA. For example, in the first research question, Grade 6, FSA ELA, with gender as a moderator variable, the null hypotheses for an effect due to school configuration and race, when each was considered independently, were rejected. In short, for Grade 6 students with reported FSA ELA scale scores (gender as moderator variable), the null hypothesis regarding school configuration was rejected because at an alpha level of 0.05, there existed statistically significant differences in FSA ELA scale scores between student groups based on school configuration. Also, for Grade 6 students with reported FSA ELA scale scores (gender as moderator variable), the null hypothesis regarding gender was rejected because at an alpha level of 0.05, there existed statistically significant differences in FSA ELA scale scores between student groups based on gender. However, for Grade 6 students with reported FSA ELA scale scores (gender as moderator variable), the null hypothesis regarding the interaction between school configuration and gender was accepted because at an alpha level of 0.05, there existed no statistically significant differences in FSA ELA scale scores between student groups due to the interaction of school configuration and gender. Please refer to Chapter 5 for a more thorough discussion of which school configuration was favored in the statistical tests.

Table 129

Research Questions, Variables, Data Analysis, and Accept or Reject Null Hypothesis

Research Question	Variables	Data Analysis	Reject Null Hypothesis							
			Outcome	Grade	Gender as Moderator			Race as Moderator		
					I	SC	G	I	SC	R
To what extent, if any, is there a difference in FSA ELA and/or FSA Mathematics and/or FSA Algebra 1 EOC Examination scale scores among sixth-, seventh-, and eighth-grade students, disaggregated by gender and race, based on school configuration?	Dependent: FSA scale scores Independent: School configuration Moderator: Gender, Race	Two separate two-way ANOVAs 1) School configuration as independent variable and gender as moderator variable 2) School configuration as independent variable and race as moderator variable	FSA ELA	6		X	X	X	X	X
				7		X	X	X		X
				8			X			X
			FSA Math	6		X	X	X		X
				7	X	X	X	X		X
				8						X
			FSA Algebra 1 EOC	7				X		X
				8		X		X	X	X

Research Question	Variables	Data Analysis	Outcome	Gender as Moderator			Race as Moderator		
				I	SC	G	I	S	R
To what extent, if any, is there a difference in growth from fifth grade to sixth grade and seventh grade to eighth grade, disaggregated by gender and race, as evidenced by FSA ELA and/or FSA Mathematics scale scores and FCAT 2.0 in Reading and/or Mathematics DSS, for eighth-grade students based on school configuration?	Dependent: FSA scale scores, FCAT 2.0 DSS Independent: School configuration Moderator: Gender, Race	Two separate two-way ANOVAs 1) School configuration as independent variable and gender as moderator variable 2) School configuration as independent variable and race as moderator variable	FSA ELA Growth						
			FSA Math Growth			X			

Research Question	Variables	Data Analysis	Reject Null Hypothesis						
			FCAT 2.0 Reading Growth	X					
			FCAT 2.0 Math Growth						
To what extent, if any, is there a difference, in number of out-of-school suspensions, disaggregated by gender and race, for sixth-, seventh-, and eighth-grade students based on school configuration?	Dependent: Number of out-of-school suspensions Independent: School configuration Moderator: Gender, Race	Two separate two-way ANOVAs 1) School configuration as independent variable and gender as moderator variable 2) School configuration as independent variable and race as moderator variable	Grade	Gender as Moderator			Race as Moderator		
				I	SC	G	I	SC	R
			6	X	X	X		X	
			7		X	X			
			8	X	X	X			X
To what extent, if any, is there a difference in number of days absent among students, disaggregated by gender and race, for sixth-, seventh-, and eighth-grade students based on school configuration?	Dependent: Number of days absent Independent: School configuration Moderator: Gender, Race	Two separate two-way ANOVAs 1) School configuration as independent variable and gender as moderator variable 2) School configuration as independent variable and race as moderator variable	Grade	Gender as Moderator			Race as Moderator		
				I	SC	G	I	SC	R
			6			X			
			7		X				X
			8						X

Note: I = interaction between dependent variable and moderator variable (gender or race), SC = school configuration, G = gender, R = race, X = reject null hypothesis

Summary

In Chapter 4, the researcher has reported in-depth as to the results of the analysis of the data provided by the large central Florida school district selected as the focus of this study. Data regarding student outcomes, including FSA ELA, Mathematics, and Algebra 1 EOC Examination scale scores, growth scores calculated from consecutive years of FCAT 2.0 Reading and Mathematics developmental scale scores, number of OSS, and number of days absent, were analyzed utilizing two-way ANOVAs. For each outcome and grade level, a two-way ANOVA was conducted using gender as a moderator variable and again using race as a moderator variable. Two-way ANOVAs with gender as a moderator variable results indicated that the null hypotheses were to be rejected for the following outcomes and grade levels: FSA ELA, Grade 6 - school configuration and gender; FSA ELA, Grade 7 - school configuration and gender; FSA ELA, Grade 8 – gender; FSA Mathematics, Grade 6 – school configuration and gender; FSA Mathematics, Grade 7 – interaction, school configuration, and gender; FSA Algebra 1 EOC, Grade 8 – school configuration; FSA Mathematics growth – gender; FCAT 2.0 Reading growth – school configuration; OSS, Grade 6 – interaction, school configuration, and gender, OSS, Grade 7 – school configuration and gender, OSS, Grade 8 – interaction, school configuration, and gender; number of days absent, Grade 6 – gender; number of days absent, Grade 7 – school configuration. Two-way ANOVAs with race as a moderator variable results indicated that the null hypotheses were to be rejected for the following outcomes and Grade levels: FSA ELA, Grade 6 – interaction, school configuration, and race; FSA ELA, Grade 7 – interaction and race, FSA ELA, Grade 8 – race; FSA Mathematics, Grade 6 – interaction and race, FSA Mathematics, Grade 7 – interaction and race; FSA Mathematics, Grade 8 – race; FSA Algebra 1 EOC, Grade 7

– interaction and race, FSA Algebra 1 EOC, Grade 8 – interaction, school configuration, and race; OSS, Grade 6 – school configuration; OSS, Grade 8 – race; number of days absent, Grade 7 – race; number of days absent, Grade 8 – race. Rejecting the null hypothesis in the aforementioned cases means that there existed statistically significant differences in student groups based on either the interaction between the independent variable (school configuration) and moderator variable (gender or race) or based on the independent variable or moderator variable alone.

CHAPTER 5
FINDINGS AND RECOMMENDATIONS

Introduction

This study was designed to determine if different grade configurations serving early adolescents have an effect on student outcomes as measured by standardized test scores, number of out-of-school suspensions, and number of days absent. Study findings regarding the impact of school configuration on student outcomes may serve to assist educational leaders as they make decisions pertaining to providing the optimal learning environment for middle grade students. The preceding chapter presented the data and data analysis of measures of student outcomes that served as the focus of this study.

This chapter has been organized into six sections. The first section lists the four research questions for the study along with their corresponding hypotheses, null hypotheses, independent, dependent, and moderator variables, along with the statistical analysis tool employed for each research question. The second section summarizes the findings of the study and is organized by research question. The third section presents a discussion of study results, specifically focusing on the underlying reasons for these findings. Implications for practice for school considering changes to their current school configurations are discussed in the fourth section. Section five provides recommendations for further research. Chapter 5 is concluded with a final study conclusion.

Research Questions and Hypotheses

This study was guided by the following research questions and hypotheses.

1. To what extent, if any, is there a difference in FSA ELA and/or FSA Mathematics and/or FSA Algebra 1 EOC Examination scale scores among sixth-, seventh-, and eighth-grade students, disaggregated by gender and race, based on school configuration?

   H_{1-0} There is no statistical difference in FSA ELA and/or FSA Mathematics and/or FSA Algebra 1 EOC Examination scale scores for sixth-, seventh-, and eighth-grade students based on school configuration.

   Variables:

   Independent: school configuration (K-8 elementary school, 6-8 middle school)

   Dependent: FSA ELA scale scores, FSA Mathematics scale scores, FSA Algebra 1 EOC Examination scale scores

   Moderator: gender, race (Black, Hispanic, White, Other)

   Statistical Tool--Two-way Analysis of Variance (ANOVA)

2. To what extent, if any, is there a difference in growth, from fifth grade to sixth grade and seventh grade to eighth grade, disaggregated by gender and race, as evidenced by FSA ELA and/or Mathematics scale scores and FCAT 2.0 in Reading and/or Mathematics DSS, for eighth-grade students based on school configuration?

   H_{2-0} - There is no statistical difference in growth, from fifth grade to sixth grade and seventh grade to eighth grade, as evidenced by FSA ELA and/or Mathematics scale scores and FCAT 2.0 in Reading and/or Mathematics DSS, for school year 2015-2016 eighth-grade students based on school configuration.

Variables:

Independent: school configuration (K-8 elementary school, 6-8 middle school)

Dependent: FSA ELA scale scores, FSA Mathematics scale scores, FCAT 2.0 Reading DSS, FCAT 2.0 Mathematics DSS

Moderator: gender, race (Black, Hispanic, White, Other)

Statistical Tool--Two-way Analysis of Variance (ANOVA)

3. To what extent, if any, is there a difference in number of out-of-school suspensions, disaggregated by gender and race, for sixth-, seventh-, and eighth-grade students based on school configuration?

   $H_{3\text{-}0}$ - There is no statistical difference in the number of out-of-school suspensions between sixth-, seventh-, and eighth-grade students based on school configuration.

   Variables:

   Independent: school configuration (K-8 elementary school, 6-8 middle school)

   Dependent: number of out-of-school suspensions

   Moderator: gender, race (Black, Hispanic, White, Other)

   Statistical tool--Two-way Analysis of Variance (ANOVA)

4. To what extent, if any, is there a difference in number of absences, disaggregated by gender and race, for sixth-, seventh-, and eighth-grade students based on school configuration?

   $H_{4\text{-}0}$ - There is no statistical difference in the number of days absent between sixth-, seventh-, and eighth-grade students based on school.

   Variables:

Independent: school configuration (K-8 elementary school, 6-8 middle school)

Dependent: number of days absent

Moderator: gender, race (Black, Hispanic, White, Other)

Statistical tool--Two-way Analysis of Variance (ANOVA)

Summary of Findings

Findings of this study focused only on those results indicating significant differences due to school configuration. Findings are discussed only when two-way ANOVA results indicated that differences in student outcomes were due to the interaction between school configuration and gender or school configuration and race or school configuration alone. Findings are not discussed when two-way ANOVA results indicated that differences in student outcomes were due only to gender or race alone, as those findings did not address the original research questions.

Research Question 1

To what extent, if any, is there a difference in FSA ELA and/or FSA Mathematics and/or FSA Algebra 1 EOC Examination scale scores among sixth-, seventh-, and eighth-grade students, disaggregated by gender and race, based on school configuration?

The first research question was addressed using a two-way ANOVA in which standardized test scale scores served as the dependent variable and school configuration served as the independent variable. Gender and race were considered separately as moderator variables. A summary of two-way ANOVA results of statistical significance for Research Question 1 can be found in Table 130. When considered as a whole, analysis of data for Research Question 1 favors the K-8 elementary school configuration over the 6-8 middle school configuration.

Table 130

Research Question 1: Two-Way ANOVA Summary of Statistical Significance

Outcome		Gender as Moderator Configuration			Race as Moderator Configuration		
	Grade	Interaction	School	Preferred	Interaction	School	Preferred
FSA ELA	6		X	K-8	X	X	K-8: White Other 6-8: Black, Hispanic
	7		X	K-8	X		K-8: White, Other 6-8: Black, Hispanic
	8						
FSA Mathematics	6		X	K-8	X		K-8: White, Hispanic, Other 6-8: Black
	7	X	X	K-8: Larger Difference for females than males	X		K-8: White, Hispanic, Other 6-8: Black
	8						
FSA Algebra 1 EOC Examination	7				X		K-8: White 6-8: Hispanic
	8		X	K-8	X	X	K-8: White 6-8: Hispanic

Note: X = reject null hypothesis

Gender

The results of the two-way ANOVA with gender as a moderator variable showed that the interaction between school configuration and gender indicated a statistically significant difference in Grade 7 FSA Mathematics scale scores. In reference to Grade 7 FSA Mathematics scale scores, both females and males attending K-8 elementary schools had higher means than their counterparts attending 6-8 middle schools. However, difference in Grade 7 FSA ELA mean scale scores based on school configuration was more pronounced for female students than for male students, with differences in mean FSA ELA scores between configuration of 8.17 and 4.77 respectively.

Considered independently, differences in school configuration, with gender as a moderator variable, produced statistically significant differences in Grade 6 and Grade 7 FSA ELA scale scores, Grade 6 and 7 FSA Mathematics scale scores, and Grade 8 Algebra 1 EOC Examination scale scores. In the aforementioned cases, students attending K-8 elementary scores had higher mean scale scores than students attending 6-8 middle schools.

Race

The results of the two-way ANOVA with race as a moderator variable showed that the interaction between school configuration and race indicated a statistically significant difference in Grades 6 and 7 FSA ELA, Grades 6 and 7 FSA Mathematics scale scores, and Grades 7 and 8 Algebra 1 EOC Examination scale scores. In both Grades 6 and 7, students classified as White and Other had higher means FSA ELA scale scores at K-8 elementary schools than White and Other students who attended 6-8 middle schools. In contrast, students in Grades 6 and 7, students classified as Black and Hispanic had higher mean FSA ELA scale scores at 6-8 middle schools than Black and Hispanic students who attended K-8 elementary schools. However, in both Grades 6 and 7, the differences in mean FSA ELA scale scores between school configuration were much smaller for Black and Hispanic students (Grade 6: Black = .6, Hispanic = .86; Grade 7: Black = 6.21, Hispanic = .33) than for White and Other students Grade 6: White = 7.06, Other = 12.63; Grade 7: White = 9.17, Other = 4.29). In terms of FSA Mathematics scale scores, Grade 6 and 7, students classified as Black had higher scale scores in the 6-8 middle school configuration and students classified as Hispanic, White, and Other had higher scale scores in the K-8 elementary school configuration. Again, differences in mean FSA ELA scale scores between school configurations differed along racial lines (Grade 6: Black = .31, Hispanic = 1.44, White = 6.47, Other = 8.06; Grade 7: Black = 9.73, Hispanic = .27, White = 13.16, Other = 7.22). Grade 7 and Grade 8 students who took the Algebra 1 EOC Examination and classified as White had higher mean scale scores at the K-8 elementary school configuration than White students at 6-8 middle schools. For Hispanic students, the trend was reversed, with Grade 7 and 8 Hispanic students having a higher mean Algebra 1 EOC scale score in the 6-8 middle school configuration than in the K-8 elementary school configuration. The difference in mean Algebra 1 EOC Examination scale scores between configurations varied along racial lines (Grade 7: Hispanic = 28.33, White = 20.62; Grade 8: Hispanic = 1.94, White = 31.48). It is important to note that the sample size for Grade 7 Algebra 1 EOC Examination was extremely small. In addition, lack of students classified as Black or Other in the K-8 elementary school configuration prevented comparison of those two racial groups at both grade levels.

Considered independently, differences in school configuration, with race as a moderator variable, produced significantly different results in Grade 6 FSA ELA and Grade 8 Algebra 1 EOC Examination scale scores. Students attending K-8 elementary schools had higher mean scale scores than their same grade counterparts attending 6-8 middle schools.

Research Question 2

To what extent, if any, is there a difference in growth, from fifth grade to sixth grade and seventh grade to eighth grade, disaggregated by gender and race, as evidenced by FSA ELA and/or Mathematics scale scores and FCAT 2.0 in Reading and/or Mathematics DSS, for eighth-grade students based on school configuration?

The second research question was addressed using a two-way ANOVA in which growth, as calculated by subtracting consecutive years of standardized test scores, served as the dependent variable and school configuration served as the independent variable. Gender and race were considered separately as moderator variables. A summary of two-way ANOVA results for Research Question 2 can be found in Table 131. For Research Question 2, when school configuration was indicated in impacting student outcomes, the K-8 elementary school configuration was favored over the 6-8 middle school configuration.

Table 131

Research Question 2: Two-Way ANOVA Summary of Statistical Significance

	Gender as Moderator Configuration			Race as Moderator Configuration		
Outcome	Interaction	School	Preferred	Interaction	School	Preferred
FSA Reading Growth						
FSA Mathematics Growth						
FCAT 2.0 Reading Growth		X	K-8			
FCAT 2.0 Mathematics Growth						

Note: X = reject null hypothesis

Gender

There was no interaction effect between school configuration and gender for any of the growth outcomes. A statistically significant difference in growth scores was indicated for FCAT 2.0 Reading growth based on school configuration with gender as a moderator variable. Within the large central Florida school district selected for this study, students who attended K-8 elementary schools had higher mean FCAT 2.0 Reading growth scores than students who attended 6-8 middle schools.

Race

There was no interaction effect between school configuration and race for any of the growth outcomes. There was also no indication of statistically significant differences in student outcomes based on school configuration alone when race was considered as a moderator variable.

Research Question 3

To what extent, if any, is there a difference in number of out-of-school suspensions, disaggregated by gender and race, for sixth-, seventh-, and eighth-grade students based on school configuration?

The third research question was addressed using a two-way ANOVA in which number of out-of-school suspensions served as the dependent variable and school configuration served as the independent variable. Gender and race were considered separately as moderator variables. A summary of two-way ANOVA results for Research Question 3 can be found in Table 132. In cases in which school configuration was indicated as impacting student outcomes in terms of OSS, the K-8 elementary school configuration was favored over the 6-8 middle school configuration.

Table 132

Research Question 3: Two-Way ANOVA Summary of Statistical Significance

		Gender as Moderator Configuration			Race as Moderator Configuration		
Outcome	Grade	Interaction	School	Preferred	Interaction	School	Preferred
Number of OSS	6	X	X	K-8: Larger difference for males than females		X	K-8
	7		X	K-8			
	8	X	X	K-8: Larger difference for males than females			

Note: X = reject null hypothesis

Gender

When gender was considered as a moderator variable, the interaction between school configuration and gender produced statistically significant differences in number of OSS in Grades 6 and Grade 8. In both Grade 6 and Grade 8, the difference in mean number of OSS based on school configuration varied by gender (Grade 6: male = .30, female = .11; Grade 8: male = .25, female = .03). In both Grades 6 and 8, males not only had a higher number of OSS than females, they had a much higher mean number of OSS in the 6-8 middle school configuration than in the K-8 elementary school configuration. In summary, the mean number of OSS for males was impacted by differences in school configuration to a greater extent than the mean number of OSS for females.

At Grade 6, 7, and 8, school configuration alone, with gender as a moderator variable, was also indicated as producing statistically significant differences in number of OSS. At all three grade levels, both females and males, had higher mean number of OSS in the 6-8 middle school configuration than in the K-8 elementary school configuration.

<u>Race</u>

When race was used as the moderator variable, school configuration was indicated in producing statistically significant differences in number of OSS in Grade 6. Grade 6 students attending K-8 elementary schools had a much lower mean number of OSS than Grade 6 students attending 6-8 middle schools (K-8 = .07, 6-8 = .28).

Research Question 4

> To what extent, if any, is there a difference in number of absences, disaggregated by gender and race, for sixth-, seventh-, and eighth-grade students based on school configuration?

The fourth research question was addressed using a two-way ANOVA in which number of days absent served as the dependent variable and school configuration served as the independent variable. Gender and race were considered separately as moderator variables. A summary of two-way ANOVA results for Research Question 3 can be found in Table 133. The K-8 elementary school configuration was favored over the 6-8 middle school configuration when school configuration was indicated in impacting student outcomes in terms of number of days absent.

Table 133

Research Question 4: Two-Way ANOVA Summary of Statistical Significance

		Gender as Moderator Configuration			Race as Moderator Configuration		
Outcome	Grade	Interaction	School	Preferred	Interaction	School	Preferred
Number of Days Absent	6						
	7		X	K-8			
	8						

Note: X = reject null hypothesis

Gender

Two-way ANOVA results indicated that the interaction between school configuration and gender produced no statistically significant differences in number of days absent for all three grade levels. School configuration alone was indicated in producing a statistically significant difference in number of days absent in Grade 7. The difference in mean number of days absent for students in Grade 7 between school configuration was slightly over one day of absences, with the K-8 elementary school configuration favored.

Race

Two-way ANOVA results indicate that at all grade levels, neither the interaction between school configuration and race or school configuration alone were indicated in producing statistically significant differences in the number of days absent for students involved in the study.

Discussion of Results

The purpose of this study was to determine if statistically significant differences existed in middle grade student outcomes based on school configuration. Standardized test scores, number of out-of-school suspensions, and number of absences were chosen to allow the researcher to ascertain if school configurations had the ability to impact early adolescent student success in the areas of academics and behavior. For the purpose of this study, student academic success was measured in two ways. Student academic success was first measured by 2015-2016 FSA ELA, Mathematics, and Algebra 1 EOC Examinations scale scores. In addition, academic growth of 2015-2016 Grade 8 students was calculated as students moved from Grade 5 to Grade 6 and from Grade 7 to Grade 8. For the purposes of this study, behavioral outcomes for students were assessed by examining the number of OSS and the number of days absent for individual students. The large central Florida school district that provided data for this study was selected due to its utilization of both the K-8 elementary school and 6-8 middle school configurations to serve students in Grades 6 through 8. The large central Florida school district had three pairs of K-8 elementary schools and 6-8 middle school with relatively similar demographic composition. The intent of this study was to provide educational decision makers with the information necessary to make sound decisions regarding school configuration with the goal of providing the educational environment most likely to produce positive outcomes for early adolescent. Research conducted by Eccles (1993a) and her fellow researchers reinforces the importance of matching school environments to students' developmental needs, "At the most basic level, the [stage-environment fit] perspective suggests the importance of looking at the fit between the needs of early adolescents and the opportunities afforded them in the…school environment" (p. 92) to improve student outcomes.

Data analysis revealed that for the most part, when school configuration alone or the interactions between school configuration and gender or school configuration and race were indicated in impacting student academic and behavioral outcomes, the K-8 elementary school was favored. One important exception to note is that the K-8 elementary school configuration was indicated in lower outcomes in terms of mean standardized test scores for students classified as Black. It is also important to note that the differences in standardized test scores based on school configuration was larger for students classified as White and Other than for students classified as Black. For students classified as Hispanic, the differences in mean standardized test scores based on differences in school configuration were very small.

Although not applicable to all racial groups, overall, the K-8 elementary school configuration positively impacted early adolescent student outcomes. Students classified as White and Other showed better academic outcomes in both FSA English Language Arts and Mathematics in Grade 6 and Grade 7 when attending schools configured as K-8 elementary schools. In addition, K-8 elementary school students classified as White had positive outcomes on Grade 7 and Grade 8 FSA Algebra 1 EOC Examinations when compared to their 6-8 middle school counterparts. This study adds to the depth of research supporting a return to the K-8 elementary school configuration by providing evidence of better academic outcomes for early adolescent students.

Results of this study support both anecdotal and research-based findings that the K-8 elementary school configuration produced better academic outcomes than the 6-8 middle school configuration for early adolescent students. Yecke (2006) discussed the trend of better academic performance in the K-8 elementary school configuration which, although not addressed by a wide body of research, has not gone unnoticed by parents, teachers, and administrators. In addition, Rockoff and Lockwood (2010), and more recently, Clark et al. (2013) provide evidence that in both Mathematics and English Language Arts, Grade 6, 7, and 8, students attending K-8 elementary schools outperformed their same grade counter parts attending 6-8 middle schools.

In regard to behavioral outcomes, the K-8 elementary school configuration produced superior outcomes for all student groups. At all grade levels, both males and females had lower mean numbers of OSS in the K-8 elementary school configuration than in the 6-8 middle school configuration. At Grades 6 and 8, the difference in number of OSS between male students attending K-8 elementary schools and male students attending 6-8 middle schools was quite large. In addition, results showed that students in Grade 7 experienced a statistically significant difference in number of days absent based on school configuration, with the K-8 elementary school configuration producing fewer absences.

Findings of this study are in agreement with those of prior researchers and provide evidence of better behavioral outcomes for students in K-8 elementary school configurations. Numerous researchers, including Rockoff and Lockwood (2010), Yecke (2006), and Clarket al. (2014), reported increased rates of discipline issues and absenteeism among students attending 6-8 middle schools as compared to those students attending K-8 elementary schools.

It is impossible to truly separate academic and behavioral outcomes for students, as many of the same factors that influence one outcome also influence another. Another consideration is that both days absent and OSS result in time out of the instructional environment for students.

Rockoff and Lockwood (2010) asserted, “Increased absences [regardless of reason] may be one mechanism through which middle schools lower student achievement” (p. 72). Therefore, both number of OSS and number of days absent are behavioral outcomes that are closely intertwined with academic outcomes. Anderson et al. (2000) explained that when students choose to disengage from the school community, it is often a result of a combination of both academic and emotional factors and “both factors are generally related” (p. 330)

Although the reasons underlying differences in student outcomes were not specifically addressed in this study, the smaller relative size of K-8 elementary schools may play a significant role in improving student outcomes. In their research, Rockoff and Lockwood (2010) reported that “cohort size has a pronounced influence on student achievement during [the middle school] years” (p. 74). In this study, the selected K-8 elementary schools served a total of 1,312 students in Grades 6 through 8, and the 6-8 middle schools selected for this study served a total of 3,412 students in the same grade levels. The trend of Grades 6-8 middle schools serving a larger number of students than Grades K-8 elementary schools is not unique to the large central Florida school district selected for this study (Holas & Houston, 2012).

In order to address the unique challenge of educating a large early adolescent population, some 6-8 middle schools have turned towards departmentalization. Subject area departmentalization may contribute to a lack of meaningful student-teacher relationships and a decreased sense of belonging among students in 6-8 middle schools (Anderson et al., 2000), both of which impact student academic and behavioral outcomes. It stands to reason that a larger student population that transitions multiple times per day will experience decreased opportunities to build meaningful relationships with multiple adults on campus (Weiss & Kipnes, 2006). A larger student population also requires a larger teaching staff, decreasing opportunities for teacher to teacher interaction. A large middle school may have several teachers assigned to teach the same classes. Without targeted efforts accompanied by sufficient time, resources, and support to facilitate common planning, teachers may have very little opportunity to ensure they are providing all students with a similar curriculum. The tendency toward departmentalization in Grades 6-8 middle schools may also contribute to decreased opportunities for cross-curricular learning experiences for students and less adult conversation regarding students' progress across the curriculum.

The transition to a different building and educational environment from fifth to sixth grade may also result in a loss of connection with the school community for both students and parents (Patton, 2005; Rockoff & Lockwood, 2010). "Typically, when a child graduate from a K-6 school, parents disconnect from that school and do not reconnect with the child's middle school" (Herman, 2004, p. 29). In addition, parents may not experience the same level of involvement in their child's education or hold the same positive feeling toward 6-8 middle schools as compared to K-8 elementary schools (Patton, 2005; Yecke, 2005). In an effort to create smaller learning communities, some large 6-8 middle schools may team students. Although teaming increases opportunities for students to create relationships with the adults associated with their teams, teaming may actually separate close peer groups that developed during the early elementary years. Differences in school climate may also impact student outcomes as students move from a K-5 elementary school to a 6-8 middle school. Anderson et al. (2000) characterized the K-5 elementary school as a primary-type environment and the 6-8 middle school as a large-scale bureaucratic secondary-type environment. In their description of

6-8 middle schools, Anderson et al. (2000) included a greater emphasis on rule following and relative student ability in addition to the increased school size, departmentalization, and fewer personal relationships with teachers discussed previously as contextual differences between the elementary and middle school.

Results of this study show that students who did not experience a school to school transition during the progression from Grade 5 to Grade 6, (i.e. students attending K-8 elementary schools), experienced statistically significantly higher mean FCAT 2.0 Reading growth scores. Students in Grade 8 during the 2015-2016 school year would have been in Grade 7 during the 2014-2015 school year producing FSA ELA and FSA Mathematics growth scores as they moved from the Grade 7 to Grade 8. No statistically significant differences in FSA ELA or FSA Mathematics growth scores were found in this study. Because neither the K-8 elementary school nor the 6-8 middle school configuration requires students to make a school to school transition as they move from Grade 7 to Grade 8, findings of no statistically significant difference in FSA ELA and FSA Mathematics growth scores between school configurations were not surprising.

Implications for Practice

District level administrators have the freedom to arrange schools in any one of a number of different grade level configurations. Efforts to re-configure the middle grades should be driven by the goal of maximizing positive academic and behavioral outcomes for early adolescence. In recent years, the K-8 school configuration has been gaining popularity with administrators, teachers, and parents. Unfortunately, academic research in this area is scant, leaving most school districts to rely on anecdotal evidence and non-specific claims of positive outcomes in making their decision to return to the K-8 school configuration. This study provides evidence of differences in student outcomes, due at least in part to school configuration.

Regardless of school configuration, district leaders should consider implementing strategies often employed by K-8 elementary school to improve student outcomes, including:

1. Create small learning communities within larger schools to increase a sense of belonging and the likelihood of forming teacher-student relationships.
2. Cultivate and maintain high levels of parent involvement as students reach early adolescence.
3. Provide common planning time for teachers to engage in meaningful curriculum planning with an emphasis on cross-curricular opportunities.
4. Implement high quality and on-going transition programs for students and parents.
5. Offer increased opportunities for academic support as students progress into more difficult courses.
6. Re-examine behavior guidelines and consequences to ensure they are age appropriate and enforced consistently.
7. Provide quality teacher professional development in the unique needs of early adolescents.

Recommendations for Further Research

Results of this study illuminate the need for additional research in the following areas:

- Further examination of teacher and school characteristics based on school configuration
    - Focus 1 – Teaching certifications for middle grade teachers

    - Focus 2 – Teaching pedagogy and resulting classroom environment as aligned with needs of early adolescents
    - Focus 3 – Gender and race composition of teacher population
    - Focus 4 – Alignment of school and community characteristics/culture (especially important for students who must "code-switch" between home and school environment)
- Analysis of distribution and allocation of funding and resources by school configuration
    - Focus 1 – Title1, ESOL/ELL funding and resources
    - Focus 2 – Funding and resources available to students requiring enrichment and advancement
    - Focus 3 – Operational components including personnel allocations, transportation, food service, and facility maintenance
- Examination of training and certification of school level administrators by configuration
- Research addressing additional student outcomes and disaggregated by additional student characteristics
    - Focus 1 – Socio-emotional health outcomes for students
    - Focus 2 - ESOL/ELL and ESE (including gifted) population outcomes
    - Focus 3 – Grade 9 student outcomes based on Grade 6 through 8 school configuration
    - Focus 4 – Student outcomes for K-12 and 7-12 school configurations

In the area of aligning grade configurations with early adolescent student needs, a viable area of future research is closer examination into the characteristics of teachers who teach at K-8 elementary schools in comparison to teachers who teach at 6-8 middle schools. Differences in K-8 elementary school teachers and 6-8 middle school teachers may be due to a variety of factors including the wide variety of teaching certifications available for Grades 6 through 8, differences in teaching pedagogy as aligned with the preadolescent developmental stage, and school and classroom environments as established by building level administrators and individual classroom teachers.

Teachers of early adolescent students may hold a wide range of teaching certifications in the state of Florida. Florida offers a Grade K-6 general certification as well as Grade 5-9 and Grade 6-12 certifications in the core subjects of English, science (5-9 general science certification, 6-12 science certification in the areas of biology, chemistry, earth-space science, and physics), mathematics, and social science. This means that Grade 6 standalone English, Science, Mathematics, and Social Science classes may be taught by teachers holding one of three vastly different certifications. In Grades 7 and 8, standalone English, Science, Mathematics, and Social Science classes may be taught by a teacher with a certification focused on the middle grades or by a teacher with a certification focused on a secondary specialization area. In the same core subject area, the certification requirements for a middle grade (5-9) certification are different than the certification requirements for a secondary level (6-12) certification. For example, a middle grade (5-9) certification in English requires "a bachelor's or higher degree with an undergraduate or graduate major in English or middle grades English" or "a bachelor's or higher degree with eighteen (18) semester hours in English." In contrast, a secondary level (6-12) certification in English requires "a bachelor's or higher degree with an undergraduate or graduate major in English" or "a bachelor's or higher degree with thirty (30) semester hours in

English" (Florida Department of Education, 2000, p. 1). Differences in the experience levels and sense of self-efficacy may also exist between K-8 elementary school and 6-8 middle school teachers. Weiss and Kipnes (2006), in studying the School District of Philadelphia, found that "middle schools have a lower percentage of certified teachers than do K-8 schools" (p. 249) and "middle school teachers are also less experienced and are more likely to leave their position within three years than their counterparts in K-8 schools" (p. 250).

In addition to differences in certification requirements, differences in pedagogy and the resulting school and classroom environment may have a larger influence on student outcomes than actual school configuration. According to McEwin, a researcher and professor at Appalachian State University, "When you look at educating, it's not necessarily the grade configuration, it's what [the teacher] is doing in the classroom that is developmentally appropriate" or inappropriate (as cited in Reeves, 2005, p. 9). Eccles et al. (1993a) advocated for environments that foster personal and positive relationships between teachers and early adolescents and a decreased emphasis on "ability groupings, comparative and public evaluation, and whole-class task organization" (p. 98) during the early adolescent years due this age groups' tendency to experience a heightened concern regarding their status in relation to their peers. Midgley et al. (1989) argued that middle school teachers hold different beliefs regarding their personal efficacy than elementary school teachers. They attributed these differences to the larger size of middle schools and tendency of middle schools to departmentalize classes and teachers by subject area.

There is another area of additional research worth pursuing, especially in light of differences in FSA scale score outcomes along racial lines. That is the distribution of Title 1, Part A (Title 1) of the Elementary and Secondary Education Act and ESOL (English for speakers of other languages) weighted FTE (full-time equivalent) funding resources in the K-8 elementary school configurations versus the 6-8 middle school configuration. In a school configured as a K-8 elementary school, Title 1 and ESOL weighted FTE resources must be divided among nine grade levels, while 6-8 middle schools only require the resources to be divided among three grade levels. Although schools using either school configuration would be allotted the same amount of funding under both Title 1 and ESOL weighted FTE funding based on qualifying student enrollment, there is a certain level of district and building level discretion as to how those funds are actually used within the school as long as certain funding guidelines are followed. According to the United States Department of Education (2015):

> Title I schools with percentages of students from low-income families of at least 40 percent may use Title I funds, along with other Federal, State, and local funds, to operate a "schoolwide program" to upgrade the instructional program for the whole school. Title I schools with less than the 40 percent schoolwide threshold or that choose not to operate a schoolwide program offer a "targeted assistance program" in which the school identifies students who are failing, or most at risk of failing, to meet the State's challenging academic achievement standards. Targeted assistance schools design, in consultation with parents, staff, and district staff, an instructional program to meet the needs of those students. Both schoolwide and targeted assistance programs must use instructional strategies based on scientifically based research and implement parental involvement activities. (para. 5)

The Florida Department of Education’s English Language Learners (ELLs) Database and Program Handbook (2011) stated the following requirements for use of ESOL weighted funding, ESOL weighted FTE funding is only allowed to be used in Basic ESOL (Language Arts/English) classes using ESOL strategies, ESOL electives, and ESOL or home language instruction in math, science, social studies and computer literacy (Florida Department of Education, 2011). The manner in which Title 1 and ESOL weighted FTE funding may be utilized may be heavily dependent on the overall structure of the school and the courses it offers and may therefore be a significant factor contributing to the difference in student outcomes between different racial groups.

A final suggestion for additional research is in the area of training and certification available to potential educational leaders. Currently, graduate programs and professional certifications for educational leaders in Florida are not school level specific. A potential educational leader desiring to lead a small elementary school pursues the same course work and leadership certifications as one desiring to lead a large high school. Even though a vastly different set of skills and knowledge is required for successfully leading schools of different grade levels, there exists no differentiation in most educational leadership programs. It is worth examining the fact that educational leaders are responsible for creating the optimal learning environment for students but may not have the prerequisite knowledge and/or skills to successfully do so at the grade level they have been assigned to lead.

Summary

This study has provided additional insight into the area of the effect of school configuration on early adolescent student outcomes. Results of this study indicate that the K-8 elementary school configuration may prove beneficial in positively impacting both student academic and behavioral outcomes. As school district decision makers consider making adjustments to current school configuration, the lack of comprehensive research on school configuration itself may lead district leaders to base their decisions on anecdotal evidence, budgetary constraints, existing facilities, and/or pressure from parents. However, the top priority for district leaders must be providing early adolescent students with the environment necessary to produce maximum positive outcomes.

APPENDIX A
PUBLIC RECORDS REQUEST AND FULFILLMENT

---------- Forwarded message ----------
From: **Jessica Kelce** <jessica.kelce@fac.htes.org>
Date: Tue, Aug 23, 2016 at 10:45 AM
Subject: Public Records Request
To: schaferd@osceola.k12.fl.us

To Ms. Schafer of the Community Relations Department of the School District of Osceola County,

Pursuant to Article I, section 24 of the Florida Constitution, and chapter 119, F.S., I am requesting copies of the following public records (with de-identification of student name and/or district assigned student identification number):

For all sixth, seventh, and eighth grade students that attended Bellalago Academy (charter), Celebration K-8, Westside K-8, Horizxon Middle School, St. Cloud Middle School, and Neptune Middle School schools during the 2015-2016 school year:

1) school attended
2) gender
3) race/ethnicity
4) standardized test scores - Florida Standards Assessment English Language Arts and Florida Standards Assessment Mathematics or End of Course Exam in Algebra
5) number of absences (by student)
6) number of out of school suspensions (by student)
7) for students in eighth grade during the 2015-2016 school year, standardized test scores for school year 2014-2015 (FSA English Language Arts and FSA Mathematics), standardized test scores for school year 2013-2014 (FCAT 2.0 Reading and FCAT 2.0 Mathematics), and standardized test scores for 2012-2013 (FCAT 2.0 Reading and FCAT 2.0 Mathematics)

Should you deny my request, or any part of the request, please state in writing the basis for the denial, including the exact statutory citation authorizing the denial as required by s. 199.07(1)(d), F.S.

I will contact your office within one week (8/30/2016) to discuss when I may expect fulfillment of my request, and payment of any statutorily prescribed fees. If you have any questions in the interim, you may contact be at 321-506-6897 or jessica.kelce@knights.ucf.edu.

Thank you,
Jessica Kelce

Copy of Public%20recor...
235 KB

Download   Save to OneDrive - University of Central Florida - UCF

From: Dana Schafer [mailto:schaferd@osceola.k12.fl.us]
Sent: Thursday, August 25, 2016 9:07 AM
To: Kelce, Jessica <Jessica.Kelce@HTES.ORG>
Subject: Public Records Request

Jessica:

Please find information attached to fulfill your public records request. Best of luck with your dissertation.

Dana Schafer
Public Information Officer
. . . .
Osceola School District
Community Relations
817 Bill Beck Blvd.
Kissimmee, FL 34744
office: 407-870-4007
cell: 407-908-8811
internal extension: 66205
fax: 407-870-4017

APPENDIX B
UCF INSTITUTIONAL REVIEW BOARD REVIEW

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901, 407-882-2012 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

NOT HUMAN RESEARCH DETERMINATION

From : **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To : **Jessica R. Kelce**

Date : **August 16, 2016**

Dear Researcher:

On 08/16/2016 the IRB determined that the following proposed activity is not human research as defined by DHHS regulations at 45 CFR 46 or FDA regulations at 21 CFR 50/56:

Type of Review:	Not Human Research Determination
Project Title:	A Comparison of Sixth, Seventh, and Eighth Grade Student Outcomes In Schools Configured K-8 Elementary Schools Versus 6-8 Middle Schools As Measured By State Standardized Tests, Student Discipline Referrals, and Student Attendance
Investigator:	Jessica R. Kelce
IRB ID:	SBE-16-12427
Funding Agency:	
Grant Title:	
Research ID:	N/A

University of Central Florida IRB review and approval is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are to be made and there are questions about whether these activities are research involving human subjects, please contact the IRB office to discuss the proposed changes.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Patria Davis on 08/16/2016 12:47:19 PM EDT

IRB Coordinator

APPENDIX C
RESEARCH QUESTION 1: SUPPORTIVE STATISTICAL ANALYSES

Mean, Standard Deviations, Skewness, and Kurtosis Results, FSA ELA, Grade 6

	N	Mean	Std. Deviation	Skewness	Kurtosis
Scale Score	1660	324.38	22.460	-.376	.276
School Configuration	1660	.71	.453	-.934	-1.129
Gender	1660	1.52	.500	-.077	-1.996
Race	1660	1.33	.718	.231	-.114
Valid N (listwise)	1660				

Levene's Test of Equality of Error Variance, FSA ELA, Grade 6, Gender as Moderator Variable

Dependent Variable: FSA ELA Scale Score 15-16

F	df1	df2	Sig.
4.466	3	1656	.004

Levene's Test of Equality of Error Variance, FSA ELA, Grade 6, Race as Moderator Variable

Dependent Variable: FSA ELA Scale Score 15-16

F	df1	df2	Sig.
.706	7	1652	.667

Mean, Standard Deviations, Skewness, and Kurtosis Results, FSA ELA, Grade Seven

	N	Mean	Std. Deviation	Skewness	Kurtosis
Scale Score	1498	329.44	21.467	-.382	.016
School Configuration	1498	.72	.450	-.968	-1.065
Gender	1498	1.50	.500	-.016	-2.002
Race	1498	1.30	.714	.340	.028
Valid N (listwise)	1498				

Levene's Test of Equality of Error Variance, FSA ELA, Grade Seven, Gender as Moderator Variable

Dependent Variable: FSA ELA Scale Score 15-16

F	df1	df2	Sig.
2.907	3	1494	.034

Levene's Test of Equality of Error Variance, FSA ELA, Grade Seven, Race as Moderator Variable

Dependent Variable: FSA ELA Scale Score 15-16

F	df1	df2	Sig.
2.601	7	1490	.011

Mean, Standard Deviations, Skewness, and Kurtosis Results, FSA ELA, Grade Eight

	N	Mean	Std. Deviation	Skewness	Kurtosis
Scale Score	1245	334.72	22.195	-.490	.372
School Configuration	1245	.74	.436	-1.123	-.740
Gender	1245	1.54	.498	-.176	-1.972
Race	1245	1.25	.693	.409	.235
Valid N (listwise)	1245				

Levene's Test of Equality of Error Variance, FSA ELA, Grade Eight, Gender as Moderator Variable

Dependent Variable: FSA ELA Scale Score 15-16

F	df1	df2	Sig.
3.106	3	1241	.026

Levene's Test of Equality of Error Variance, FSA ELA, Grade Eight, Race as Moderator Variable

Dependent Variable: FSA ELA Scale Score 15-16

F	df1	df2	Sig.
4.021	7	1237	.000

Mean, Standard Deviations, Skewness, and Kurtosis Results, FSA Mathematics, Grade 6

	N	Mean	Std. Deviation	Skewness	Kurtosis
Scale Score	1673	320.60	22.080	-.167	.370
School Configuration	1673	.71	.454	-.930	-1.136
Gender	1673	1.52	.500	-.090	-1.994
Race Coded	1673	1.33	.718	.233	-.110
Valid N (listwise)	1673				

Levene's Test of Equality of Error Variance, FSA Mathematics, Grade 6, Gender as Moderator Variable

Dependent Variable: FSA Mathematics Scale Score 15-16

F	df1	df2	Sig.
2.846	3	1669	.036

Levene's Test of Equality of Error Variance, FSA Mathematics, Grade 6, Race as Moderator Variable

Dependent Variable: FSA Mathematics Scale Score 15-16

F	df1	df2	Sig.
1.497	7	1665	.164

Mean, Standard Deviations, Skewness, and Kurtosis Results, FSA Mathematics, Grade Seven

	N	Mean	Std. Deviation	Skewness	Kurtosis
Scale Score	1506	331.55	24.951	-.154	-.154
School Configuration	1506	.72	.450	-.976	-1.049
Gender	1506	1.51	.500	-.024	-2.002
Race	1506	1.30	.715	.357	.046
Valid N (listwise)	1506				

Levene's Test of Equality of Error Variance, FSA Mathematics, Grade Seven, Gender as Moderator Variable

Dependent Variable: FSA Mathematics Scale Score 15-16

F	df1	df2	Sig.
8.938	3	1502	.000

Levene's Test of Equality of Error Variance, FSA Mathematics, Grade Seven, Race as Moderator Variable

Dependent Variable: FSA Mathematics Scale Score 15-16

F	df1	df2	Sig.
3.328	7	1498	.002

Mean, Standard Deviations, Skewness, and Kurtosis Results, FSA Mathematics, Grade Eight

	N	Mean	Std. Deviation	Skewness	Kurtosis
Scale Score	1222	337.15	21.740	-.322	.216
School Configuration	1222	.74	.436	-1.124	-.739
Gender	1222	1.55	.498	-.191	-1.967
Race	1222	1.25	.689	.405	.256
Valid N (listwise)	1222				

Levene's Test of Equality of Error Variance, FSA Mathematics, Grade Eight, Gender as Moderator Variable

Dependent Variable: FSA Mathematics Scale Score 15-16

F	df1	df2	Sig.
8.471	3	1218	.000

Levene's Test of Equality of Error Variance, FSA Mathematics, Grade Eight, Race as Moderator Variable

Dependent Variable: FSA Mathematics Scale Score 15-16

F	df1	df2	Sig.
1.865	7	1214	.072

Mean, Standard Deviations, Skewness, and Kurtosis Results, Algebra 1 EOC Examination, Grade Seven

	N	Mean	Std. Deviation	Skewness	Kurtosis
Scale Score	18	529.72	17.736	-.369	-.026
School Configuration	18	.83	.383	-1.956	2.040
Gender	18	1.33	.485	.773	-1.594
Race	18	1.44	.616	-.616	-.391
Valid N (listwise)	18				

Levene's Test of Equality of Error Variance, FSA Algebra 1 EOC Examination, Grade Seven, Gender as Moderator Variable

Dependent Variable: FSA Algebra 1 EOC Examination Scale Score 15-16

F	df1	df2	Sig.
4.887	2	15	.023

Levene's Test of Equality of Error Variance, FSA Algebra 1 EOC Examination, Grade Seven, Race as Moderator Variable

Dependent Variable: FSA Algebra 1 EOC Examination Scale Score 15-16

F	df1	df2	Sig.
1.725	4	13	.205

Mean, Standard Deviations, Skewness, and Kurtosis Results, Algebra 1 EOC Examination, Grade Eight

	N	Mean	Std. Deviation	Skewness	Kurtosis
Scale Score	121	517.30	16.595	.467	.064
School Configuration	121	1.37	.276	-3.070	7.548
Gender	121	1.43	.497	.287	-1.950
Race	121	1.37	.797	.229	-3.21
Valid N (listwise)	121				

Levene's Test of Equality of Error Variance, FSA Algebra 1 EOC Examination, Grade Eight, Gender as Moderator Variable

Dependent Variable: FSA Algebra 1 EOC Scale Score 15-16

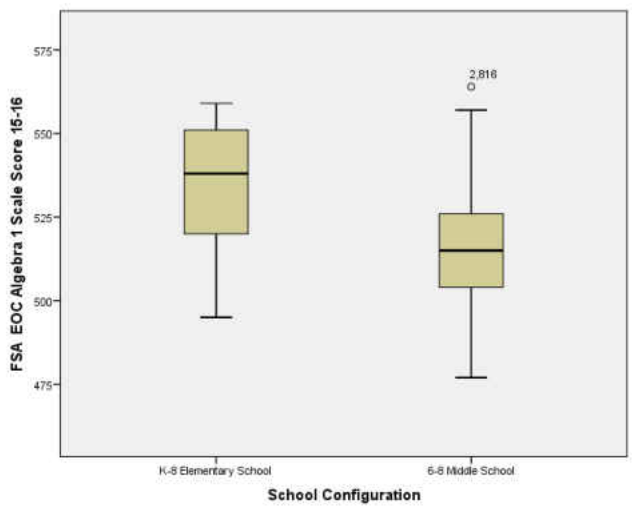
F	df1	df2	Sig.
.816	3	117	.488

Levene's Test of Equality of Error Variance, FSA Algebra 1 EOC, Grade Eight, Race as Moderator Variable

Dependent Variable: FSA Algebra 1 EOC Scale Score 15-16

F	df1	df2	Sig.
.804	5	115	.549

FSA Algebra 1 EOC Examination, Grade Eight - Outlier Analysis



Descriptive information for case ID 3816: Grade-8, Gender-Female, Race-White, School Configuration-K-8 elementary school

APPENDIX D
RESEARCH QUESTION 2: SUPPORTIVE STATISTICAL ANALYSES

Mean, Standard Deviations, Skewness, and Kurtosis Results, FSA ELA Growth

	N	Mean	Std. Deviation	Skewness	Kurtosis
FSA ELA Growth	1009	9.27	11.933	.166	.570
School Configuration	1009	.78	.416	-1.333	-.224
Gender	1009	1.54	.499	-.157	-1.979
Race	1009	1.26	.703	.385	.160
Valid N (listwise)	1009				

Levene's Test of Equality of Error Variance, FSA ELA Growth, Gender as Moderator Variable

Dependent Variable: FSA ELA Growth

F	df1	df2	Sig.
2.813	3	1005	.038

Levene's Test of Equality of Error Variance, FSA ELA Growth, Race as Moderator Variable

Dependent Variable: FSA ELA Growth

F	df1	df2	Sig.
.880	7	1001	.521

Mean, Standard Deviations, Skewness, and Kurtosis Results, FSA Mathematics Growth

	N	Mean	Std. Deviation	Skewness	Kurtosis
FSA Mathematics Growth	1015	12.65	12.912	.394	.657
School Configuration	1015	.78	.418	-1.322	-.254
Gender	1015	1.54	.499	-.152	-1.981
Race	1015	1.26	.702	.389	.170
Valid N (listwise)	1015				

Levene's Test of Equality of Error Variance, FSA Mathematics Growth, Gender as Moderator Variable

Dependent Variable: FSA Mathematics Growth

F	df1	df2	Sig.
1.838	3	1011	.138

Levene's Test of Equality of Error Variance, FSA Mathematics Growth, Race as Moderator Variable

Dependent Variable: FSA Mathematics Growth

F	df1	df2	Sig.
2.547	7	1007	.013

Mean, Standard Deviations, Skewness, and Kurtosis Results, FCAT 2.0 Reading Growth

	N	Mean	Std. Deviation	Skewness	Kurtosis
FCAT 2.0 Reading Growth	781	7.73	12.305	-1.005	9.177
School Configuration	781	.78	.412	-1.380	-.095
Gender	781	1.54	.499	-.141	-1.985
Race	755	1.28	.683	.372	.178
Valid N (listwise)	755				

Levene's Test of Equality of Error Variance, FCAT 2.0 Reading Growth, Gender as Moderator Variable

Dependent Variable: FCAT 2.0 Reading Growth

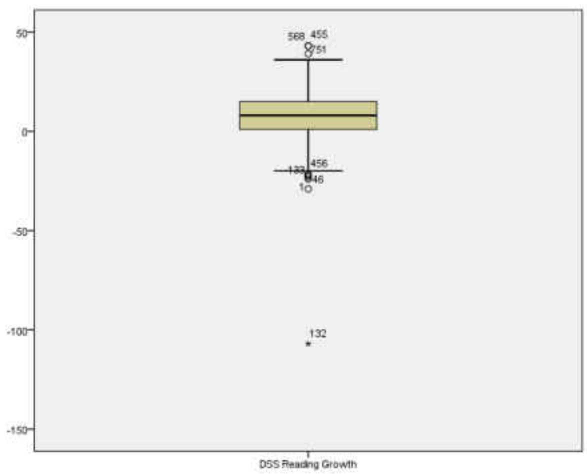
F	df1	df2	Sig.
.138	3	777	.937

Levene's Test of Equality of Error Variance, FCAT 2.0 Reading Growth, Race as Moderator Variable

Dependent Variable: FCAT 2.0 Reading Growth

F	df1	df2	Sig.
.918	7	747	.492

FCAT 2.0 Reading Growth - Outlier Analysis



Outlier Case ID, Gender Race/Ethnicity, School Configuration, FCAT 2.0 Reading Growth

Case ID	Gender	Race/Ethnicity	School Configuration	FCAT 2.0 Mathematics Growth
568	Male	Hispanic	K-8 Elementary School	43
455	Female	White	6-8 Middle School	43
751	Female	Hispanic	6-8 Middle School	39
133	Female	Hispanic	6-8 Middle School	-24
456	Female	White	6-8 Middle School	-22
46	Female	White	6-8 Middle School	-29
1	Female	Other	6-8 Middle School	-23

APPENDIX E
RESEARCH QUESTION 3: SUPPORTIVE STATISTICAL ANALYSES

Mean, Standard Deviations, Skewness, and Kurtosis Results, Number of OSS, Grade 6

	N	Mean	Std. Deviation	Skewness	Kurtosis
Number of OSS	1768	.22	.771	4.972	30.302
School Configuration	1768	.71	.453	-.938	-1.122
Gender	1768	1.53	.499	-.111	-1.990
Race	1768	1.32	.717	.250	-.090
Valid N (listwise)	1768				

Levene's Test of Equality of Error Variance, OSS, Grade 6, Gender as Moderator Variable

Dependent Variable: Number of OSS

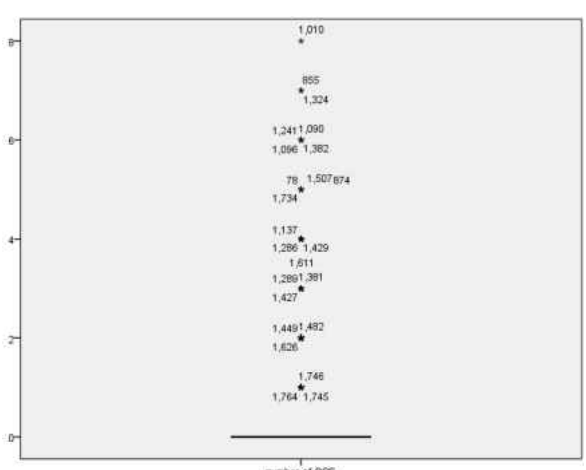
F	df1	df2	Sig.
99.388	3	1764	.000

Levene's Test of Equality of Error Variance, OSS, Grade 6, Race as Moderator Variable

Dependent Variable: Number of OSS

F	df1	df2	Sig.
21.082	7	1760	.000

Number of OSS, Grade 6 - Outlier Analysis



Outlier Case ID, Gender Race/Ethnicity, School Configuration, Number of OSS

Case ID	Gender	Race/Ethnicity	School Configuration	Number of OSS
78	Female	Hispanic	6-8 Middle School	5
855	Male	Black	6-8 Middle School	7
874	Male	Black	6-8 Middle School	5
1010	Male	Hispanic	6-8 Middle School	8
1090	Male	Hispanic	6-8 Middle School	6
1096	Male	Hispanic	6-8 Middle School	6
1137	Male	Hispanic	6-8 Middle School	4
1241	Male	Hispanic	6-8 Middle School	6
1286	Male	White	6-8 Middle School	4
1289	Male	White	6-8 Middle School	3
1324	Male	White	6-8 Middle School	7
1381	Male	White	6-8 Middle School	3
1382	Male	White	6-8 Middle School	6
1427	Male	White	6-8 Middle School	3
1429	Male	White	6-8 Middle School	4
1449	Male	White	6-8 Middle School	2
1482	Male	Other	6-8 Middle School	2
1507	Male	Black	K-8 Elementary School	5
1611	Male	White	K-8 Elementary School	4
1626	Male	White	K-8 Elementary School	2
1734	Male	White	K-8 Elementary School	5
1745	Male	White	K-8 Elementary School	1
1746	Male	White	K-8 Elementary School	1
1764	Male	Other	K-8 Elementary School	1

Two-Way ANOVA Results for Number of Out-of-School Suspensions, Grade 6, Outliers Excluded, Race as Moderator Variable

Tests of Between-Subjects Effects

Dependent Variable: number of OSS

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Race	3.419	3	1.140	3.561	.014
School Configuration	7.145	1	7.145	22.324	.000
Race * School Configuration	1.568	3	.523	1.633	.180
Error	555.572	1736	.320		
Corrected Total	575.775	1743			

Mean, Standard Deviations, Skewness, and Kurtosis Results, Number of OSS, Grade 7

	N	Mean	Std. Deviation	Skewness	Kurtosis
Number of OSS	1607	.22	.838	7.065	79.829
School Configuration	1607	.72	.450	-.974	-1.053
Gender	1607	1.51	.500	-.054	-2.000
Race	1607	1.30	.719	.342	.022
Valid N (listwise)	1607				

Levene's Test of Equality of Error Variance, OSS, Grade 7, Gender as Moderator Variable

Dependent Variable: Number of OSS

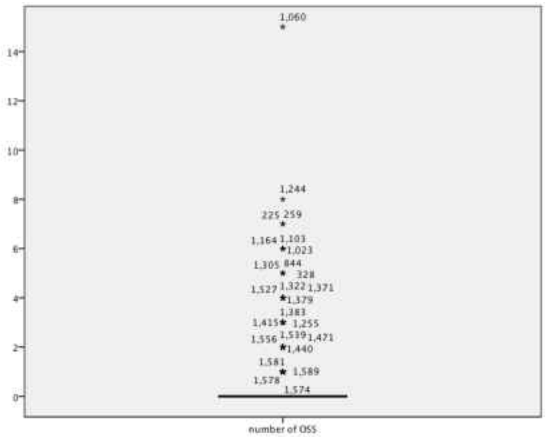
F	df1	df2	Sig.
46.687	3	1603	.000

Levene's Test of Equality of Error Variance, OSS, Grade 7, Race as Moderator Variable

Dependent Variable: Number of OSS

F	df1	df2	Sig.
7.989	7	1599	.000

Number of OSS, Grade 7 - Outlier Analysis



Outlier Case ID, Gender Race/Ethnicity, School Configuration, Number of OSS

Case ID	Gender	Race/Ethnicity	School Configuration	Number of OSS
225	Female	Hispanic	6-8 Middle School	7
259	Female	Hispanic	6-8 Middle School	7
328	Female	Hispanic	6-8 Middle School	5
844	Male	Black	6-8 Middle School	5
1023	Male	Hispanic	6-8 Middle School	6
1060	Male	Hispanic	6-8 Middle School	15
1103	Male	Hispanic	6-8 Middle School	6
1164	Male	Hispanic	6-8 Middle School	6
1244	Male	White	6-8 Middle School	8
1255	Male	White	6-8 Middle School	3
1305	Male	White	6-8 Middle School	5
1322	Male	White	6-8 Middle School	4
1371	Male	Black	K-8 Elementary School	4
1379	Male	Black	K-8 Elementary School	4
1383	Male	Black	K-8 Elementary School	3
1415	Male	Hispanic	K-8 Elementary School	3
1440	Male	Hispanic	K-8 Elementary School	2
1471	Male	Hispanic	K-8 Elementary School	2
1527	Male	White	K-8 Elementary School	4
1539	Male	White	K-8 Elementary School	2
1566	Male	White	K-8 Elementary School	0
1574	Male	White	K-8 Elementary School	1
1578	Male	White	K-8 Elementary School	1
1581	Male	White	K-8 Elementary School	1
1589	Male	Other	K-8 Elementary School	1

Two-Way ANOVA Results for Number of Out-of-School Suspensions, Grade Seven, Outliers Excluded, Gender as Moderator Variable

Tests of Between-Subjects Effects

Dependent Variable: number of OSS

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	4.697	1	4.697	15.555	.000
School Configuration	6.270	1	6.270	20.762	.000
Gender * School Configuration	2.295	1	2.295	7.601	.006
Error	476.515	1578	.302		
Corrected Total	495.176	1581			

a. R Squared = .038 (Adjusted R Squared = .036)

Two-Way ANOVA Results for Number of Out-of-School Suspensions, Grade Seven, Outliers Excluded, Race as Moderator Variable

Tests of Between-Subjects Effects

Dependent Variable: number of OSS

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Race	.764	3	.255	.821	.482
School Configuration	2.473	1	2.473	7.977	.005
Race * School Configuration	.070	3	.023	.076	.973
Error	488.007	1574	.310		
Corrected Total	495.176	1581			

a. R Squared = .014 (Adjusted R Squared = .010)

Mean, Standard Deviations, Skewness, and Kurtosis Results, Number of OSS, Grade 8

	N	Mean	Std. Deviation	Skewness	Kurtosis
Number of OSS	1349	.26	.768	4.156	21.442
School Configuration	1349	.74	.439	-1.094	-.804
Gender	1349	1.55	.498	-.186	-1.968
Race	1349	1.25	.704	.410	.204
Valid N (listwise)	1349				

Levene's Test of Equality of Error Variance, OSS, Grade 8, Gender as Moderator Variable

Dependent Variable: Number of OSS

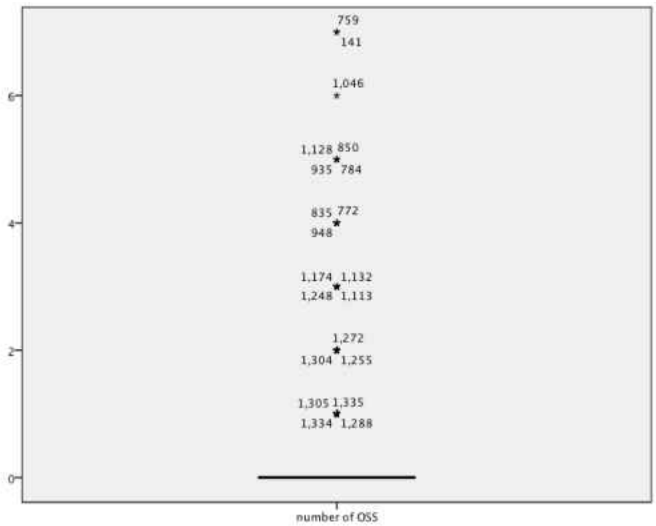
F	df1	df2	Sig.
52.196	3	1345	.000

Levene's Test of Equality of Error Variance, OSS, Grade 8, Race as Moderator Variable

Dependent Variable: Number of OSS

F	df1	df2	Sig.
11.997	7	1341	.000

Number of OSS, Grade 8 - Outlier Analysis



Outlier Case ID, Gender Race/Ethnicity, School Configuration, Number of OSS

Case ID	Gender	Race/Ethnicity	School Configuration	Number of OSS
141	Female	Hispanic	6-8 Middle School	7
759	Male	Hispanic	6-8 Middle School	7
772	Male	Hispanic	6-8 Middle School	4
784	Male	Hispanic	6-8 Middle School	5
835	Male	Hispanic	6-8 Middle School	4
850	Male	Hispanic	6-8 Middle School	5
935	Male	Hispanic	6-8 Middle School	5
948	Male	Hispanic	6-8 Middle School	4
1046	Male	White	6-8 Middle School	6
1113	Male	White	6-8 Middle School	3
1128	Male	White	6-8 Middle School	5
1132	Male	White	6-8 Middle School	3
1174	Male	Black	K-8 Elementary School	3
1248	Male	Hispanic	K-8 Elementary School	3
1255	Male	Hispanic	K-8 Elementary School	2
1272	Male	Hispanic	K-8 Elementary School	2
1288	Male	Hispanic	K-8 Elementary School	1
1304	Male	White	K-8 Elementary School	2
1305	Male	White	K-8 Elementary School	1
1334	Male	White	K-8 Elementary School	1
1335	Male	White	K-8 Elementary School	1

APPENDIX F
RESEARCH QUESTION 4: SUPPORTIVE STATISTICAL ANALYSES

Mean, Standard Deviations, Skewness, and Kurtosis Results, Days Absent YTD, Grade 6

	N	Mean	Std. Deviation	Skewness	Kurtosis
Days Absent YTD	1768	8.30	7.929	2.000	6.427
School Configuration	1768	.71	.453	-.938	-1.122
Gender	1768	1.53	.499	-.111	-1.990
Race	1768	1.32	.717	.250	-.090
Valid N (listwise)					

Levene's Test of Equality of Error Variance, Days Absent, Grade 6, Gender as Moderator Variable

Dependent Variable: Days Absent YTD

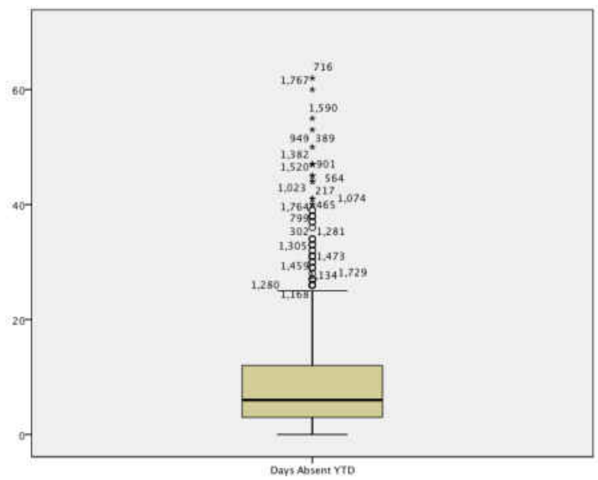
F	df1	df2	Sig.
1.737	3	1764	.157

Levene's Test of Equality of Error Variance, Days Absent, Grade 6, Race as Moderator Variable

Dependent Variable: Days Absent YTD

F	df1	df2	Sig.
1.604	7	1760	.130

Days Absent YTD, Grade 6 - Outlier Analysis



Outlier Case ID, Gender Race/Ethnicity, School Configuration, Days Absent YTD

Case ID	Gender	Race/Ethnicity	School Configuration	Days Absent YTD
217	Female	Hispanic	6-8 Middle School	40
302	Female	Hispanic	6-8 Middle School	37
389	Female	White	6-8 Middle School	53
465	Female	White	6-8 Middle School	40
564	Female	White	6-8 Middle School	45
716	Female	Hispanic	K-8 Elementary School	62
799	Female	White	K-8 Elementary School	36
901	Male	Hispanic	6-8 Middle School	47
949	Male	Hispanic	6-8 Middle School	50
1023	Male	Hispanic	6-8 Middle School	41
1074	Male	Hispanic	6-8 Middle School	41
1134	Male	Hispanic	6-8 Middle School	26
1168	Male	Hispanic	6-8 Middle School	26
1280	Male	White	6-8 Middle School	26
1281	Male	White	6-8 Middle School	37
1305	Male	White	6-8 Middle School	31
1382	Male	White	6-8 Middle School	47
1459	Male	White	6-8 Middle School	31
1473	Male	Other	6-8 Middle School	31
1520	Male	Black	K-8 Elementary School	45
1590	Male	Hispanic	K-8 Elementary School	55
1729	Male	White	K-8 Elementary School	31
1764	Male	Other	K-8 Elementary School	38
1767	Male	Other	K-8 Elementary School	60

Two-Way ANOVA Results for Number of Days Absent, Grade 6, Race as Moderator Variable, Outliers Excluded

Tests of Between-Subjects Effects

Dependent Variable: Days Absent YTD

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Race	788.619	3	262.873	5.561	.001
School Configuration	17.013	1	17.013	.360	.549
Race * School Configuration	57.471	3	19.157	.405	.749
Error	82055.927	1736	47.267		
Corrected Total	83123.128	1743			

a. R Squared = .013 (Adjusted R Squared = .009)

Mean, Standard Deviations, Skewness, and Kurtosis Results, Days Absent YTD, Grade 7

	N	Mean	Std. Deviation	Skewness	Kurtosis
Days Absent YTD	1607	9.18	8.369	2.043	7.722
School Configuration	1607	.72	.450	-.974	-1.053
Gender	1607	1.51	.500	-.054	-2.000
Race	1607	1.30	.719	.342	.022
Valid N (listwise)	1607				

Levene's Test of Equality of Error Variance, Days Absent, Grade 7, Gender as Moderator Variable

Dependent Variable: Days Absent YTD

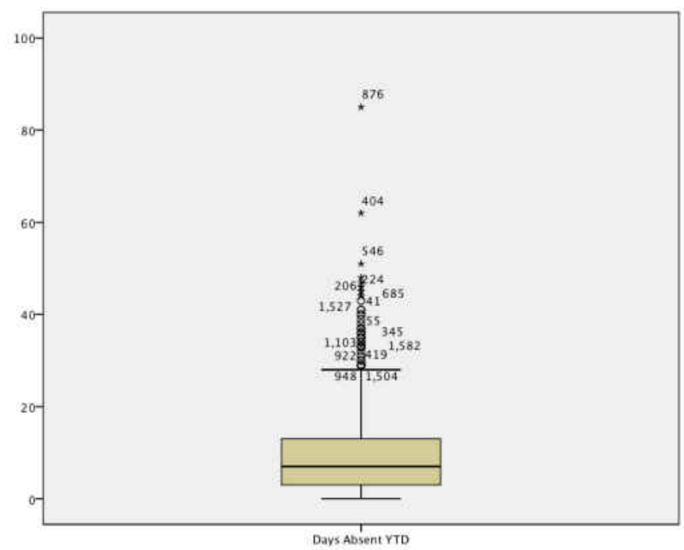
F	df1	df2	Sig.
.837	3	1603	.473

Levene's Test of Equality of Error Variance, Days Absent, Grade 7, Race as Moderator Variable

Dependent Variable: Days Absent YTD

F	df1	df2	Sig.
2.446	7	1599	.017

Days Absent YTD, Grade 7 - Outlier Analysis



Outlier Case ID, Gender Race/Ethnicity, School Configuration, Days Absent YTD

Case ID	Gender	Race/Ethnicity	School Configuration	Days Absent YTD
41	Female	Black	6-8 Middle School	43
55	Female	Hispanic	6-8 Middle School	36
206	Female	Hispanic	6-8 Middle School	44
224	Female	Hispanic	6-8 Middle School	45
345	Female	Hispanic	6-8 Middle School	36
404	Female	White	6-8 Middle School	62
419	Female	White	6-8 Middle School	29
546	Female	White	6-8 Middle School	51
685	Female	Hispanic	K-8 Elementary School	45
876	Male	Hispanic	6-8 Middle School	85
922	Male	Hispanic	6-8 Middle School	29
948	Male	Hispanic	6-8 Middle School	29
1103	Male	Hispanic	6-8 Middle School	36
1504	Male	Hispanic	6-8 Middle School	29
1527	Male	White	K-8 Elementary School	44
1582	Male	White	K-8 Elementary School	36

Two-Way ANOVA Results for Number of Days Absent, Race as Moderator Variable, Grade Seven, Outliers Excluded

Tests of Between-Subjects Effects

Dependent Variable: Days Absent YTD

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	123.602	1	123.602	2.187	.139
Race	869.238	3	289.746	5.127	.002
School Configuration * Race	456.375	3	152.125	2.692	.045
Error	89467.544	1583	56.518		
Corrected Total	91427.097	1590			

a. R Squared = .021 (Adjusted R Squared = .017)

Mean, Standard Deviations, Skewness, and Kurtosis Results, Days Absent YTD, Grade 8

	N	Mean	Std. Deviation	Skewness	Kurtosis
Days Absent YTD	1349	9.76	8.551	1.788	5.681
School Configuration	1349	.74	.439	-1.094	-.804
Gender	1349	1.55	.498	-.186	-1.968
Race	1349	1.25	.704	.410	.204
Valid N (listwise)	1349				

Levene's Test of Equality of Error Variance, Days Absent, Grade 8, Gender as Moderator Variable

Dependent Variable: Days Absent YTD

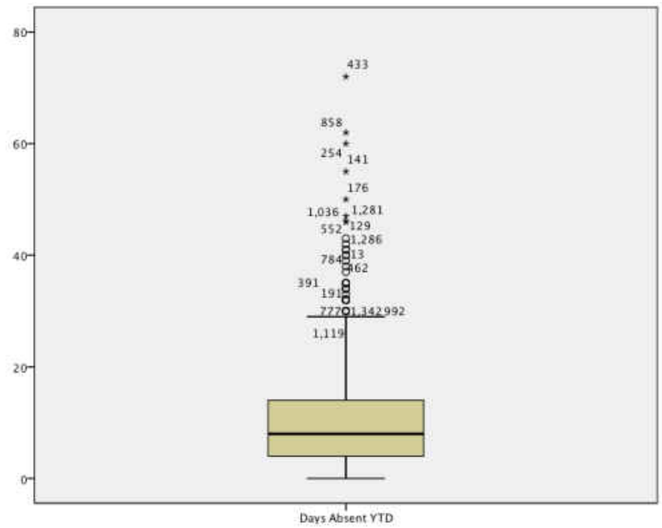
F	df1	df2	Sig.
.598	3	1345	.617

Levene's Test of Equality of Error Variance, Days Absent, Grade 8, Race as Moderator Variable

Dependent Variable: Days Absent YTD

F	df1	df2	Sig.
.707	7	1341	.666

Days Absent YTD, Grade 8 - Outlier Analysis



Outlier Case ID, Gender Race/Ethnicity, School Configuration, Days Absent YTD

Case ID	Gender	Race/Ethnicity	School Configuration	Days Absent YTD
13	Female	Black	6-8 Middle School	15
129	Female	Hispanic	6-8 Middle School	47
141	Female	Hispanic	6-8 Middle School	55
176	Female	Hispanic	6-8 Middle School	50
191	Female	Hispanic	6-8 Middle School	35
254	Female	Hispanic	6-8 Middle School	60
391	Female	Black	6-8 Middle School	35
433	Female	Other	6-8 Middle School	72
462	Female	Other	K-8 Elementary School	35
552	Female	Hispanic	K-8 Elementary School	43
777	Male	Hispanic	6-8 Middle School	30
784	Male	Hispanic	6-8 Middle School	41
858	Male	Hispanic	6-8 Middle School	62
992	Male	Black	6-8 Middle School	30
1036	Male	Black	6-8 Middle School	46
1119	Male	Black	6-8 Middle School	30
1281	Male	Hispanic	K-8 Elementary School	46
1286	Male	Hispanic	K-8 Elementary School	41
1342	Male	White	K-8 Elementary School	30

Two-Way ANOVA Results for Number of Days Absent, Race as Moderator Variable, Grade Eight, Outliers Excluded

Tests of Between-Subjects Effects

Dependent Variable: Days Absent YTD

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
School Configuration	123.602	1	123.602	2.187	.139
Race	869.238	3	289.746	5.127	.002
School Configuration * Race	456.375	3	152.125	2.692	.045
Error	89467.544	1583	56.518		
Corrected Total	91427.097	1590			

a. R Squared = .021 (Adjusted R Squared = .017)

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