ACHIEVEMENT GAP IN UNITED STATES HISTORY END OF COURSE ASSESSMENT

SCORES IN GA HIGH SCHOOLS

by

Kristopher Michael Watkins

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University

2017
ACHIEVEMENT GAP IN UNITED STATES HISTORY END OF COURSE ASSESSMENT

SCORES IN GA HIGH SCHOOLS

by Kristopher Michael Watkins

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University, Lynchburg, VA

2017

APPROVED BY:

Rick Bragg, Ed.D, Committee Chair

Monica Huband, Ed.D, Committee Member

Lisa Eaton, Ed.D, Committee Member
The purpose of this dissertation study, which employed a quantitative correlational research design, was to determine if the school-level variables of percentage of African American students, the percentage of economically disadvantaged students, and type of school scheduling significantly influence student performance on the Georgia Milestones U.S. History end-of-course assessments (EOCs) for the school years 2014-15 and 2015-16. The study utilized a sample of 163 high schools located in the Atlanta metropolitan statistical area (MSA). Results from simultaneous linear regression analyses showed that school-level percentage of economically disadvantaged students was significantly associated with school-level Georgia Department of Education (GADOE) U.S. History EOC scores. As the percentage of economically disadvantaged students increased, EOC scores decreased. Results were not however, significant for the relationship between school-level percentage of Black students and EOC scores. Results from simultaneous linear regression analyses as well as one-way analyses of variance (ANOVAs) showed that traditional scheduling more so than 4 X 4 block and A/B block scheduling and 4 X 4 block in comparison to A/B block scheduling was significantly associated with higher EOC scores. Study findings and suggestions for further research are discussed.

Keywords: high schools, achievement, African American students, economically disadvantaged, United States history, Georgia Milestones EOC scores, block schedule
Dedication

To my beautiful wife, you are my rock. You always knew when to push me to work to get this completed and when to take a step back. You were able to deal with me when no one else could, when I was frustrated and always knew how to motivate me to finish. Thank you for staying on me and not letting me give up!

To my beautiful daughter Harper. Your birth helped motivate me to work harder than I ever have to finish. Your smile everyday warms my heart and gave me the motivation to finish this long journey.
Acknowledgments

To my outstanding committee of Dr. Bragg, Dr. Huband, and Dr. Eaton, thank you for all of your time and hard work, none of this could have been completed without your support.
# Table of Contents

ABSTRACT ................................................................................................................................. 3

Dedication ................................................................................................................................. 4

Acknowledgments ..................................................................................................................... 5

List of Tables ............................................................................................................................ 8

List of Figures .......................................................................................................................... 9

List of Abbreviations ............................................................................................................... 10

CHAPTER ONE: INTRODUCTION .............................................................................................. 11

Overview ................................................................................................................................. 11

Background ............................................................................................................................... 11

Problem Statement .................................................................................................................. 16

Purpose Statement ................................................................................................................... 18

Significance of the Study .......................................................................................................... 19

Research Question(s) .............................................................................................................. 21

Definitions ............................................................................................................................... 22

CHAPTER TWO: LITERATURE REVIEW .................................................................................... 25

Overview ................................................................................................................................. 25

Theoretical Framework ........................................................................................................... 25

Related Literature .................................................................................................................. 31

Summary ................................................................................................................................. 55

CHAPTER THREE: METHODS ................................................................................................ 56

Overview ................................................................................................................................. 56

Design ..................................................................................................................................... 56
List of Tables

Table 1: (GADOE) U.S. History End-of-Course Test Scoring……………………………………63
Table 2: Descriptive Statistics: Metropolitan Atlanta High Schools - Percentages of White and
Ethnic Minority, Special Education, Gifted, and ESOL Students Schools …………………72
Table 3: Descriptive Statistics: Metropolitan Atlanta High Schools -Percentage of Black Students
and Percentage of Economically Disadvantaged Students ………………………………..74
Table 4: Frequencies and Percentages: Metropolitan Atlanta High Schools’ Type of Scheduling
………………………………………………………………………………………………………………75
Table 5: Descriptive Statistics: Metropolitan Atlanta High Schools - GADOE U.S. History
EOCs………………………………………………………………………………………………………………76
Table 6: Testing for Multicollinearity: Pearson Correlation Coefficients, Spearman’s Rho
Correlation Coefficients, and Variance Inflation Factors………………………………………..80
Table 7: Multiple Linear Regression: School-level Percentage of Black Students, Percentage of
Economically Disadvantaged Students, Traditional versus 4 X 4 Block Scheduling, and
Traditional versus A/B Block Scheduling Predicting GADOE U.S. History EOCs ………..82
Table 8: Multiple Linear Regression: School-level Percentage of Black Students, Percentage of
Economically Disadvantaged Students, Traditional versus 4 X 4 Block Scheduling, and
Traditional versus A/B Block Scheduling Predicting GADOE U.S. History
EOCs………………………………………………………………………………………………………………83
List of Figures

Figure 1 ..................................................................................................................................................81
List of Abbreviations

Annual Yearly Progress (AYP)

College and Career Ready Performance index (CCRPI)

Common Core State Standards Initiative (CCSSI)

End of Course (EOC)

English Language Arts (ELA)

Every Child Achieves Act (ECAA)

Georgia Department of Education (GADOE)

Metropolitan Statistical Area (MSA)

National Center for Education Statistics (NCES)

National Governors Association (NGA)

No Child Left Behind (NCLB)

State Education Agency (SEA)

United States Department of Education (USDOE)
CHAPTER ONE: INTRODUCTION

Overview

The goal of the dissertation study, which employed a quantitative correlational research design, was to determine if the school-level variables of percentage of African American students, the percentage of economically disadvantaged students, and type of school scheduling significantly influence student performance on the Georgia Milestones U.S. History end-of-course assessments (EOCs) in 163 high schools located in the Atlanta metropolitan statistical area (MSA). The goal of this chapter is to present a comprehensive overview of the study. The chapter opens with a historical review of the United States Department of Education (USDOE) accountability system in the background section. The chapter continues with both a problem and a purpose statement. The significance of the study prefaces the study research questions. The chapter ends with summary of definitions of terms pertinent to the study.

Background

Since 1965, the educational system in America has been driven by the principles and guidelines set forth by the Elementary and Secondary Education Act of 1965, commonly known as ESEA, the largest source of fiscal federal support for public K-12 education (Vinovskis, 2015). ESEA enacted the Title 1 policy, which provided the United States Department of Education (USDOE) public schools with 35% or more students who were eligible for free/reduced lunch with supplemental funding for educational initiatives aimed at enhancing the academic achievement of this at-risk student group (Vinovskis, 2015). Students of color disproportionately attend Title I schools, as poverty is strongly associated with ethnic minority status (Institute on Assets & Social Policy [IASP], 2013).
While ESEA and its many iterations informed the way in which several generations of American schoolchildren were to be educated, it was the eighth iteration of ESEA, the No Child Left Behind (NCLB) of 2001, that was the first to place substantial emphasis on school accountability standards by its establishment of the adequate yearly progress (AYP) initiative (Baker & Johnston, 2010; Ladd, 2017). NCLB ostensibly focused on Title I schools; however, federal education funding for state departments of education (SEAs) was contingent upon all schools’ adoption of the AYP accountability system (Vinovskis, 2015). As such, NCLB AYP impacted all students, teachers, schools, and school districts (Ladd, 2017). The USDOE initiated AYP to gauge student progress in meeting NCLB English/language arts (ELA) and mathematics achievement standards as well as to minimize the achievement gap in these subjects between Caucasian students of color in both Title I and non-Title I schools, goals of NCLB (Dee, Jacob, & Schwartz, 2013). Under NCLB, schools that received USDOE funding not only had to demonstrate student progress in academic achievement each year, they had to show reductions in achievement gaps among student groups recognized as at risk for school failure, including students of color, students whose first language was not English, and students who were economically disadvantaged (Dee et al., 2013; Ladd, 2017).

The USDOE mandated that state education agency (SEA) administrators develop and implement a state-wide accountability system that utilized standardized assessments to measure the degree to which Title I and non-Title I schools were meeting the objectives of NCLB (Dee et al., 2013; Ladd, 2017). Under NCLB, SEA administrators were required to develop AYP standardized assessments to measure K-12 student achievement in ELA and mathematics (Dee et al., 2013; Ladd, 2017). The AYP initiative increasingly became known as high-stakes testing (Ladd, 2017), as schools that did not meet AYP goals received a series of tiered sanctions that
increased in severity. Schools that failed to achieve AYP goals for two consecutive years were considered schools in need of improvement, and as a sanction, parents could send their child to a public school that had passing AYP scores. Schools that continued to not make AYP received a series of tiered sanctions, ending with restructuring, which often resulted in school closures (Ladd, 2017; Vinovskis, 2015).

The expectation of NCLB was that schools would reach their targeted goals by 2014, with 100% of students attaining proficiency in ELA and mathematics (Dee et al., 2013; Ladd, 2017; Thompson & Allen, 2012). Despite the federal investment of over $1 billion dollars for NCLB, it ended with having minimal evidence that students who were educated during the era of NCLB evinced positive academic outcomes or experienced substantial gains in ELA and mathematics (Domina, 2008; Ladd, 2017; Thompson & Allen, 2012). The general consensus of researchers and educators has been that NCLB was a “failed promise” (Dee et al., 2013, p. 253).

The state of Georgia was among many states in which education statistics documented the failure of NCLB. For the 2010-2011 school year - the last year GADOE used AYP assessments - 73% of Georgia schools made AYP, a drop from 77% in 2010 (GADOE, 2012). Moreover, 69.5% of Title I schools made AYP in 2011 in comparison to 75% in 2010, and the number of schools identified as in need of improvement increased from 305 in 2010 to 364 in 2011 (GADOE, 2012).

The most recent educational policy, the Every Child Achieves Act (ECAA) of 2015, has transformed the educational community, removing the AYP accountability systems established under NCLB (Senate Committee on Health, Education, Labor, and Pensions, 2015). However, state accountability remains a core component of the ECAA, ostensibly to ensure that SEAs provide students the necessary education services that promote life-long learning and 21st
century skills (Steinberg & Donaldson, 2016). While the USDOE is forbidden to utilize a national accountability system under ECAA, the introduction of the Common Core State Standards Initiative (CCSSI) and its associated USDOE funding required that SEA administrators develop high-quality and effective state accountability systems (Lauen & Gaddis, 2016). SEA administrators may choose to utilize PARCC, the assessment system developed for CCSSI, or they may choose to develop their own system of accountability that involves high-stakes testing (Steinberg & Donaldson, 2016).

The Georgia Department of Education (GADOE) serves almost two million students at their 13 K-12 schools, 1,320 elementary schools, 488 middle schools, and 470 high schools, of which 62% are economically disadvantaged and 37% are African American (The Governor’s Office of Student Achievement, 2017c). In 2012, GADOE received a waiver from the USDOE to develop and implement its own accountability system called the College and Career Ready Performance index (CCRPI) (see Appendix A), which is aligned with their new GADOE Milestones Assessment System (GADOE, 2013). The CCRPI is a more in-depth, complex, and rigorous accountability system that goes beyond the previous pass/fail system established under AYP (GADOE, 2013).

The CCRPI and Milestones Assessment System brought forth some key changes in the measurement of student performance (GADOE, 2013). One change was the use of both end-of-grade tests (EOGs) for third through eighth grade students and end-of-course tests (EOCs) in 10 high school subject areas that act as final exams for high school students, accounting for 15% to 20% of their course grade. The GADOE Milestones Assessment System utilizes assessments that are more difficult than AYP assessments created under NCLB (GADOE, 2014; Lindberg, 2015). During the 2011-2012 Milestones testing year, 40% of students who passed AYP ELA and
mathematics assessments did not receive passing scores on the GADOE Milestones ELA and mathematics EOGs (Lindberg, 2015).

School data supports the idea that GADOE’s accountability and assessment changes have been well-utilized, informing instructional practices to improve student performance (GADOE, 2015). The percentage of students who graduated from high school increased from 72.6% for the 2013-2014 school year to 79.4% for the 2015-2016 school year (The Governor’s Office of Student Achievement, 2017a). The increases in graduation rates for African American and economically disadvantaged students were more striking: the percentage of African American students who graduated increased from 65.3% for the 2013-2014 school year to 76.2% for the 2015-2016 school year and the percentages of economically disadvantaged students increased from 62.6% for the 2013-2013 school to 75.3% for the 2015-2016 school year (The Governor’s Office of Student Achievement, 2017a). However, school data show that schools in Georgia are still struggling to achieve the same high goals. While graduation rates have increased from 59.1% for the 2013-2014 school year to 71.1% for the 2015-2016 for Atlanta city high schools, which serves a student body in which 77% are economically disadvantaged and 75% are African American, these percentages are well below the state percentages (The Governor’s Office of Student Achievement, 2017a, 2017b).

The GADOE CCRPI accountability and Milestones Assessment Systems brought forth another change, in that student performance in not only ELA and mathematics but also science and social studies – under which the U.S. History course falls – is measured (GADOE, 2013, 2014). For the first time, high school teachers of U.S. History are responsible to ensure that their students meet standards of achievement as outlined by GADOE (GADOE, 2013, 2014). As NCLB did not assess student performance in history, teachers of history courses, especially those
teaching in Title I schools, did not receive the same supports and resources as the teachers of ELA and mathematics. Furthermore, they had little experience as to how to utilize student assessment scores to inform and guide their instructional practices. GADOE data suggest that the lack of social studies instructor experience, support, and resources impacted students’ learning (GADOE, 2015). GADOE U.S. History EOCs data reflect this concern: the percentages of African American and economically disadvantaged high school students who met competency levels on U.S. History EOCs in Atlanta city high schools remained a steady 36% (for both categories) from school year 2013-2014 to school year 2015-2016 while the percentages of students from other wealthier Georgia high schools increased from 40% in school year 2013-2014 to 43% in school year 2015-2016 (The Governor’s Office of Student Achievement, 2017b).

Problem Statement

Under NCLB, high schools in the 29-county Atlanta metropolitan statistical area (MSA) school districts often did not meet AYP and are still struggling to meet student competency levels and reduce achievement gaps under GADOE’s new CCRPI accountability system and the national Common Core State Standards (CCSSI), which implements Milestone EOGs and EOCs considered more rigorous than AYP assessments (Lindberg, 2015; The Governor’s Office on Student Achievement, 2014). There is a specific concern that a substantial percentage of students attending high schools in the Atlanta MSA school district are not meeting competency levels in U.S History, as documented by EOC scores (GADOE, 2016a). Under NCLB, Georgia educators teaching in Title I schools that did not meet or exceed ELA and mathematics AYPs received curricula and instructional support from the Georgia SEA and USDOE (Lindberg, 2015). Teachers of ELA and mathematics courses on the high school level have over 15 years of professional development, instructional support, and curricular resources to guide their
classroom practices to best promote student performance and progress and reduce achievement gaps among students of color and students who are economically disadvantaged. Under NCLB, high school student performance in U.S. History was not included in the calculation of state AYP but is now a component of the GADOE CCRPI accountability system (GADOE, 2013, 2014). High school history teachers in Georgia are required to demonstrate student achievement, progress, and reduction of achievement gaps in history topics but unfortunately have not received the same level of resources as their colleagues who teach ELA and mathematics (Liebtag, 2013). Moreover, U.S. History teachers need to utilize different instructional techniques that promote student critical thinking and problem-solving skills required under the CCSS, a substantial change from instructional practices that focused on rote memorization necessary under NCLB’s high-stakes testing environment (Leibtag, 2013). ELA and mathematics teachers have voiced difficulty with making this switch in instructional practices (Erickson, Lanning, & French, 2017); it is likely teachers of U.S. History feel the same way. They do not know if their instructional practices and factors such as scheduling types do in fact lead to student achievement and reduce achievement gaps (Harris & Bain, 2010; Murphy & Torff, 2016). Furthermore, they have little experience in high-stakes testing in relationship to the pressures aligned with state accountability systems (Kenna & Russell, 2015; van Hover, Hicks, Washington, & Lisanti, 2016). It is unknown if GADOE high school curricula and instructional practices in U.S. History align with EOC subject material and resultantly ensure student achievement and reduce the achievement gap among African American and economically disadvantaged students.

The problem that this study will address is the lack of current research in reference to the newly formulated GA Milestones assessment in U.S. History in relationship to overall student population and school schedule format the school chooses to employ. There have been
numerous other studies that have focused on subjects such as English, Math, and Science (Dee, Jacob, & Schwartz, 2013; Gagnon, 2010; Jennings & Bearak, 2014), however, there has been limited research conducted with a focus on student achievement in U.S. History. One problem addressed in this study is the current gap in research on student achievement in U.S. History among students attending Atlanta MSA high schools that have high percentages of African American and economically disadvantaged students in the metropolitan Atlanta area on the newly formulated GA Milestones assessment in United States History. Another problem addressed in this study is the current gap in research on how schedule format influences student performance on the newly formulated Georgia Milestones U.S. History EOC scores in high schools located in the Atlanta MSA. This study will help stakeholders and educational decision makers when choosing to evaluate their schedule format in reference to their overall student population.

**Purpose Statement**

The purpose of this quantitative study, which utilized a correlational research design and was conducted using 2014-2015 and 2015-2016 school year data from 163 high schools located in the Atlanta MSA, was three-fold. Studies that use correlational research designs use the nomenclature of predictor variable for independent variable and criterion variable for dependent variable (Denscombe, 2014). The first purpose is to examine if the school-level percentage of African American students, the predictor variable, is significantly related to U.S. History EOC scores, the criterion variable. The second purpose is to examine if the school-level percentage of students eligible for free/reduced lunch, the predictor variable and an indicator of economic disadvantage, is significantly related to U.S. History EOC scores, the criterion variable. The third and final purpose of the study is to examine if the type of school scheduling – traditional
versus block – the predictor variable significantly influences U.S. History EOC scores, the
criterion variable. The study sample of high schools in the Atlanta MSA represent the
population of high schools in Georgia.

**Significance of the Study**

This study has both empirical and applied significance. NCLB acted as a catalyst for
empirical research on student performance in ELA and mathematics, resulting in an enhanced
understanding of what NCLB did and did not achieve and providing information to guide
instructional practices and curricula (Domina, 2008; Lauen & Gaddis, 2016; Vinovskis, 2015).
Assessment of student performance in social studies courses in general and history courses in
particular were not priorities for NCLB, despite the understanding that students taking social
studies and history courses learn to enhance their critical thinking, problem solving, and
analytical skills (McLaughlin & McGill, 2017; McPeck, 2016). Moreover, the emphasis placed
on such factors as tiered instruction under NCLB likely stymied research that examined the
effects of other school factors, namely school scheduling types, on student achievement and
progress, especially in courses that were not tied to AYP. There have been numerous studies on
achievement and schedule format in regards to assessment performance, however, there have
been very few that focused on U.S. History assessment scores.

There have been numerous studies on achievement and schedule format in regards to
assessment performance, particularly in the subjects of math and English, however, very few
have been conducted with a focus on U.S. History. Veal and Schreiber (1999) study showed
inconclusive results when examining achievement scores in reading, language, and mathematics
scores. Lewis, Dungan, Winokur, and Cobb (2005) study showed that students had higher
assessment scores on math and reading ACT scores in students taught on the 4 X 4 block
compared to those taught on traditional and A/B block schedule formats. The results of Zepeda and Mayers (2006) research that examined 11 studies on schedule format and standardized test scores proved to be ambiguous.

A review of the literature on the effects of school scheduling type on student achievement with a focus on U.S. History revealed only three studies, one by Lawrence and McPherson (2000) and one by Gruber and Onwuegbuzie (2001) that are now obsolete and one more current study by Ratcliff at al (2014) which examined the effects of block scheduling on student achievement in U.S. history. This study will address the gap in literature as it pertains to student performance in U.S. history, with regard to both the student demographic factors and the type of school scheduling that may influence student achievement and progress as well as reducing the achievement gap in this high school subject. Moreover, this study will address the gap in school performance empirical literature that is recognized for its lack of guiding theories to inform research (Scheerens, 2013). This study will be among the first to test the relevance of Bronfenbrenner’s (1988) ecological system theory and Scheerens’ (1990) school effectiveness model to student performance in U.S. History on the newly formulated Georgia Milestones assessment.

This study will be integral to GADOE’s new CCRPI accountability system by determining linkages between the school demographic factors of percentage of African American and economically disadvantaged students and performance on U.S. History EOCs located in Metro Atlanta schools. The study will furthermore determine which type of scheduling, traditional or block, leads to higher U.S. History EOC scores. It is hoped that results from this study will be utilized by GADOE stakeholders to (a) focus more resources on Title I high schools, especially as they pertain to U.S. History educational materials and resources, (b)
develop and implement relevant professional development and training for U.S. History teachers in this school district, and (c) revise or update U.S. History courses to guarantee alignment to U.S. History EOCs.

**Research Question(s)**

This study poses three research questions. The predictor variables of the study are the ratio-coded school-level percentage of African American students and school-level percentage of student eligible for free/reduced lunch, both of which are measured using a scale from 0% to 100%, as well as the categorical variable of type of school scheduling, which will be coded as 0 = traditional and 1 = 4 X 4 block or modified block schedule. The criterion variables are the same for all three research questions: school-level U.S. History grade scores measured using a scale from 0-100 for the 2014-2015 and 2015-2016 school years. The study sample is not human subjects but is instead high schools located in the Atlanta MSA. The study will utilize a sample of 163 Atlanta MSA high schools, which represent the population of Title I high schools in Georgia. One simultaneous regression analyses for each school year will be conducted to test study hypotheses.

**RQ1:** To what extent, if any, does the school-level African American student enrollment percentage significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-2016, in a sample of 163 metropolitan Atlanta high schools?

**RQ2:** To what extent, if any, does the school-level economically disadvantaged student enrollment percentage (i.e., percentage of students eligible for free/reduced lunch) significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-16, in a sample of 163 metropolitan Atlanta high schools?
RQ3: To what extent, if any, does the type of high school scheduling (i.e., block or traditional) significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-2016, in a sample of 163 metropolitan Atlanta high schools?

Definitions

Terms pertinent to the study should be listed and defined as the final section of chapter one. All definitions in this section also need to be supported by the literature. Include terms that use abbreviations. Citations are needed. Dictionary definitions are not acceptable. Italicize terms to be defined. Example:

1. *Atlanta Metropolitan Statistical Area (MSA)* - The Atlanta MSA is an urban area that is 8,376 square miles and encompasses 29 counties in Georgia (Barrow, Bartow, Butts, Carroll, Cherokee, Clayton, Cobb, Coweta, Dawson, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Haralson, Heard, Henry, Jasper, Lamar, Meriweather, Morgan, Newton, Paulding, Pickens, Rockdale, Spalding, and Walton) (Georgia Power, 2017). Home to almost six million people, the Atlanta MSA is the ninth largest metropolitan area in the United States (Georgia Power, 2017).

2. *Block Scheduling* - Block scheduling, an instructional approach informed by extended/increase learning time empirical literature and theory, refers to replacing traditional scheduling in which students attend six to eight 45- or 50-minute classes a day to a schedule in which students attend three to four 90 or more minute classes a day (Center for School Success [CSS], 2009). Block scheduling is delineated into three types: (a) alternative day schedule, where students have three to four classes in subject areas that vary every other day, (b) 4 X 4 semester plan, where students take four 90-
minute courses every day, with courses changing every quarter, and (c) trimester plan that requires students to take two to three courses every 60 days across three semesters (CSS, 2009). In this study, the 4 X 4 and A/B block schedule will be examined.

3. **College and Career Ready Performance Index (CCRPI)** - The CCRPI is the accountability system implemented by GADOE administrator that replaced AYP as of the 2011-2012 school year (GADOE, 2013). At the end of every school year, each school receives a CCRPI score that can range from 0 to 100, based on student scores on criterion-reference standardized tests, EOGs, and EOCs. Schools can receive up to 60 points for documented student achievement, up to 25 points for documented student progress, and up to 15 points based on the degree to which schools reduced the achievement gap. Schools can also earn up to 10 extra points for documented excellence in English Language Literacy (ELL) education and “exceeding the bar” in 10 specific academic (i.e., percent of high school students earning physics credit, percent of graduates earning 3 or more foreign language credits, STEM certification) and instructional (e.g., teacher utilization of Statewide Longitudinal Data Systems, teacher participation in Teachers as Advisors and related mentoring programs) domains (GADOE, 2013).

4. **Milestones Assessment System** - GADOE administrators implemented the Milestones Assessment System during the 2011-2012 school year, replacing AYP tests, to gauge the degree to which third through twelfth grade students have gained knowledge and skills in the GADOE content standards in ELA, mathematics, social sciences, sciences, and additional subject on the high school level (GADOE, 2014). The Milestones Assessment System utilizes two types of tests: end-of-grade tests (EOGs) and end-of-course tests
(EOCs). Under the new Milestones Assessment System, third through eighth grade students take EOGs in ELA and mathematics; science and social studies EOGs start in fifth grade and continue through eighth grade. Third through eighth grade students furthermore have to complete a writing assessment that is part of the ELA EOG. High school student achievement is assessed through 10 EOCs in the subject areas of ninth grade literature and composition (with a writing assessment component), American literature and Composition, Algebra I, geometry, Coordinate Algebra, Analytic Geometry, biology, Physical Science, U.S., History, and Economics. Scoring of EOGs and EOCs includes the computation of (a) raw scores, in which each correct test item is given one point, with scores ranging from 0 to 55, 65, or 75 depending on the type of test taken; (b) scale scores, in which a mathematical formula recalculates raw scores to scores that can range from 200-600, 200-700, or 200-800 depending on the test; (c) grade conversion scores, which can range from 0% to 100% and are used as students’ final exam scores; and (d) achievement level, which pertains to four categories (i.e., beginning, developing, proficient, distinguished) that identify the degree of achievement attained in a specific subject area (GADOE, 2014, 2017b).
CHAPTER TWO: LITERATURE REVIEW

Overview

This study, which is quantitative and correlational in design, will examine the relationships between the predictor variables of school-level percentage of African American and economically disadvantaged students and type of school scheduling (i.e., traditional or 4 X 4 block scheduling) on student achievement in U.S. History in 163 Atlanta MSA high schools. The intent of this chapter is to review pertinent theoretical and empirical literature that has informed this study. The chapter opens with a discussion of the study’s guiding theories, Bronfenbrenner’s (1988) ecological system theory and Scheerens’ (1990) school effectiveness model. The related literature section follows, presenting and discussing relevant empirical findings on school demographics, school scheduling, and school achievement and their interactions. The chapter concludes with a summary.

Theoretical Framework

Two theoretical frameworks guide this study. The first is Bronfenbrenner’s (1988) ecological systems theory, one of the first human development theories to recognize that the individual and his/her context influence and are influenced by one another. The second is Scheeren’s (1990) school effectiveness model, which can be argued is a ecological systems model for education.


An ecological theory posits that the external environment and the individual influence and are influenced by one another to influence development, cognitions, attitudes, and behaviors (Newman & Newman, 2017). Bronfenbrenner (1988) is recognized as the theorist who developed an ecological system theory as it pertains to human development. In his ecological
systems theory for human development, Bronfenbrenner (1988) postulated four proximal to
distal systems that influence the individual: These are the (a) microsystem, (b) mesosystem, (c)
exosystem, and the (d) macrosystem. The system closest to the individual is the microsystem.
This system is comprised of factors that have direct interrelationships with the individual and
includes family, friends/peers, and school. This study focuses on the microsystem factor of the
school. The specific microsystem elements of the school are percentage of African American
students, percentage of students who are eligible for free/reduced lunch, and type of school
schedule (i.e., traditional versus block scheduling).

The next system in Bronfenbrenner’s (1988) ecological systems theory is the
mesosystem. The mesosystem concerns the interaction of microsystem factors. These factors do
not directly and independently affect the individual; instead, the interconnections between
microsystems act indirectly to influence individual attitudes, cognitions, and behaviors
(Bronfenbrenner, 1988). The exosystem is the third system in Bronfenbrenner’s (1988)
ecological systems theory. This system includes distal factors that, while not directly affecting
the individual, still play a role in the individual’s life. Factors that comprise the exosystem are
industry, social services, mass media, the neighborhood, and local politics. The most distal
system is the macrosystem, which includes cultural, religious, and societal factors that can
influence the individual’s attitudes, cognitions, and behaviors (Bronfenbrenner, 1988).

Numerous educational studies on a plethora of topics have utilized Bronfenbrenner’s
(1988) ecological systems theory. Sirin (2005) conducted a review of literature that utilized
ecological systems theory to explain linkages between poverty and student achievement, arguing
that socioeconomic status was “probably the most widely used contextual variable in education
research” (p. 417). Sirin (2005) found that the system level at which poverty is measured
differentially influences its degree of association with student achievement: the mean effect size for studies examining associations between student-level poverty and achievement was medium while the mean effect size for empirical work on relationships between school-level poverty and student achievement was large. Similar effects have been documented regarding the effects of community and school ethnicity demographics and student achievement (Condron, Tope, Steidl, & Freeman, 2013).

Numerous studies utilizing adolescent samples have employed this theory to explain how academic outcomes are influenced by such factors in the domains of the neighborhood/community (e.g., neighborhood violence, neighborhood crime, school (e.g., school reform initiatives, the condition of the school building, school social climate extra-curricular activities, school mental health programs, teacher attrition), parents and families (e.g., parent support, parent involvement with the school, parent-teacher interactions and relationships, family structure), and peers (e.g., peer relationships, peer-assisted learning interventions, bullying) (Berkowitz, Moore, Astor, & Benbenishty, 2017; Bowers, Geldhof, Johnson, Lerner, & Lerner, 2014; Egeberg, McConney, & Price, 2016; Hamre et al., 2013; Munoz & Dossett, 2001; Ozer, Lavi, Douglass & Wolf, 2017; Shukla, Konold, & Cornell, 2016; Sirin, 2005; Thapa, Cohen, Guffey, & Higgins-D’Alessandro, 2013; Wang & Degol, 2016; Webber & Miller, 2017; Zaff, Donlan, Gunning, Anderson, McDermott, & Sedaca, 2016).

One of the greatest contributions of Bronfenbrenner’s (1988) ecological system theory to the field of education research is its critical role in informing the development of theoretical and conceptual education and academic achievement models (Kagitcibasi, 2013; Tudge, Mokrova, Hatfield, & Karnik, 2009). Scholars have the utilized the systemic elements found in Bronfenbrenner’s (1988) theory to develop ecological theories on educational resilience,
educational technology, school climate, school counseling, school-based prevention interventions, school readiness, school improvement, school leadership, school nutrition, school discipline policy and practices, pedagogical practices and instruction, educational assessments, even education policy (Bogenschneider, 1996; Burns, Warmbold-Brann, & Zaslofsky, 2015; Cook, 2015; Crosby, 2015; DiBenedetto & Myers, 2016; Gipps, 1994; Hawe, Shiell, & Riley, 2009; Kagitcibasi, 2013; Krasny, Lundholm, & Plummer, 2013; Lemke & Sabelli, 2008; Lustick, 2017; Morrow & Torres, 1995; Sheridan & Gutkin, 2000; Townsend & Foster, 2013; Weaver-Hightower, 2008; Yorke, 2003).

Bronfenbrenner’s (1988) ecological system theory has further led to the development of a group of education theoretical frameworks classified as cultural compatibility theories, which include Schneider and Lee’s (1990) model of East Asian students’ academic success; Ogbu’s (1995) cultural-ecological theory of minority academic achievement; Madyun’s (2011) social disorganization theory of African American student achievement; and Spencer’s (2006) phenomenological variant of ecological system theory. Ecological systems theory has also provided a foundation for school accountability theories, such as Petrides and Guiney’s (2002) ecological framework for thinking schools, and Berkovich’s (2014) socio-ecological framework of social justice leadership in education. Another school accountability theory informed by ecological system theory is Scheerens’ (1990) school effectiveness model.

**Scheerens**’ (1990) **School Effectiveness Model**

Scheerens’ (1990) school effectiveness model meshed the systems thinking pathway of context-input-process-output with the ecological systems theory concepts of the micro-, meso-, and exosystems. Scheerens’ (1990) school effectiveness model is also aligned with contingency theory, in that the effectiveness of a school system is not determined by clearly delineated
factors that are consistent across all schools at all times, but instead is influenced by constraints that vary from school to school. One of the notable strengths of Scheeren’s (1990) school effectiveness model is the identification of theoretically- and empirically-driven global indicators. The use of global versus specific indicators enhances the applicability of Scheeren’s (1990) school effectiveness model by allowing researchers and educators to specify variables that are relevant to the education system under study while recognizing that there is not a certain set of school variables that are always associated with school effectiveness or ineffectiveness (Scheerens, 1990).

According to Scheerens’ (1990) school effectiveness model, the context level is the most distal, an exosystem construct with three global indicators. The first context-level factor is higher administration achievement orientation, defined by Scheerens (1990) as “the political will of a school to achieve” (p. 386). Administration achievement orientation factors pertain to the support and resources provided to a school district or school as well as administrative directives and policy; both factors play a role in how a school functions. Achievement orientation of the school is frequently and increasingly associated with the second contextual factor of educational consumerism, where parents and students treat education not as a public but instead as a private good (Scheerens, 1990). The third contextual factor concerns a grouping of demographic school covariables that include but are not limited to the size of the school, the composition of the student body, the type of school (e.g., public, private, charter), and the geographical location of the school. Considered to be mesosystem factors, covariables indirectly affect student achievement by influencing process variables at the school and classroom levels. School and classroom level variables are also affected by inputs, which are a combination of microsystem
(i.e., teacher experience, parent support) and mesosystem (i.e., per-pupil expenditure) variables (Scheerens, 1990).

Contextual factors directly influence the school- and classroom-level process variables (Scheerens, 1990). Policy, leadership, curricula, assessment and climate are school-level process variables. These variables most often function at the exosystem and mesosystem levels, less so at the microsystem level; the system level is determined by how the variable is operationally defined. For example, the consensus and cooperative planning of educators can be a microsystem factor of instructors co-teaching a class, a mesosystem factor of a team of teachers adapting and revising curricula, or the mesosystem factor of teacher professional development. The classroom process variables function on the microsystem level and pertain primarily to the teacher. Classroom process variables include instructor preparedness and preparation to teach, the subject that is taught and the length that is spent on it, teacher expectations of the student, and methods used to evaluate student academic learning and progress (Scheerens, 1990).

The theoretical and empirical work conducted on the school effectiveness model by Scheerens is extensive (Bosker & Scheerens, 1994; Scheerens, 1991, 1993, 1997, 2000, 2013; Scheerens, Bosker & Creemers, 2001; Scheerens & Demeuse, 2005). It is an education theory that has been extensively tested by its creator, with conclusions drawn with regard to the significance of specific factors and relationships on the model outputs. Scheerens (1993, 1997) posited that the contextual factor of administration achievement orientation was one of the strongest predictors of student achievement, as it impacted numerous school-, classroom-, teacher, and student-level factors to then influence outputs. In contrast, after his review of 147 studies that examined the effects of the process variables of teacher/student ratio and teacher qualifications, experience, and salary on student achievement, Scheerens (1991) argued that
process variables “account for relatively little variance in educational achievement” (p. 376).

Over 20 years later, Scheerens, Witziers, and Steen (2013) conducted a meta-analysis of 155 research studies that examined the relationship between the process variables, called “school organizational factors,” of achievement pressure, educational leadership, classroom monitoring, parental involvement, orderly classroom climate, differentiated instruction, curricula quality, and time on task (i.e., learning time), and achievement among secondary students in The Netherlands and the United States. The variable with the highest effect size of 0.185 was time on task, with studies conducted in the United States having a higher effect size than studies conducted in the Netherlands (Scheerens et al., 2013).

This study will test whether the school-level percentages of African American and economically disadvantaged students and type of school scheduling (i.e., traditional versus 4 X 4 block/modified block) significantly influences school-level U.S. History grade scores. The predictor variables are considered microsystem variables in accordance with Bronfenbrenner’s (1988) ecological systems theory and process variables in accordance with Scheerens’ (1990) school effectiveness model. While these variables have been examined in relation to student achievement in ELA and mathematics, no study was found that examined these factors in relation to student achievement in U.S. History. This will be the first study to test the relevance of these theories to high school student achievement in U.S. History.

**Related Literature**

In 1981, the Secretary of Education T.H. Bell created the National Commission on Excellence in Education and commissioned its members to examine and report upon the state of education in the United States (NEA, 2013; U.S. Department of Education [USDOE], 1983). The result was the 1983 seminal work, *A Nation at Risk*, a scathing review of the poor state of
education in America (NEA, 201; USDOE, 1983). Statistics in this report shocked the nation: (a) a minimum of 17% and a maximum of 40% of 17-year-olds rates were functionally illiterate; (b) the College Board reported consistent declines in SAT scores from 1963 to 1980; (c) American students tested last in seven of 19 international academic tests; (d) a fourth of the credits earned by high school students in the general track were in physical and health education and remedial mathematics and English; (e) only a third of high school students successfully passed Algebra I and only 6% passed Calculus; and (f) high school seniors spent less than an hour per day on homework (USDOE, 1983). The Commission concluded:

Learning is an indispensable investment required for success in the “information age” we are entering … [However,] secondary school curricula have been homogenized, diluted, and diffused to the point that they no longer have a central purpose. [America has] a cafeteria style curriculum … (USDOE, 1983, paras. 3, 23)

Over 25 years later, our country is still facing the same issues as it was in 1983 as we are a nation of meritocracy that is “linked to the foundations of our educational institutions and is spilling over into the workplaces and other sectors” (Ornstein, 2010, p. 424). Although A Nation at Risk brought to the forefront the feelings and issues on the inadequacies of the American educational system it was not until the implementation of NCLB that the federal government began to make mandates on our students at a national level in which students and schools would be judged on performance (Drew, 2012). After over 15 years of NCLB, it became clear that it set unattainable goals and there needed to be a shift in the American educational system (Erikson et al., 2017; Ladd, 2017; NEA, 2013).

The Obama presidency implemented the Common Core State Standards Initiative (CCSSI), a new K-12 ELA and mathematics standards and assessment initiative developed by
the National Governors Association (NGA) in partnership with the Council of Chief State School Officers (CCSSO) (Coburn, Hill, & Spillane, 2016). The CCSSI was implemented not only in response to the recognized failures of NCLB but also as means to develop a skilled workforce that is prepared for the 21st century (NEA, 2013). There was an increasing concern among educators and scholars that American students could not compete with their international colleagues: 2012 international test scores showed that the United States ranked 17 out 34 countries in reading, 20 out 34 countries in science, and 27 out of 34 countries in mathematics. In responses to American students falling behind much of the rest of the world, the CCSSI intent is to truly prepare America’s youth for the 21st century workforce (Coburn et al., 2016; NEA, 2013). The CCSSI, a research-driven initiative that utilized empirical findings to guidance standards and practices which encourage a focus on depth-of-knowledge versus rote memorization to increase students’ critical thinking, problem-solving, and analytical skills (Coburn et al., 2016; NEA, 2013).

Under ECCA, “the federal government is prohibited from influencing, incentivizing, or coercing states or school districts to adopt any specific standards” (Senate Committee on Health, Education, Labor, and Pensions, 2015, para. 36). However, just as the NCLB AYP initiative affected both Title I and non-Title I schools, the CCSSI initiative has influenced accountability systems on the state level (Coburn et al., 2016; Cohen, 2012). Moreover, CCSSI focus was only on English and mathematics but it has expanded to cover all subjects, as the CCSSI has put forth national standards for other K-12 courses (Cohen, 2012). Controversy exists with regard to developmental appropriateness of the CCSSI standards in all K-12 subjects, with some educators arguing that required content is beyond the age of especially the elementary student (Coburn et al. (2016). Moreover, some teachers voiced difficulty in shifting from instructional practices
focused on rote memorization versus pedagogy that encourages student problem solving and analytical skills (Erikson et al., 2017).

GADOE has been one of the most proactive SEAs in developing a highly effective accountability and assessment system that works with its educators and students (GADOE, 2014, 2015; The Governor’s Office of Student Achievement, 2014). Under the CCSSI, GADOE will continue its CCRPI and Milestones Assessment System, especially regarding the 10 high school EOCs (GADOE, 2014, 2016a). However, GADOE test developers must create EOCs that will continually become more rigorous to align with the subject and instructional practices requirements. Conley (2011) writes,

[Under CCSSI] it is essential that the common assessments and the curriculum that support the standards recognize the importance of complex, challenging non-routine applications of knowledge (p. 18).

The GADOE remains consistent in its goal to promote student achievement and to reduce the gap in achievement among African American and economically disadvantaged students (GADOE, 2015). It is a priority among GADOE educators to recognize and confront the factors that can place barriers in front of academic efforts aimed at reducing the achievement gap (GADOE, 2015).

The Black-White Achievement Gap

The achievement gap can be defined as differences between White higher-income students and ethnic minority and economically disadvantaged students on numerous achievement indicators, including not only performance on in the classroom and on standardized tests, but also access to and success in higher-level and Advanced Placement (AP) foreign language, mathematics, and science courses, attending school on a regular basis (i.e., low tardiness and
absence rates), graduating from high school, and demonstrating college and career readiness (Carpenter & Ramirez, 2012; Elliott, 2015; Henfield, 2012; Ladson-Billings, 2013; NEA, 2016). The emphasis on high-stakes testing under NCLB that continues under the CCSSI has led to student performance on standardized assessments becoming the primary indicator of student achievement (GADOE, 2015; NEA, 2016).

Achievement in our American school system is something that been discussed in analyzed in depth over the last 25 years since A Nation at Risk was published in 1983 (NEA, 2013, 2016; McKown, 2013; Steinberg & Donaldson, 2016). The information age of which A Nation at Risk emphasized as being of critical importance for American students is no longer in the future; it is now. However, findings from the 2015 Program for International Student Assessment (PISA) standardized test, taken by 15-year-old students in 34 countries document that American students are falling behind their international colleagues (National Center for Education Statistics [NCES], 2016). The 2015 PISA reading literacy score of 497, which placed the United States 18th out of 65 countries, was not significantly different from the mean score of 493 nor from its 2012 PISA score of 498 (NCES, 2016). The 2015 PISA mathematics literacy score of 470 was lower than the mean score of 490 as well as its 2012 PISA mathematics score of 481 (NCES, 2016). America was ranked 34th of 65 countries in mathematics literacy in 2015 (NCES, 2016).

Not only is there a growing gap between the American school system and other industrialized nations within the world (NCES, 2016; NEA, 2016), but there is a long-standing gap in achievement between ethnic minority and economically disadvantage students and their Caucasian and higher income counterparts in the American school system (Henfield, 2012; Ladson-Billings, 2013; Nichols, Glass, & Berliner, 2012). The achievement gap has historically
been a concern among American educators, existing well before the publication of a *Nation at Risk* (NEA, 2013, 2016; Vinovskis, 2015). The American school system was not a fair one for students of color, especially African American students (NEA, 2013, 2016; Williams, 2011). The education provided to African American students in America has historically been subpar, and there are some that believe this may still be the case today (Henfield, 2012; Williams, 2011).

Some of the educational disparities seen among African American students have been overcome by many different court cases such as *Plessy v. Ferguson* (1896), *Brown v Board of Education of Topeka, Kansas* (1954), and the Civil Rights Act of 1964 (NEA, 2013, 2016; Williams, 2011).

Trend data on the national level denote that the achievement gap has been minimized in the past 40 years; for example, 83% versus 34% of African American fourth grade students performed below competency levels in 1990 as compared to 2014, respectively, on NAEP tests (NEA, 2016). Comparisons of academic performance data between African American and Caucasian students do suggest reductions between ethnic groups: for example, the percentage difference regarding African American versus Caucasian students who performed below fourth grade mathematics competency levels was 42% in 1990 and 25% in 2013. However, national data show that the percentage of Caucasian students performing below competency in reading, mathematics, and science are lower when compared to African American student percentages (e.g., 9% of Caucasian fourth grade students versus 34% of African American fourth grade students who performed below mathematics competency levels). Moreover, while the graduation rate of African American students increased by 3.7% between 2011 and 2013, the 2013 graduation rate of African American students – 70.7% - was lower than the 86.6% graduation rate for Caucasian students (NEA, 2016).
African American and Caucasian students also differ with regard to other indicators of academic achievement (Barton & Coley, 2010; Nichols et al., 2012; Pitre, 2001; Reardon, 2013). African American students, especially male students, are substantially more likely than their Caucasian peers to receive exclusionary discipline, to be expelled from school, to be in special education, and to drop out of school (Barton & Coley, 2010; Ladson-Billings, 2013, 2014; Madyun, 2011). Moreover, African American students take less rigorous courses and advanced placement (AP) course even though their test scores qualify them for these course (Barton & Coley, 2010; Ladson-Billings, 2000, 2013, 2014; Rowley & Wright, 2011). As these differences suggest, African American students experience school as a system in which they are “consistently told that they are inferior, … [and] incapable of high academic achievement” (Ladson-Billings, 2000, p. 208).

**Black/White achievement gap and ecological systems.** Scholars acknowledge that many microsystem, exosystem, and mesosystem factors play a role in the Black/White achievement gap. This is well-stated by Ford and Moore (2013):

… differences in [Black versus White student achievement occur] within the context of social, cultural/familial, school, and individual factors, given that no one variable contributes to or causes underachievement and low achievement (p. 401)

In their seminal study, Barton and Coley (2010) identified 16 variables that significantly contribute to the Black-White achievement gap. Barton and Coley (2010) conducted a review of the literature examining predictors of the Black/White achievement gap. They found that 16 variables that fell into three categories were consistently linked to low achievement among African American students. Barton and Coley (2010) emphasized that the 16 risk factors were “related to poverty” and highlight the inequalities in education that African American students
experience (p. 405). The authors emphasize the role that the family plays regarding student achievement, and they identified six family factors that significantly influenced achievement among African Americans (Barton & Coley, 2010). As this study examines school-level effects on achievement levels, attention is given to school and individual factors. Findings from other bodies of literature augment the discussion.

**Black-White achievement gap: School racial composition.** Research has shown that, with regard to the topic of school racial composition that differences exist with regard to the geography of high-density African American schools. NCES (2016) documented that high-density African American K-12 public schools are more likely to be in southern states and in urban areas. Differences further exist between African American and Caucasian students with regard to the racial composition of the schools they attend. NCES (2016) reported that 86% of Caucasian students as compared to 24% of African American students attended schools with a student body that was 0-20% African American; in contrast, 1% of Caucasian students and 36% of African American students attended schools with a student body that was 60-100% African American.

Substantial empirical attention has been directed toward understanding school climate, teacher, and curricula differences in low- versus high-density African American schools (e.g., Berkowitz et al., 2017; Shukla et al., 2016; Thapa et al., 2013; Wang & Degol, 2016; Whaley & Noel, 2012). However, few studies have examined the effects of school racial composition on African American student achievement outcomes (NCES, 2015). Findings from the small but sound body of literature (e.g., Angioloni & Ames, 2015; Condron et al., 2009; Hopson, Lee, & Tang, 2014; NCES, 2016) examining the effects of school racial composition suggest that attending high-density African American schools is significantly associated with poor academic performance among African American students but not Caucasian students. A study by NCES
(2016) found that Caucasian student performance on fourth and eighth grade NAEP assessments did not significantly differ between low- and high-density African American schools. However, African American student achievement was significantly lower in high- versus low-density African American schools (NCES, 2015). Similar results were found in studies by Kainz and Pan (2014) and Mickelson (2015).

Studies (e.g., Angioloni & Ames, 2015; Hopson, Lee, & Tang, 2014; White et al., 2016) have also documented significant associations between incremental increases of the percentage of African American students and decreases in student achievement across many subjects and grades. Angioloni and Ames (2015) found significant associations between school racial composition and fourth grade student achievement in ELA and mathematics, with effects being more pronounced in urban schools. Hopson et al. (2014), who used archival data from the School Success Profile on 318 middle and high school students, found that as the African American student density increased for a school, African American student GPA decreased. A higher percentage of African American students was also associated with increased likelihood of African American students’ engaging in risk behaviors (e.g., drug use, skipping school) and decreased perceptions of school safety (Hopson et al., 2014). White et al. (2016), in a study conducted using data on 452 K-12 public schools in New Jersey, found that a 1% increase in the percentage of African American students was associated with a 0.19 decrease in ELA proficiency scores and a 0.33 decrease in mathematics proficiency.

Most students on low- and high-density schools have tended to utilize as predictor variables school-level percentages of African American versus Caucasian students and student achievement test scores or other indicators of student academic achievement. Condron et al. (2009) conducted a comprehensive examination of specific school racial segregation predictors
and their influence on the Black-White achievement gap. Results from Condron et al.’s (2013) study showed that the Black/White student index of dissimilarity, a measure of “true segregation”, and Black student isolation, a measure of exposure of “black students to black students” were significantly associated with increases in the Black-White achievement gap in fourth grade ELA and mathematics whereas exposure of African American students to Caucasian students was significantly associated with decreases in the Black-White achievement gap in fourth grade ELA and mathematics (p. 146).

**Black/White achievement gap: School curricula.** African American students are more likely than their White peers to attend schools in which dual credit, advanced placement (AP), and gifted and talented (G/T) courses are not offered (Dutkowsky, Evensky, & Edmonds, 2009; Ford, 2015; Ford & King, 2014; Ford & Moore, 2013; Kim, 2014; Young, Slate, Moore, & Barnes, 2013). Research data on dual credit courses supports this argument. Between school year 2008-9 and school year 2011-12, dual credit course participation rates significantly increased for White, Asian, and Hispanic male and female students; in contrast, the percentage of dual enrolled African American male and female students significantly decreased (Young et al., 2013). During the 2008-9 school year, 11% of African American females and 10% of African American males were in dual enrollment programs; during the 2011-12 school year, these percentages dropped to 7.6% and 7.3%, respectively (Young et al., 2013). African American students are also more likely to attend schools that do not offer higher-level courses in mathematics, science, and social studies (Hirsch, 2010; Howard, 2012; Toldson & Lewis, 2012; Welton & Martinez, 2014). In addition, African American students often attend schools that lack instructional technology resources and have large class sizes, which significantly influence their academic achievement (Hirsch, 2010; Ladson-Billings, 2000, 2013; Whiting, 2009).
Black-White achievement gap: Teacher attitudes and behaviors. Teachers play a profound role in the Black-White achievement gap (Barton & Coley, 2010; Howard, 2012; Ladson-Billings, 2000, 2013; Toldson & Lewis, 2012). African American students are more likely to attend impoverished schools in which administrators have difficulty in hiring and keeping high-quality teachers, despite the emphasis placed on teacher quality under NCLB (Barton & Coley, 2010; Hirsch, 2010; Ladson-Billings, 2000, 2013; Lauen & Gaddis, 2016). Teachers at high-poverty schools with high percentages of African American students are more likely than their colleagues at predominantly Caucasian and wealthier schools to (a) lack qualifications, (b) have limited teaching experience, (c) teach courses outside their educational field, (d) be poorly credentialed (Ford, 2013; Ford & Moore, 2013; Hirsch, 2010). Ford and Moore (2013) further noted that teachers at high-poverty schools tend to have “the lowest college grades and test scores” (p. 406). Lack of adequate training and experience contribute to the high teacher absence and turnover rates in high-poverty schools (Ford & King, 2014; Ford & Moore, 2013).

Empirical evidence from educational studies has shown that teachers are often responsible for the perpetuation of the stereotype of African American low achievement (Appel & Kronberger, 2012; Henfield, 2012; Whaley & Noel, 2012). The stereotypical attitudes held by teachers influences their instructional practices: a teacher who has a stereotype of how African American and low-income students may not teach to the level in which a student may attain because they have a preconceived notion of what abilities that student may have based on their background (Appel & Kronberger, 2012). This stereotype threat creates an environment that is detrimental to the learning of African American students (Appel & Kronberger, 2012).
The negative perceptions regarding African American students that are held by teachers are often the result of the diversity gap between students and teachers (Boser, 2014; Henfield, 2012; Ladson-Billings, 2013, 2014). African American students are more likely to be taught by Caucasian teachers than ethnic minority teachers, although research findings have shown that ethnic minority students perform better academically if they have a teacher of color (Boser, 2014; Ladson-Billings, 2000, 2014). In a study conducted by Boser (2014), results showed that, in the state of Georgia, 76% of K-12 teachers were Caucasian and 17% were African American while 44% of students were Caucasian and 37% were African American. Boser (2014) conducted a study examining teacher diversity in America and across the 50 states. Results showed often lack cultural competence and lack experience in utilizing culturally-congruent instructional methods (Boser, 2014; Ladson-Billings, 2000, 2014). Cultural differences often shape teacher attitudes and behaviors (Boser, 2014; Ladson-Billings, 2000, 2014).

**Black-White achievement gap: Black students’ “burden of acting White.”** Stereotypes are “shared beliefs about person attributes, usually personal traits but often also behaviors of a group of people” (Appel & Kronberger, 2012, p. 10). There has been extensive theoretical and empirical attention given to the stereotype-related construct of “acting White” (Fordham & Ogbu, 1986). Fordham and Ogbu (1986) posited that Black students, especially Black male students, associate academic achievement with the stereotype of “acting White.” As stated by Fordham and Ogbu (1986),

One major reason black students do poorly in school is that they experience inordinate ambivalence and affective dissonance [which leads them] to doubt their own intellectual ability, begin to define academic success as white people’s prerogative, and [resultantly]
to discourage their peers, perhaps unconsciously, from emulating white people in academic striving, i.e., from ‘acting White’ (p. 172).

It is not surprising that an extensive body of literature, both theoretical and empirical, has been published in reaction to Fordham and Ogbu’s (1986) premise over the past 30 years. One side are scholars who criticize Fordham and Ogbu (1986) for perpetuating stereotypes that the Civil Rights movement fought so hard against, with many referring to the empirical literature that has documented significant associations between an achieved sense of racial and ethnic identity and academic success (Burrell, Winston, & Freeman, 2013; Cokley, 2013; Cokley, McClain, Enciso, & Martinez, 2013; Olitsky, 2015). On the other side are scholars who argued that Fordham and Ogbu (1986) spoke less to African American stereotypes and more to the “institutional arrangements, ideological beliefs, mass-mediated images, and state practices” of “White privilege” that pervade the American school system (Akom, 2008, p. 263).

Some studies have found that “acting White” may differ across certain student groups (Fryer & Torelli, 2010). Fryer and Torelli (2010) found that “acting White” was a concern among African American male and female high school students with GPAs of 3.5 and higher. Among students whose GPAs were 3.4 or lower, African American ethnicity did not even emerge as a significant predictor of “acting White” (Fryer & Torelli, 2010). Grantham and Biddle (2014) found that African American students in special and gifted education may be more sensitive to “acting White” racialized peer pressure and resultantly academically under-perform. Other studies have found support for Fordham and Ogbu’s (1986) premise among Black immigrant students residing in ethnically homogenous countries (Thelamour & Johnson, 2017; Tomlin, Wright, & Mocombe, 2014). Sasson-Levy & Shoshana (2013) found an “acting White” corollary for White Israeli students.
**Black-White achievement gap: Black students’ risk factors.** Beale Spencer et al. (2001) argued that other ecological system factors played roles, perhaps even primary ones, in African American student achievement. Beale Spencer (2001) developed the phenomenological variant of ecological systems (PVEST) theory, informed by Bronfenbrenner’s (1988) ecological systems theory. The PVEST theory posits that exo-, meso-, and microsystem factors influence and are influenced by the individual to effect achievement, and that certain systemic factors negatively influenced African American student achievement while others promoted it. In addition to recognizing that ecological systems often have overlapping disadvantage, disorder, and poverty risk factors that negatively affect Black student achievement, Beale Spencer (2001) also identified individual risk factors for poor academic achievement among Black students. The primary risk factors included (a) early maturation status, especially for female students; (b) poor self-appraisal processes; (c) maladaptive coping mechanisms, including male bravado, “reactive” ethnocentrism, and an attitude of superiority; (d) deviant behavior and mental illness; and (a) poor health.

**Black-White achievement gap: Student achievement in U.S. History.** Despite the immense body of research on the Black-White achievement gap, there is minimal theoretical and empirical work specific to achievement in social studies, specifically U.S. History. A fascinating study was conducted by Epstein and Gist (2015), who examined how the racial identity of African American students influenced their perceptions and interpretations of U.S. History events. Epstein and Gist (2015) found that African American students with higher levels of racial identity were more likely than their peers with lower levels of racial identity to (a) perceive White historical actors as oppressors and Black historical actors as victims; (b) focus on inequality and violence when discussing historical events related to race relations; (c) argue that
rights for African Americans were still influenced by “whites [finding] ways to keep black people down”; and (d) were distrustful of the information provided in textbooks and as discussed by teachers, arguing that both the textbooks and the teacher “was not providing the ‘whole history’” (p. 165). No studies, however, were found that examined the effects of school composition on student achievement in U.S History courses.

**High-Poverty Schools**

It is difficult to separate race and poverty indicators of low achievement among African American students, as African American students are more likely to attend high-poverty schools and as poverty and race constructs are often intertwined (Barton & Coley, 2010; NCES, 2016; NEA, 2013, 2016). National data support educators’ argument that the American school system remains “separate and unequal” (NEA, 2013, para. 1). The percentage of K-12 public schools with a high percentage of ethnic minority and low-income students – called *racial isolation* schools – increased from 9% in 2001 to 16% in 2014 (NEA, 2016). NCES (2016) data show that the percentage of African American students attending high-poverty schools has increased from 40.7% in 2013 to 42.6% in 2015 while the percentage of Caucasian students attending high-poverty actually decreased from 7.7% in 2013 to 7.6% in 2015. Achievement gaps between African American and Caucasian are highest in high-poverty school districts located in high-poverty neighborhoods (Nichols et al., 2005; Sirin, 2005; Whaley & Noel, 2012).

The widening of the achievement gap is better understood when it is examined in relation to both systemic effects as well as cumulative advantage as posited by Caro (2009). This theory posits that the achievement gap, increases in “hierarchical fashion” (Caro, 2009, p. 561), meaning that economically disadvantage students who are behind when they begin their schooling will continue to fall behind their wealthier classmates, resulting in an ever-widening
achievement gap. These ideas were exemplified in Chiu and Chow’s (2010) study, where they conducted multilevel analysis on reading achievement data from over 140,000 students from 33 countries. Chiu and Chow (2010) found that not was reading achievement substantially different between students from lower- versus higher-income family, schools, and countries, the relationship between students’ past and current reading achievement levels were highest among students attending higher-income schools in higher-income countries.

In their analysis of the achievement gap, Elias, White, and Stepney (2014) reviewed the disparities in regards to the disproportionality in terms of African American children who live below the poverty line in comparison to the actual percentage of African American children in the country. Using 2011 U.S Census data, the authors found that while African American children comprise just 14% of American children overall, they represent 26% of the children living in poverty (Elias et al., 2014). The question posed by Elias et al. (2014) was: how you improve the gap of achievement as seen in test scores of disadvantaged students if it is those same disadvantages that are causing the gap? Results from Elias et al.’s (2014) study showed that increasing by 10% the percentage of students of African American ethnicity in a school resulted in a 1.3% decrease in the percentage of students performing at proficiency levels on standardized ELA tests; this effect is worsened when the percentage of students eligible for free/reduced lunch is added to the mathematical equation. Elias et al. (2014) did not find similar results when utilizing data from Hispanic students.

Studies have shown that school-level poverty plays a larger role on the achievement of students than the effects of family poverty status (Cook, 2015; Coburn et al., 2016; Munoz & Dossett, 2014; Sandy & Duncan, 2010). Reasons for this effect have been explained in relation to the direct effects that school-level poverty resources (Coburn et al., 2016; Munoz & Dossett,
Poverty has also influence student achievement indirectly, through higher teacher and administrator attrition rates and fewer teaching and curricula resources (Coburn et al., 2016; Munoz & Dossett, 2014; Pitre, 2001; Reardon, 2013).

**School Schedules: Traditional versus Block**

Scheduling format in schools has been a very widely debated topic in school systems for decade, and educators have spent extensive efforts in understanding the effects that school schedules have on student achievement outcomes (Center for School Success [CSS], 2009; Jenkins, Queen, & Algozzine, 2002; Preston, Goldring, Guthrie, Ramsey, & Huff, 2016; Veal & Flinders, 2001). Numerous types of scheduling formats exist in the American school system, and there has been some empirical examination of school scheduling effects on student achievement across various school grades and courses (e.g., Evans, Tokarczyk, Rice, & McCrary, 2002; Kubitschek, Hallinan, Arnett, & Galipeau, 2005; Lawrence & McPherson, 2000; Maltese, Dexter, Tai, & Sandler, 2007; Randler, Kranich, & Eisele, 2007; Zepeda & Mayers, 2006).

The secondary school system in America historically utilized a traditional schedule, and many U.S. high schools still implement this type of scheduling (NEA, 2013; Preston et al., 2016). Students attending high schools with traditional scheduling take six-eight class a day, with classes lasting between 45 and 55 minutes. The courses are taught the full school year continue in these six to eight classes for the whole school year. When students attend a high school that is on the traditional schedule, these students can earn six credits a school year giving them the ability to earn 24 credits to graduate (Preston et al., 2016).

Changes from a traditional schedule were initiated by educators in the 1960s and 1970s, primarily in response to the *open classroom* movement (Nichols, 2005; Preston et al., 2016).
During these decades, school administrators across the country implemented the *flexible modular schedule*, in which courses that lasted 20 to 30 minutes, taught twice a day (resulting in 40 to 50 minutes on a subject) (Preston et al., 2016). While the intent of flexible modular scheduling was to enhance student learning by pacing and personalizing instruction (Nichols, 2005). Supporters of the flexible modular schedule championed the idea of increased classroom instructional time (Nichols, 2005; Preston et al., 2016). However, by the 1980s, this schedule format was eliminated in most schools this type of schedule was often chaotic, especially in open classroom Teachers found themselves facing numerous discipline problems in their classrooms as they failed to adjust their teaching strategies to account for different time frames of instruction each day (CSS, 2009; Nichols, 2005).

Block scheduling emerged in the late 1980s as an attempt to address the educational issues addressed in *A Nation at Risk* (CSS, 2009; NEA, 201, 2016; Nichols, 2005). The 4 X 4 block schedule, which is one type of scheduling examined in this study, requires that students take 4 courses each semester with each class period lasting for a 90-minute period (Preston et al., 2016). Students on the 4 x 4 block schedule can earn 8 credits a year giving them the ability to earn up to 32 credits to graduate (CSS, 2009). There was an expectation that 4 X 4 block scheduling would positively affect the secondary school climate in that (a) more higher-level and advanced courses would be offered to students; (b) it would result in the development and implementation of more rigorous content standards; (c) encourage school administrators to increase the number of credits required for graduation; and (d) encourage the creation of small learning communities that have been shown to increase student academic achievement (Zepeda & Mayers, 2006). There is little evidence that these goals were accomplished (CSS, 2009).
**Advantages of block scheduling.** One benefit of block scheduling voiced by researchers was that school administrators could expand the number and type of courses offered to students, and resultantly, students had the ability to take more elective classes as well as retake courses they failed during the same school year (Evans et al., 2002; Preston et al., 2016). Block scheduling was thought to improve the school climate, in that fewer classes resulted in fewer class changes and ostensibly less distraction (Veal & Schreiber, 1999; Veal & Flinders, 2001). However, it was the extended learning time that block scheduling offered that was viewed as the primary advantage. The extended time in the classroom was thought to increase the quality of instruction. Teachers, in theory, utilized time to develop more in-depth and engaging lessons as well as to plan, implement, and utilize assessments of learning (Rickard & Banville, 2005). Moreover, the lengthy class periods were thought to promote the use of individualized instruction as well as enhance student-teacher relationships (Preston et al., 2016). Extended learning time was thought to be especially beneficial for students taking science courses that required laboratory work (Randler, Kranich, & Eisele, 2007). With nearly double the amount of time in a science lab, students and teachers will not be rushed to complete the lab prior to the bell ringing (Randler et al., 2007). Another benefit of the block schedule pertained to the increased numbers of credits earned during the school year (Preston et al., 2016). A student earns up to 8 credits a year when following a 4 X 4 block schedule as compared to 6 credits earned when following the traditional schedule (Preston et al., 2016).

**Disadvantages of block scheduling.** Just as there are educators who support block scheduling, there are numerous educators who do not believe in its effectiveness. A primary concern among educators is how to effectively utilize the 90-minute period; this was especially a concern for mathematics, science, and foreign language courses that “lend themselves to
intensity rather than breadth” (Preston et al., 2016, p. 2). Another issue was that students could take a course but “not revisit the subject for up to a year” (Preston et al., 2016, p. 2). This course issue could negatively impact student performance on standardized assessments (NEA, 2013). Moreover, course sequencing was difficult to implement in a 4 X 4 block schedule (Preston et al., 2016). Another concern relevant to African American and low-income students was that students who were absent could miss a substantial amount or course material (Nichols, 2005).

One of the biggest assumptions regarding 4 X 4 block scheduling was that teachers had the training, experience and skills to effectively utilize 90 minutes of class-time, even though block scheduling is often implemented without adequate teacher and student preparation (CSS, 2009; Preston et al., 2016). Studies have suggested that teachers were in fact not adequately prepared to teach block classes (Evans et al., 2002; Gruber & Onwuegbuzie, 2001; Ratcliff et al., 2014; Zepeda & Mayers, 2006). One study, using data from over 2000 North Carolina teachers showed that teachers did not vary their instruction on the block schedule and in fact, used less differentiation in their lesson plans due to the fact they had such a large amount of material to cover in essentially a shorter period of time (Maltese, Dexter, Tai, & Sandler, 2007). Zepeda and Mayers (2006) found that teachers reported feeling unprepared and overwhelmed by the amount of time they were given each day to instruct their students. Much of this can be attributed to the lack of congruence between a teacher’s degree of preparation, experience, and skill-building working in a 4 X 4 block schedule (Veal & Finders, 2001; Zepeda & Mayers, 2006).

School administrators often move from the traditional to the block schedule without truly considering the comprehensive and in-depth training necessary for teachers to learn how to engage students for 90 minutes (CSS, 2009; Preston et al., 2009). In order for 4 X 4 block scheduling to transform the learning experience of students, teachers need appropriate
professional development, training, and ongoing support to most effectively utilize extended
learning time (Gruber & Onwuegbuzie, 2001, Veal & Flinders, 1999, 2001; Zepeda & Mayers,
2006). Some instructors may revert to default instructional practices that worked under NCLB,
which emphasized rote learning and memorization that conflict with CCSSI requirements
(Preston et al., 2016). As noted by a teacher in Veal and Flinders’ (2001) study

Even though block [scheduling] promised less lecture based courses, I have found that …

lectur[ing] [is] a quicker way to cover materials (p. 2).

Alternatively, some instructors used the extended time of block scheduling to introduce and
discuss numerous and varied course material, which was contradictory to the purpose of 4 X 4
scheduling (Preston et al., 2016; Veal & Finders, 2001). For example, a social studies teacher in
Veal and Finders’ (2001) study stated that she moves “at a faster pace, pushing a lot more
material in a shorter time on the students” (p. 2).

Perhaps most importantly, many educators do not realize that a class taught on the block
schedule has nearly 22% less total class time compared to the same course on the traditional
schedule (Maltese et al., 2007). Although students are in classes for an extended time of 90
minutes on the 4 X 4 block, students are only in these classes for one semester (Maltese et al.,
2007; Veal & Schreiber, 2001). Veal and Schreiber (2001) analyzed the actual amount of time
spent in three different schedule types: (a) a traditional schedule, (b) a 4 X 4 block schedule, and
(c) a hybrid schedule. Results from Veal and Schreiber’s (2001) study showed that students in
the 4 X 4 block schedule courses had 37 less hours of seat time than students in the traditional
schedule courses. Another issue that emerged during the NCLB period was that 4 X 4 block
scheduling time was spent of preparing students for high-stakes testing: time meant for
instruction was spent on students completing standardized assessments (Preston et al., 2016). This remains a concern in the era of CCSSI (Preston et al., 2016).

**Block scheduling and student achievement.** A concern that has existed among educators in America for decades is the implementation of school curricula, instructional practices, and scheduling that has minimal to no empirical foundation (NEA, 2016b). Like numerous initiatives mandated by both the USDOE and SEAs, 4 X 4 block scheduling has received little empirical attention and resultantly, this type of scheduling has been implemented based on “theoretical suggestions and suppositions rather than concrete, research based findings and recommendations” (Evans, Tokarczyk, Rice, & McCrary, 2002, p. 319).

Zepeda and Mayers (2006) seminal work is a review of the literature on block scheduling. The authors analyzed 58 quantitative, qualitative, and mixed method studies that addressed five specific topics: (a) teacher perceptions of block scheduling; (b) school administrator motivations and rationales for implementing block scheduling; (c) the efficacy of block scheduling as a strategy for school restructuring; (d) student perceptions of block scheduling; and (c) the effects of block scheduling on student learning outcomes. Zepeda and Mayers (2006) noted concerns with the body of literature itself, in that many of the studies utilized diverse sample, addressed diverse subjects, and utilized diverse evaluation methods. The authors further argued that many studies omitted key information that could have assisted school administrators and teachers in implementing more effective block scheduling instruction (Zepeda & Mayers, 2006).

Pertinent to this study, Zepeda and Mayers (2006) examined the literature to assess the effects of 4 X 4 block scheduling on student standardized test scores, GPAs, disciplinary actions, attendance. The authors reviewed 11 studies that examined the influence of 4 X 4 block
scheduling on students’ standardized test scores and found that results were equivocal across studies. The eight studies that assessed the relationship between block scheduling and student GPA and the three studies that examined the effects of block scheduling on student attendance also had mixed results. Consistency in findings was only found in the three studies that found significant associations between 4 X 4 block scheduling and reductions in the number of student disciplinary referrals and lower levels of student misconduct (Zepeda & Mayers, 2006).

Few studies on school scheduling topics have been published since Zepeda and Mayers’ (2006) review of the literature published over 11 years ago. The lack of pertinent research published after 2006 necessitated the review of relevant literature published in the mid-2000s. Two studies examined the relationship between scheduling type and student achievement in ELA and mathematics. Lewis, Dungan, Winokur, and Cobb (2005) conducted a longitudinal study conducted with 355 9th grade students who were followed into 11th grade. Lewis et al., (2005) examined the effects of 4 X 4 block, traditional, and A/B block schedules on 9th and 11th grade ACT reading and mathematics test scores study; they further assessed changes in 9th to 11th grade student scores on ACT test over time. Results showed that ACT reading and mathematics tests scores were higher among students in 4 X 4 block schedule courses as compared to their peers in the traditional and A/B schedule courses. Interestingly, study results showed that scheduling format accounted for 26% of variance in achievement scores in reading whereas ethnicity only accounted for 5% of variance in scores. The authors furthermore found an actual decline in achievement scores in both reading and math from 9th to 11th grade in students who were taught following a traditional schedule (Lewis et al., 2005).

Three studies were found that pertained to student achievement in U.S. History. Gruber and Onwuegbuzie (2001) examined student achievement on the Georgia High School Graduation
Test (GHSGT) assessments, utilized in the GADOE assessment system prior to the GADOE Milestones. The authors compared achievement in ELA, mathematics, science, and social studies between 115 students taught following a 4 X 4 block schedule and 146 students taught following a traditional schedule. Traditional schedule students had significantly higher assessment scores in all four content areas as compared to block schedule students that there were statistically significant outcomes in the GHSGT across all four content areas: Language Arts, Mathematics, Social Studies, and Science (Gruber & Onwuegbuzie, 2001). In a study with 415 North Carolina high school students, Lawrence and McPherson (2000) also found that North Carolina high school students in a traditional schedule setting had significantly higher EOC scores in Algebra I, biology, ELA, and U.S. History as compared to students in a 4 X 4 block schedule setting.

The literature review yielded only one study, Ratcliff et al. (2014), that was published in the past five years and that examined the effects of school scheduling on student achievement. Ratcliff et al. (2014) was pertinent to this study in that it measured student achievement on EOCs and moreover, it utilized EOCs in not just ELA, mathematics, and science, but also U.S. History. Ratcliff et al. (2014) conducted the study with 665 high school students attending four high schools in South Carolina. Results from this study showed that students following a traditional schedule had higher U.S. History EOC scores than did students following a 4 X 4 block schedule (Ratcliff et al., 2014).

Ratcliff et al. (2014) included an observation component to the study, with researchers observing and assessing the quality of the student/teacher relationships, overall classroom structure and organization, and use of instructional time. The authors found that a loss of 18 minutes of instructional time occurred near the end of the 4 X 4 course period. Ratcliff et al,
(2014) posited that significant differences in student EOC scores between 4 X 4 block and traditional schedules could statistically be attributed to “the last 18 minutes of the longer class periods in block classrooms” (p. 15).

Summary

This chapter provided the context for this quantitative study, which will use a correlational research design to assess if the percentages of African American and economically disadvantaged students and the type of scheduling (i.e., traditional versus 4 X 4 block) are significantly associated with U.S. History EOCs in 163 high schools in the Atlanta MSA. The chapter opened with a presentation and discussion of the guiding theories of the study, Bronfenbrenner’s (1988) ecological system theory and Scheerens’ (1990) school effectiveness model. The pertinent literature was of focus for the remainder of the chapter, with reviews of studies on the academic achievement gap among Caucasian and African American students as well as the influence of poverty on academic achievement. The chapter then shifted to the topic of school scheduling, with advantages and disadvantages of block scheduling receiving attention.
CHAPTER THREE: METHODS

Overview

As documented by NAEP achievement scores, American students’ history achievement levels have advanced little since 1994, increasing eight points from 259 to 267 in 2014 (NCES, 2016). The lack of growth in history achievement scores is relatively surprising given the fact that achievement in this domain is influenced by as much as 60% by school-level (as opposed to student) factors (NCES, 2016). Despite this knowledge, as well as almost 25 years of research has supported the argument that students’ academic achievement in English/language arts (ELA), mathematics, and science is significantly lower in schools that serve predominantly low-income, African American students, the examination as to whether history achievement differs by school income and racial composition has yet to be fully examined in the educational empirical literature. The purpose of this quantitative study was to examine if end-of-course grades in history significantly differ across metropolitan Atlanta schools that have higher versus lower percentages of African American and economically disadvantaged students. The purpose of this chapter is to review the methodological procedures utilized in this study.

Design

This study was quantitative and employed a non-experimental correlational research design. Quantitative studies endorse the positivist paradigm that reality is objective, external to the researcher, and can be defined and measured (Gall, Gall, & Borg, 2007; Mertens, 2014). Quantitative studies are guided by deductive reasoning, that is, the focus is on testing – as opposed to creating – theory (Gall et al., 2007; Mertens, 2014). Study hypotheses are a means to test theory, and hypotheses are tested through the statistical analyses of numerical data (Gall et al., 2007), which in this study was the GADOE Milestones U.S. History end-of-course scores
(EOCs). The selected quantitative research design should align with the scientific method steps of (a) developing a research problem, (b) constructing a hypothesis(es), (c) selecting the appropriate sample and collecting the correct data, and (d) applying statistical analyses that provide the best means to interpret the data (Merrtler & Reinhart, 2016; Mertens, 2014; Moon & Blackman, 2014).

The ability to manipulate the predictor variable or researcher’s ability to intervene to influence “individuals being studied” informs whether the quantitative study is experimental, quasi-experimental or non-experimental (Gall et al., 2007, p. 297). Non-experimental research designs have neither random selection nor random assignment (Gall et al., 2007; Moon & Blackman, 2014). This study did not have conditions - there are no intervention or control groups – which precludes the use of an experimental or a quasi-experimental research design.

If the intent of the study is to assess if one or more predictor variables significantly relate(s) to a criterion variable, a correlational research design, also called an associational research design, is utilized (Asamoah, 2014). A correlational research design investigates if a significant linear relationship exists between the predictor and criterion variables; it also determines the direction and degree of that relationship (Asamoah, 2014). A correlational research design aligns with the study intent to determine if significant relationships between the predictor and criterion variables exist, if the associations are negative or positive, and the strength of these relationships, otherwise known as the explained variance (as determined by model $R^2$, an indicator of effect size) (Asamoah, 2014).

The intent of the study was to determine if the predictor variables of percentage of African American students, percentage of economically disadvantaged students, and type of high school scheduling were significantly associated with the criterion variable of high school student
academic performance in U.S. History. The operational definitions for the two demographic predictor variables are the school percentage of 9th through 12th grade African American students and the school percentage of 9th through 12th grade students eligible for free/reduced lunch, respectively. The type of high school schedule was operationally defined as to whether the school follows a block schedule or a traditional daily schedule of classes. The criterion variable of academic performance in U.S. History was operationally defined as the high-school-level score on the GADOE Milestones U.S. History EOC that measures high school students’ knowledge of U.S. history topics. This study, which assessed relationships between variables at the school versus student level, will utilize as ‘participants’ in a sample selection of 163 high schools in the 29-county metropolitan Atlanta MSA.

**Research Question(s)**

**RQ1:** To what extent, if any, does the school-level African American student enrollment percentage significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-2016, in a sample of 163 metropolitan Atlanta high schools?

**RQ2:** To what extent, if any, does the school-level economically disadvantaged student enrollment percentage (i.e., percentage of students eligible for free/reduced lunch) significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-16, in a sample of 163 metropolitan Atlanta high schools?

**RQ3:** To what extent, if any, does the type of high school scheduling (i.e., block or traditional) significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-2016, in a sample of 163 metropolitan Atlanta high schools?
Hypotheses

H01: The school-level African American student enrollment percentage does not significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-2016, in a sample of 163 metropolitan Atlanta high schools.

H02: The school-level economically disadvantaged student enrollment percentage (i.e., percentage of students eligible for free/reduced lunch) does not significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-2016, in a sample of 163 metropolitan Atlanta high schools.

H03: The type of high school scheduling (i.e., block or traditional) does not significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-2016, in a sample of 163 metropolitan Atlanta high schools.

Participants and Setting

This study did not have human subjects as participants. Instead, the study participants were high schools located in the 29-county Metropolitan Statistical Area (MSA) of Atlanta. The U.S. Census Bureau (2016) defines an MSA as a geographical location that is comprised of a core urban area with a 50,000+ resident population and “one or more counties containing the core urban area as well as any adjacent counties that have a high degree of social economic integration” (para. 1). The population that the study sample represents are high schools located in MSAs in the United States. According to the U.S. Census Bureau (2016), there are approximately 9,000 high schools located in the over-25 MSAs in the United States.

A power analysis using G*Power (Faul et al., 2007) for simultaneous regression, the analysis to be used for hypothesis testing, determined the number of schools needed in the study
to achieve adequate statistical power to detect significance, should significance emerge. Power was set to 0.80 and the level of significance was set to $p < 0.05$. The average effect size for studies examining the effects of school-level factors on student achievement has been small-to-moderate, Cohen’s $D = .30$. The effect size was set to small-to-moderate, $f^2 = 0.075$. Results from the power analysis showed that the study requires a sample of 150 public high schools in the Atlanta MSA. The study used a sample of schools, with 163 selected from the larger group of 174 public high schools located in the Atlanta MSA. The sampling frame of the study was an Excel spreadsheet of the 174 Atlanta MSA high schools.

The setting for the study was online, as all data were downloaded from the GADOE data website and Georgia Governor’s Office of Student Achievement. Archival data for the 2014-2015 and 2015-2016 school years was used. While names of the schools selected for the study were not identified in the dissertation manuscript, additional data on the schools was included in the dissertation manuscript for descriptive purposes. Descriptive statistics (i.e., mean, standard deviation, minimum and maximum score) was reported for (a) the overall student body number, (b) the percentage of male and female students, (c) the percentage of students who are White, Hispanic, Asian, Native American, or multiracial, (d) the percentage of students in special or gifted education, and (e) the percentage of English as second language students. This was a quantitative correlational study, and as such, it examined relationships between variables and not make comparisons or assess differences between groups of schools or students.

**Instrumentation**

The instrument used in this study to measure the criterion variable of school-level academic performance in U.S. History was the GADOE Milestones U.S. History EOC. This assessment is one of the 10 GADOE Milestones Assessment System EOCs aligned with
GADOE content standards and the state’s A+ Educational Reform Act of 2000 (O.C.G.A. §20-2-281) (GADOE, 2014). GADOE Milestones EOCs, which students take in two 70-minute sessions, act as final exams, and students’ scores on these tests comprise 20% of their final class grade (GADOE, 2017a, 2017b). Educators administer the GADOE Milestones EOCs near the end of the class semester instructional period (i.e., late December or late April/early May).

While individual districts and schools currently have the option to administer online versus paper and pencil versions of the EOCs, GADOE is moving towards an all-online assessment system (GADOE, 2014, 2017a).

The GADOE Milestones Assessment System, first implemented during the 2014-2015 school year, is an integral component of GADOE’s overarching goal to ensure that GADOE students are college and career ready in the 21st century world (GADOE, 2015, 2016a). Data from milestone assessments are utilized by GADOE educators to (a) identify and provide academic assistance to students who are struggling to master subject content; (b) ascertain strengths and weakness in school curricula and instructional practices; and (d) inform and guide curricula changes and educational initiatives (GADOE, 2014, 2016a). Under the new GADOE accountability system, student performance on U.S. History EOCs is included as one component by which schools will be evaluated (GADOE, 2014, 2017a, 2017c). This is change from the previous NCLB AYP accountability system. Furthermore, general education high school students must take U.S. History as a graduation requirement (GADOE, 2016a, 2017c). The U.S. History EOC is comprised of 75 multiple-choice items that range on degree of difficulty, with 1-to 2-level items requiring recall and/or basic reasoning skills and 3- to 4-level items requiring complex/extended reasoning skills (GADOE, 2017a, 2017c). The Cronbach’s alphas, indicators
of inter-item reliability, were .92 for school years 2015-16 and 2016-17 (GADOE, 2017a, 2017c).

The test includes questions from five equally-weighted subject areas: (a) colonization through constitution, (b) new republic through reconstruction, (c) industrialization, reform, and imperialism, (d) establishment of a world power, and (e) post-World War II to present. An example of a level 1 question on the U.S. History EOC is “The first permanent English settlement in North America was located [where]?” (GADOE, 2017a, p. 15). A level-3 question example is “The Supreme Court decision in Miranda v. Arizona had the greatest effect of the application of which constitutional amendment?” (GADOE, 2017a, p. 18).

Of the 75 items on the U.S. History EOC, 47 are criterion-referenced items aligned with GADOE U.S. History content standards, 20 are norm-referenced items that may or may not align with state content standards, and 8 are field test items (GADOE, 2017a, 2017b). The final assessment raw scale score is based on correct responses to 55 items, the 47 criterion-referenced items and 8 of the 20 norm-referenced items (GADOE, 2017a, 2017b). The GADOE Milestones System computes a raw score, based on 1 point given for a correct answer, and a scale score, which is “a mathematical transformation of the total number of points earned” on the test (GADOE, 2017b, p. 7). GADOE administrators use scale scores, which are comparable “across all test forms and administrations for the same EOC assessment,” as a means of “standard setting” at the local, district, and state-wide level (GADOE, 2017b, p. 8). A grade conversion score, which ranges from 0 to 100, is a derivation of the scale score and is used as a student’s final exam grade. The raw, scale, and grade conversion scores correspond to four student achievement levels, which provide information on the degree of mastery a student has regarding a specific academic subject (GADOE, 2017b). Table 1 provides information on the U.S. History
EOC scores and levels. Data from the 2016-17 school year showed that students in the Atlanta MSA had a mean scale score of 497, roughly equivalent to a grade of 75, a ‘C.’ Of the students who took the U.S. History EOC at the end of the 2016-17 school year, 41% were beginning learners, 32% were developing learners, 20% were proficient learners, and 7% were distinguished learners (GADOE, 2017a, 2017c). This study will use the grade conversion score.

Table 1

<table>
<thead>
<tr>
<th>Raw Score</th>
<th>Scale Score</th>
<th>Grade Conversion</th>
<th>Achievement Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-13</td>
<td>215-474</td>
<td>0-69</td>
<td>1-Beginning</td>
</tr>
<tr>
<td>14-27</td>
<td>475-524</td>
<td>68-79</td>
<td>2-Developing</td>
</tr>
<tr>
<td>28-41</td>
<td>525-589</td>
<td>80-91</td>
<td>3-Proficient</td>
</tr>
<tr>
<td>42-55</td>
<td>590-765</td>
<td>92-100</td>
<td>4-Distinguished</td>
</tr>
</tbody>
</table>

Procedures

The study commenced once IRB approval was obtained from the Liberty University IRB Board (see Appendix A for IRB Approval). The researcher used data from 163 schools from a total sample of 174 schools. An Excel spreadsheet was created in which the school names were entered as individual ‘participants.’ School-related data on student demographics, including the
percentage of African American students and percentage of students eligible for free/reduced lunch, for the 2014-2015 and 2015-2016 school years was downloaded from the GADOE website. The researcher contacted schools used in study to confirm the schedule type for the 2014-2015 and 2015-2016 school years. The mean U.S. History EOC score for the 163 schools for the 2014-2015 and 2015-2016 school years used in the study was accessed through the GADOE website.

Once these data were obtained, the information was manually entered into the Excel spreadsheet. The researcher made sure that the correct data were entered for each school. The researcher entered data for the predictor variables of school-level percentage of African American students and students eligible for free/reduced lunch as percentage values. Data entry also included the type of school schedule using effect coding, based on the number of categories minus 1 \((k - 1)\) requirements for coding of categorical variables for regression models discussed by Keith (2014). For the first schedule variable, traditional schedule schools, the reference group, were coded as 1, and 4 X 4 block schedule schools, the comparison group, were coded as -1. A/B block schedule schools were coded as 0 for the first schedule variable, as this group was not compared to the other two in the first schedule variable. For the second schedule variable, traditional schedule schools, the reference group, were coded as 1, and A/B block schedule schools, the comparison group, were coded as -1. Four by four block schedule schools were coded as 0 for the second schedule variable, as this group was not compared to the other two. Last to be entered was the mean grade score data on the U.S. History EOC for the 2014-2015 and 2015-2016 school years for each school. To provide additional information on the schools, study variable data were augmented with information on (a) the overall student body number, (b) the percentage of male and female students, (c) the percentage of students who are White, Hispanic,
Asian, Native American, or multiracial, (d) the percentage of students in special or gifted education, and (e) the percentage of English as second language students. The data were reviewed for entry errors and any incorrect data or entry mistakes were corrected. Finally, the data in the Excel spreadsheet was transferred to an SPSS 24.0 data file.

**Data Analysis**

The researcher followed a structured sequential process when analyzing the data for school years 2014-2015 and 2015-2016. The data were reviewed and checked for entry errors with any errors found being corrected.

The researcher conducted tests of assumptions for simultaneous regression, also called standard regression (Warner, 2013), the analysis used for hypothesis testing. One simultaneous regression was run to address the three study research hypotheses, with simultaneous regressions conducted separately for each school year. Simultaneous regression was selected as the intent of the study to examine the relationship between each predictor and the outcome of U.S History EOC grade scores “controlling for all other predictors in the model” (Warner, 2013, p. 561).

As with any parametric statistics, simultaneous (multiple linear) regression has assumptions that needed to be met for the data (Tabachnick & Fidell, 2013; Warner, 2013). The researcher conducted statistical tests to determine if the data met the five primary assumptions of multiple linear regression. These assumptions were: (a) interval/ratio-coded variable normality; (b) lack of multicollinearity among predictor variables; (c) independence of errors; and (d) linearity and homoscedasticity (Tabachnick & Fidell, 2013; Warner, 2013).

The researcher computed $z_{skewness}$ values to test the assumption of normality (where $z_{skewness} = skewness/SE_{skewness}$) (Warner, 2013). A $z_{skewness}$ value $<= +/− 3.30$ indicates the presence of extreme outliers (Warner, 2013). In accordance with Warner (2013), multivariate
normality was assessed by computing Mahalonobis distances for each case. The critical value for Mahalonobis distance is determined by degrees of freedom equal to the number of predictor variables (Garson, 2012). Different procedures can be employed to address univariate and multivariate outliers (Warner, 2013). Had there been any outliers, the researcher would have used winsorization instead of deleting cases. Winsorization is a data modification process which reduces skewness by replacing outliers with the next lowest or high scores or percentiles “deemed reliable” (Garson, 2012, p. 31).

Multicollinearity was a potential concern for this study, as there was a possibility of significant positive correlations between the percentage of African American students and the percentage of students eligible for free/reduced lunch for both school years. Multicollinearity was tested by computing Pearson bivariate correlations and variance inflation factors (VIFs) between the predictor variables (for both school years). Multicollinearity is evident among predictors if Pearson bivariate correlations are $r \geq .80$, $p < .001$, and if VIFs are greater than 4.00 (Garson, 2012). If multicollinearity was evident, separate linear regression analyses would have been conducted for each predictor variable.

Durbin-Watson values were computed to determine if the data met the assumption of independence of errors. If a Durbin-Watson value is less than 1.00 or greater than 3.00, the assumption of independence of errors is violated (Garson, 2012). A violation of the independence of errors assumption tends to be more common in studies that utilize repeated-measures or longitudinal data (Garson, 2012), which this study did not.

The data were tested to meet the assumptions of linearity, that is, the predictor and criterion variables have linear relationships, and homoscedasticity, that is, variance around the regression line is the same for all values of the predictor variable (Tabachnick & Fidell, 2013).
Scatterplots were computed of actual versus predicted error (residual) terms, with the actual error terms (called ZRESD) placed on the Y-axis and the predicted error terms (called ZPRED) placed on the X-axis (Fox, 2015; Garson, 2012). The distribution of data points equally above and below the horizontal axis, indicated by ‘0,’ denote that the linearity and homoscedasticity assumptions are met (Fox, 2015; Garson, 2012). If this assumption is violated, little can be done to resolve it; however, simultaneous regression is robust against any violations of homoscedasticity (Fox, 2015; Garson, 2012).

Once assumption testing and any adjustments to the data were complete, descriptive statistics were computed on the study variables. For variables that were ratio-coded (i.e., the percentage of African American students, the percentage of students eligible for free/reduced lunch, and the school-level U.S. History EOC grade score), the mean, median, median, standard deviation, and minimum and maximum scores were calculated. The frequency and percentage for categorically-coded type of school schedule variable were computed. Descriptive data analyses were conducted and the findings were reported separately for the 2014-2015 and 2015-2016 school years.

The last set of analyses was the simultaneous regression analyses to test all three research questions for the 2014-2015 and 2015-2016 school years, respectively. The researcher ran the simultaneous regression analysis for the 2014-2015 school year, then for the 2015-2016 school year. In alignment with the requirements for simultaneous regression, all three predictor variables (i.e., percentage of African American students first, percentage of students eligible for free/reduced lunch second, and type of school schedule third) were entered in the first model of the regression, with school-level U.S. History EOC grade scores being the criterion variable.
Significance of findings in simultaneous regression concerns model and individual predictor results. Model significance in a simultaneous regression pertains to the significance that all predictors entered on a model (or step) have on a criterion variable (Fox, 2015; Warner, 2013). A model $F$-value pertains to the overall model significance, with significance set at $p < .05$ (Fox, 2015; Tabachnick & Fidell, 2013; Warner, 2013). The effect size of the model was determined by the model $R^2$ (Fox, 2015; Tabachnick & Fidell, 2013; Warner, 2013). Neither the model $F$-value nor the model $R^2$ provide any information on individual predictor significance or effect size, respectively (Fox, 2015; Warner, 2013). Individual predictor significance was determined by the standardized beta weight ($\beta$), which pertains to the slope of the regression line (Fox, 2015; Warner, 2013). The standardized beta weight has an associated $t$-value, which assesses its magnitude and is significant at $p < .05$ (Fox, 2015; Warner, 2013). Each predictor variable also has an associated effect size, which is calculated by the $sr^2$, or the part correlation squared (Fox, 2015; Warner, 2013). Standardized (beta) weight was reported for each predictor, and associated significance value, with significance set at $p < .05$. One-way analyses of variance (ANOVAs) augmented the multiple linear regression analyses with regard to type of school schedules.
CHAPTER FOUR: FINDINGS

Overview

The purpose of this quantitative correlational study, which was conducted using school year 2014-15 and 2015-16 school data from 163 metropolitan Atlanta high schools, was threefold. The first purpose was to examine if the school-level percentage of African American students, the predictor variable, was significantly related to U.S. History EOC scores, the criterion variable. The second purpose was to examine if the school-level percentage of economically disadvantaged students (i.e., students eligible for free/reduced lunch), the predictor variable, significantly influenced U.S. History EOC scores, the criterion variable. The third and final purpose of the study was to examine if the type of school scheduling (i.e., traditional, 4 X 4 block, A/B block), the predictor variable, was significantly associated with U.S. History EOC scores, the criterion variable.

The purpose of this chapter is to provide and summarize the results from the statistical analysis conducted for hypothesis testing. The chapter opens with a review of the study research questions and associated null and alternative hypotheses. The chapter continues with a presentation of descriptive information for the study ‘participants,’ which were schools, and for the study variables. The results comprise the most comprehensive section of this chapter. In the results section, the researcher discusses the coding of the categorically-coded scheduling predictor variable, presents and interprets the statistical tests conducted for the testing of assumptions of multiple linear regression, reports and reviews the results from the multiple linear regressions conducted for hypothesis testing, and provides findings from one-way analyses of variance (ANOVAs), which augment regression findings with regard to the scheduling predictor variable. The chapter ends with a restatement of each of the null hypotheses. In this section, it is
denoted if the researcher failed to reject the respective null hypothesis, should associated findings be non-significant, or if the researcher rejected the respective null hypothesis, should the associated findings be significant.

**Research Question(s)**

**RQ1:** To what extent, if any, does the school-level African American student enrollment percentage significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-2016, in a sample of 163 metropolitan Atlanta high schools?

**RQ2:** To what extent, if any, does the school-level economically disadvantaged student enrollment percentage (i.e., percentage of students eligible for free/reduced lunch) significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-16, in a sample of 163 metropolitan Atlanta high schools?

**RQ3:** To what extent, if any, does the type of high school scheduling (i.e., block or traditional) significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-2016, in a sample of 163 metropolitan Atlanta high schools?

**Null Hypotheses**

**H01:** The school-level African American student enrollment percentage does not significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-2016, in a sample of 163 metropolitan Atlanta high schools.

**H02:** The school-level economically disadvantaged student enrollment percentage (i.e., percentage of students eligible for free/reduced lunch) does not significantly relate to school-

**H₀₃:** The type of high school scheduling (i.e., block or traditional) does not significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-2016, in a sample of 163 metropolitan Atlanta high schools.

**Descriptive Statistics**

The initial study sample was comprised of 174 metropolitan Atlanta high schools. A review of the data showed that the number of high schools with hybrid scheduling was too small (n=11) to utilize as a separate type of scheduling, in addition to traditional, 4 X 4 block, or A/B block scheduling. These 11 schools were removed from the dataset, resulting in a final study sample of 163 metropolitan Atlanta high schools.

**General Descriptive Information on Schools**

A general overview provided descriptive information on the 163 Atlanta metropolitan high schools used in this study. Table 2 presents information on the overall mean enrollment number, mean percentages of White students and ethnic minority students, and mean percentages of special education, gifted, and English as a Second Language (ESOL) students for school years 2014-15 and 2015-16. Descriptive statistics for Black students and economically disadvantaged students for school years 2014-15 and 2015-16 are presented separately, in Table 3, as they are predictor variables. The mean number of students per high school was 1756 (SD=713.14) and the range of students per school was 339.00 to 4077.00 for school year 2014-2015. The mean number of students per high school slightly increased to 1792 (SD=708.68) and the range of students per school was 322.00 to 4192.00 for school year 2015-16.
There was little change in student demographics for the 163 high schools from the 2014-15 to the 2015-16 school years. The percentage of female students, 49.0%, and the percentage of male students, 51.0%, stayed the same for the two school years. Based on the descriptive information on student ethnicity presented in Tables 1 and 2, the schools were comprised of student populations that were largely White (mean percentage was 38.69% for school year 2014-15 and 37.86% for school year 2015-16) and Black (discussed in the following section). The largest percentage of ethnic minority students (other than Black students) served by these schools were Hispanic: the average percentage of Hispanic students was 13.23% for school year 2014-15, increasing slightly to 13.88% for school year 2015-16.

The mean percentage of special education students was 10.60% for school year 2014-15, increasing slightly to 10.77% for school year 2015-16. The mean percentage of gifted students was 15.62% for school year 2014-2015, decreasing slightly to 15.26% for school year 2015-2016. The schools, on average, served very few ESOL students: the mean percentage of ESOL students was 2.04% for school year 2014-15 and 2.06% for school year 2015-16.

Table 2

*Descriptive Statistics: Metropolitan Atlanta High Schools - Percentages of White and Ethnic Minority, Special Education, Gifted, and ESOL Students (2014-15 and 2015-16 School Years) (N=163)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-15 School Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enrollment Number</td>
<td>1756.00</td>
<td>713.14</td>
<td>339.00</td>
<td>4077.00</td>
</tr>
<tr>
<td>% White Students</td>
<td>38.69</td>
<td>29.32</td>
<td>0.00</td>
<td>98.00</td>
</tr>
<tr>
<td>% Asian Students</td>
<td>4.25</td>
<td>6.68</td>
<td>0.00</td>
<td>47.00</td>
</tr>
<tr>
<td>% Hispanic Students</td>
<td>13.23</td>
<td>13.78</td>
<td>1.00</td>
<td>83.00</td>
</tr>
<tr>
<td>% Native American Students</td>
<td>0.06</td>
<td>0.24</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>% Multiracial Students(^a)</td>
<td>2.79</td>
<td>1.43</td>
<td>0.00</td>
<td>8.00</td>
</tr>
<tr>
<td></td>
<td>2015-16 School Year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enrollment Number</td>
<td>1792.00 708.68 322.00 4192.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% White Students</td>
<td>37.86 29.22 0.00 98.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Asian Students</td>
<td>4.48 6.96 0.00 48.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Hispanic Students</td>
<td>13.88 14.36 1.00 85.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Native American Students</td>
<td>0.04 0.20 0.00 1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Multiracial Students</td>
<td>2.82 1.38 0.00 7.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Special Education Students</td>
<td>10.77 2.80 0.00 18.20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Gifted Students</td>
<td>15.26 10.56 0.40 47.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% ESOL Students</td>
<td>2.06 3.74 0.00 31.40</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. a For school year 2014-15, the ethnicity mean percentage equaled 59.02%. The mean percentage of Black students, 37.56%, is presented in Table 3, as this table presents the descriptive statistics for the study’s predictor and criterion variables. The total mean percentage of student ethnicity groups for school year 2014-15 was 96.58%. b For school year 2015-16, the ethnicity mean percentage equaled 59.08%. The mean percentage of Black students, 38.93%, is presented in Table 3, as this table presents the descriptive statistics for the study’s predictor and criterion variables. The total mean percentage of student ethnicity groups for school year 2015-16 was 98.01%. Neither percentage equaled 100.0%, as percentages were mean percentages based on information from the 163 schools.*

**Descriptive Statistics: Study Variables**

This study utilized single items for the study predictor variables. Ratio-coded items regarding the percentage of Black students per school and the percentage of economically disadvantaged students per school year were used for the first two predictor variables. The type of school scheduling and criterion, a categorically-coded variable, was the third predictor variable, measured for school year 2014-15 and school year 2015-16. This study utilized one interval-coded item per school year that measured school-level GADOE U.S. History EOCs as the study criterion interval-coded variables.

**Descriptive statistics on ratio-coded predictor variables of percentage of Black and economically disadvantaged students.** This study utilized school-level percentage of Black
and school-level percentage of economically disadvantaged students, both ratio-coded variables, as predictor variables, for school year 2014-15 and for school year 2015-16. Descriptive statistics were conducted on the percentage of Black and economically disadvantaged student variables for both school years, and results from these analyses are presented in Table 3.

For the 2014-15 school year, the mean percentage of Black students at the 163 high schools was 37.56% ($SD = 26.22\%$), and the percentages of Black students ranged from 0.00% to 98.00%. The mean percentage of economically disadvantaged students was 52.55% ($SD = 25.33$), and the percentages of economically disadvantaged students ranged from 5.00% to 100.00% across the 163 high schools.

For the 2015-16 school year, the mean percentage of Black students at the 163 high schools was 38.93% ($SD = 28.46\%$), and the percentages of Black students ranged from 0.00% to 98.00%. The mean percentage of economically disadvantaged students was 52.33% ($SD = 23.37$), and the percentages of economically disadvantaged students ranged from 4.00% to 100.00% across the 163 high schools.

Table 3

*Descriptive Statistics: Metropolitan Atlanta High Schools - Percentage of Black Students and Percentage of Economically Disadvantaged Students (2014-15 and 2015-16 School Years) (N=163)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>$M$</th>
<th>$SD$</th>
<th>$Min$</th>
<th>$Max$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2014-15 School Year</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent Black Students</td>
<td>37.56</td>
<td>26.22</td>
<td>0.00</td>
<td>98.00</td>
</tr>
<tr>
<td>Percent Economically Disadvantaged Students</td>
<td>52.55</td>
<td>25.33</td>
<td>5.00</td>
<td>100.00</td>
</tr>
<tr>
<td><strong>2015-16 School Year</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent Black Students</td>
<td>38.93</td>
<td>28.46</td>
<td>0.00</td>
<td>98.00</td>
</tr>
<tr>
<td>Percent Economically Disadvantaged Students</td>
<td>52.33</td>
<td>23.37</td>
<td>4.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>
Descriptive statistics for categorically-coded predictor variable of type of scheduling. Descriptive statistics, specifically, frequencies and percentages, were calculated for the type of scheduling utilized across the 163 metropolitan Atlanta high schools for the 2014-15 and 2015-16 school years. Results are presented in Table 4. For the 2014-15 school year, 81 (49.70%) high schools had traditional scheduling, 51 (31.30%) had 4 X 4 block scheduling, and 31 (19.00%) had A/B block scheduling. For the 2015-16 school year, 80 (49.10%) high schools had traditional scheduling, 56 (34.30%) had 4 X 4 block scheduling, and 27 (16.60%) had A/B block scheduling.

Table 4

Frequencies and Percentages: Metropolitan Atlanta High Schools’ Type of Scheduling – 2014-15 and 2015-16 School Years (N=163)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency N</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2014-15 School Year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traditional</td>
<td>81</td>
<td>49.70</td>
</tr>
<tr>
<td>4 X 4 Block</td>
<td>51</td>
<td>31.30</td>
</tr>
<tr>
<td>A/B Block</td>
<td>31</td>
<td>19.00</td>
</tr>
<tr>
<td><strong>2015-16 School Year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traditional</td>
<td>80</td>
<td>49.10</td>
</tr>
<tr>
<td>4 X 4 Block</td>
<td>56</td>
<td>34.30</td>
</tr>
<tr>
<td>A/B Block</td>
<td>27</td>
<td>16.60</td>
</tr>
</tbody>
</table>

Descriptive statistics of interval-coded criterion variable of GADOE U.S. History EOCs. This study had one construct, school-level GADOE U.S. History EOC, that was utilized as a criterion variable in analyses for hypothesis testing for school year 2014-15 and school year 2015-16. Descriptive statistics were computed for the variable at both time-points, and results
from these analyses are presented in Table 5. For school year 2014-15, the mean GADOE U.S. History EOC score for the 163 schools was 515.13 ($SD = 23.80$). This score corresponded to a grade of ‘C’ and the category of ‘developing learner.’ For school year 2015-16, the mean GADOE U.S. History EOC score for the 163 schools was 522.61 ($SD = 23.80$). This score corresponded to a grade of ‘C’ and the category of ‘developing learner.’ Despite both school year scores being equivalent to a ‘C’ and the ‘developing student’ category, results from a paired-samples $t$-test showed that the GADOE U.S. History EOC mean score significantly increased from 515.13 points for the 2014-15 school year to 522.61 points for the 2015-16 school year, $t(160) = -8.95, p < .001$.

Table 5


<table>
<thead>
<tr>
<th>Variable</th>
<th>$M$</th>
<th>$SD$</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2014-15 School Year</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GADOE U.S. History EOCs</td>
<td>515.13</td>
<td>23.80</td>
<td>456.30</td>
<td>600.00</td>
</tr>
<tr>
<td><strong>2015-16 School Year</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GADOE U.S. History EOCs</td>
<td>522.61</td>
<td>25.48</td>
<td>454.40</td>
<td>594.60</td>
</tr>
</tbody>
</table>

**Results**

Prior to hypothesis testing, the researcher performed two sets of analyses. The first analysis concerned the recoding of the type of scheduling variable. The researcher then conducted statistical analyses to test the assumptions of multiple linear regressions. The final sets of analyses for statistics were conducted for the testing of hypotheses.
Recoding Type of Scheduling Variable

As the type of scheduling variable had three categories (i.e., traditional, 4 X 4 block, A/B block), the researcher utilized effect coding to create two variables, based on the number of categories minus 1 \((k – 1)\) requirements for coding of categorical variables for regression models discussed by Keith (2014). The researcher recoded the two type of scheduling variables using effect coding, which requires the use of -1, 0, and 1 values. The researcher created two new variables, and traditional scheduling was used as the reference category for both variables. For the first variable, traditional scheduling was coded as 1 and 4 X 4 block scheduling as -1. If results from the multiple linear regressions conducted for hypothesis testing show a negative standardized regression (beta) weight, then 4 X 4 block scheduling rather than traditional scheduling influenced GADOE U.S. History EOCs; if results show a positive beta weight, traditional scheduling rather than 4 X 4 block scheduling is influencing GADOE U.S. History EOCs. A/B block scheduling was not examined and was thus coded as 0 for the first variable.

For the second variable, traditional scheduling was coded as 1 and A/B block scheduling as -1. If results from the MLR show a negative standardized regression (beta) weight, then A/B block scheduling rather than traditional scheduling is influencing GADOE U.S. History EOCs; if results show a positive beta weight, traditional scheduling rather than A/B block scheduling is influencing GADOE U.S. History EOCs. Four by four block scheduling was not examined and was thus coded as 0.

A limitation of effect coding, as well as other types of coding of categorical variables for linear regression, is that the necessary use of a reference category precludes the ability to examine the comparison categories (Keith, 2014). In this study, traditional scheduling was the reference group. As such, the researcher was unable to determine whether 4 X 4 block
scheduling in comparison to A/B block scheduling significantly influenced GADOE U.S.
history EOCs. To provide more comprehensive findings of the effects of type of scheduling on
history test scores, two ANOVAs were performed to determine if GADOE U.S. History EOCs
significantly differed across the three different types of school scheduling for the school years of

**Testing of Assumptions**

The researcher analyzed the data to test if the data met five assumptions for multiple
linear regression. The five assumptions for multiple linear regression are: (a) normality in the
distribution of ratio- or interval-coded variable scores; (b) lack of multicollinearity among
predictor variables; (c) independence of errors; and (d) linearity and homoscedasticity (Garson,

**Assumption 1: Normality in the distribution of ratio- or interval-coded variable scores.** Parametric statistics must meet certain assumptions of the data (Kim, 2013; Warner,
2013). One assumption that concerns most types of parametric statistics is normality in the
distribution of scores for ratio- or interval-coded variables (Kim, 2013; Warner, 2013). The
researcher computed \( z_{\text{skewness}} \) values for the two ratio-coded predictor variables and the interval-
coded criterion variables by dividing the variable’s skewness by the standard error of skewness.
Statisticians recommend using \( z_{\text{skewness}} \) values to test for univariate normality (Field, 2013; Kim,
2013; Warner, 2013). A \( z_{\text{skewness}} \) value that is less than +/-3.30 indicates that the variable has met
the assumption of univariate normality, that is, it is normally distributed (Kim, 2013).

The researcher calculated Mahalanobis distances for each case (participant) to test for
multivariate normality. Mahalanobis distances are derived from the results of a multiple linear
regression analysis conducted using ratio- or interval-coded predictor variables and a randomly
selected ratio- or interval-coded criterion variable (Ernst & Albers, 2017; Garson, 2012; Warner, 2013). The critical value of the Mahalanobis distance is based on the number of predictor variables (Ernst & Albers, 2017; Garson, 2012; Warner, 2013). In this study, the critical value for the two predictor variables was 5.99 at \( p < .05 \).

For school year 2014-15, the school-level percentage of Black students variable had a \( z_{\text{skewness}} \) value of 2.47, and the school-level percentage of economically disadvantaged students variable had a \( z_{\text{skewness}} \) value of 0.26. These two \( z_{\text{skewness}} \) values were lower than the critical value of +/- 3.30, indicating that these two school year 2014-15 variables displayed relative normality.

For school year 2015-16, the school-level percentage of Black students variable had a \( z_{\text{skewness}} \) value of 2.76, and the school-level percentage of economically disadvantaged students variable had a \( z_{\text{skewness}} \) value of 0.95. These two \( z_{\text{skewness}} \) values were also lower than the critical value of +/- 3.30, indicating that the school year 2015-16 variables displayed relative normality.

The 2014-15 GADOE U.S. History EOC variable had a \( z_{\text{skewness}} \) of 1.97, and the 2015-16 GADOE U.S. History EOC variable had a \( z_{\text{skewness}} \) of 1.57. The \( z_{\text{skewness}} \) values for the GADOE U.S. History EOC variables were lower than the critical value of +/-3.30, indicating normality.

None of the Mahalanobis distances of the cases exceeded 5.99, which indicated that the data met the assumption of multivariate normality. The data met the assumption of normality, requiring no adjustments to the data.

**Assumption 2: Lack of multicollinearity.** Pearson correlation coefficients were computed to determine the relationship between the two ratio-coded predictor variables of percentage of Black students and percentage of economically disadvantaged students and Spearman’s rho correlations to determine the relationship between these ratio-coded variables
and the two categorically-coded predictor variables of type of scheduling. Correlation coefficient analyses were augmented by the computation of variance inflation factors (VIFS).

Table 6 presents the correlation coefficients and the VIFs. As seen in Table 6, none of the correlation coefficients exceeded .80, which is indicative of multicollinearity. The two relationships that were most concerning were those between the percentage of Black students and the percentage of economically disadvantaged students for both school years. These variables were correlated: \( r(163) = .702, p < .001 \) for school year 2014-15 and \( r(163) = .696, p < .001 \) for school year 2015-16. However, the correlations did not exceed .80. The VIFs further confirmed that the assumption of lack of multicollinearity was met.

Table 6

| Testing for Multicollinearity: Pearson Correlation Coefficients, Spearman’s Rho Correlation Coefficients, and Variance Inflation Factors (N=163) |
|---|---|---|---|---|---|---|---|
| | SY 2014-15 | | | | SY 2015-16 | | |
| 1. % Black Students | -- | 1.23 | 1.74 | 2.02 | -- | 1.09 | 1.79 | 1.91 |
| 2. % ED Students | .702*** | -- | 2.42 | 1.45 | .696*** | -- | 1.82 | 2.03 |
| 3. Traditional-4 X 4a | -.190* | -.230*** | -- | 1.40 | | |
| 4. Traditional-A/Bb | -.523*** | -.430*** | .649*** | -- | | |

Note. Correlations are below the diagonal and variance inflation factors are above the diagonal.

\( a \) Spearman’s rho correlations; \( b \) Spearman’s rho correlations.

Assumption 3: Independence of errors. Durbin-Watson values were computed to determine if the 2014-15 school year and the 2015-16 school year data met the assumption of independence of errors. The Durbin Watson value was 1.95 for the 2014-15 school year data, and the Durbin Watson value was 2.09 for the 2015-16 school year data. Both values were between 1.00 and 3.00, indicating that the assumption of independence of errors was met.
**Assumption 4: Linearity and Homoscedasticity.** Two scatterplots of actual versus predicted residuals were computed to determine if the data met the assumption of homoscedasticity. As seen in Figure 1, the scatterplots for schools 2014-15 and 2015-16 had data points that were equally dispersed above and below the ‘0’ horizontal line. The assumptions of linearity and homoscedasticity were met.

![Scatterplots of actual versus predicted residuals](image)

**Figure 1.** Scatterplots of actual versus predicted residuals-SY 2014-15 and SY 2015-16

**Multiple Linear Regression Results**

**Results: School year 2014-15.** The first multiple linear regression was computed using the school year 2014-15 data. Table 7 presents the results from this analysis. The overall regression model was significant, $F(4, 156) = 42.29, p < .001$. The $R^2$ was .520, a large effect size, and it indicated that the group of predictor variables explained 52.0% of the variance in GADOE U.S. History EOCs. A review of the effects of the individual predictors on GADOE U.S. History EOCs showed that percentage of Black students was not significantly related to GADOE U.S. History EOCs, $\beta(163) = -.085, p = .309$. However, schools’ percentage of economically disadvantaged students was significantly related to GADOE U.S. History EOCs, $\beta(163) = -.714, p < .001$. As the high schools’ percentage of economically disadvantaged students increased, their students’ GADOE U.S. History EOCs decreased. Results further
showed that traditional versus A/B block scheduling was significantly associated with GADOE U.S. History EOCs, $\beta(163) = .192, p = .038$. The positive beta weight showed that traditional scheduling more so than A/B block scheduling led to increased GADOE U.S. History EOCs.

Table 7

*Multiple Linear Regression: School-level Percentage of Black Students, Percentage of Economically Disadvantaged Students, Traditional versus 4 X 4 Block Scheduling, and Traditional versus A/B Block Scheduling Predicting GADOE U.S. History EOCs (School year 2014-15) (N = 163)*

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$SE B$</td>
<td>$B$</td>
</tr>
<tr>
<td>% Black Students</td>
<td>-.077</td>
<td>.076</td>
<td>-.085</td>
</tr>
<tr>
<td>% ED Students</td>
<td>-.669</td>
<td>.072</td>
<td>-.714***</td>
</tr>
<tr>
<td>Traditional-4 X 4 Block</td>
<td>-3.32</td>
<td>2.02</td>
<td>.123</td>
</tr>
<tr>
<td>Scheduling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traditional-A/B Block</td>
<td>5.89</td>
<td>2.65</td>
<td>.192*</td>
</tr>
<tr>
<td>Scheduling</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| $Model F$               | 42.29  |
| $R^2$                   | .520   |
| Sig. ($p$)              | < .001 |

Note. ***$p < .001$; **$p < .01$; *$p < .05$.

Results from the one-way ANOVA were significant, $F(2, 161) = 14.84, p < .001$. A Tukey *post hoc* test determined that schools with traditional schedules ($n = 81$) had a significantly higher GADOE U.S. History EOC mean score ($M = 521.93, SD = 23.86$) than did 4 X 4 block schedule schools ($n = 51, M = 515.73, SD = 22.48$) and A/B block schedule schools ($n = 31, M = 496.63, SD = 14.82$). Moreover, 4 X 4 block schedule schools had a significantly higher GADOE U.S. History mean score ($n = 51, M = 515.73, SD = 22.48$) in comparison to A/B block schedule schools ($n = 31, M = 496.63, SD = 14.82$).

**Results: School year 2015-16.** A second multiple linear regression was conducted using the school year 2015-16 data. Table 8 presents the results from this analysis. The overall
regression model was significant, \( F(4, 156) = 57.74, p < .001 \). The \( R^2 \) was .582, a large effect size, and it indicated that the group of predictor variables explained 58.2% of the variance in GADOE U.S. History EOCs. A review of the effects of the individual predictors on GADOE U.S. History EOCs showed that percentage of Black students was not significantly related to GADOE U.S. History EOCs, \( \beta(163) = -.050, p = .483 \). In contrast, schools’ percentage of economically disadvantaged students was significantly related to GADOE U.S. History EOCs, \( \beta(163) = -.743, p < .001 \). As the high schools’ percentage of economically disadvantaged students increased, their students’ GADOE U.S. History EOCs decreased. Results further showed that traditional more so than 4 X 4 block scheduling and A/B block scheduling was significantly associated with GADOE U.S. History EOCs, \( \beta(163) = .149, p = .031 \) and \( \beta(163) = .225, p = .002 \).

Table 8

*Multiple Linear Regression: School-level Percentage of Black Students, Percentage of Economically Disadvantaged Students, Traditional versus 4 X 4 Block Scheduling, and Traditional versus A/B Block Scheduling Predicting GADOE U.S. History EOCs (School Year 2015-16) (N = 163)*

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
</tr>
<tr>
<td>% Black Students</td>
<td>-.045</td>
</tr>
<tr>
<td>% ED Students</td>
<td>-.722</td>
</tr>
<tr>
<td>Traditional-4 X 4 Block Scheduling</td>
<td>4.19</td>
</tr>
<tr>
<td>Traditional-A/B Block Scheduling</td>
<td>7.75</td>
</tr>
</tbody>
</table>

Model F 57.74
\( R^2 \) .592 1.
Sig. (p) < .001

*Note. ***p < .001; **p < .01; *p < .05*
Results from a one-way ANOVA confirmed the significant traditional scheduling effects on GADOE U.S. History EOCs, $F(2, 161) = 11.63, p < .001$. A Tukey post hoc test determined that schools with traditional schedules ($n = 80$) had a significantly higher GADOE U.S. History EOC mean score ($M = 528.23, SD = 26.03$) than did 4 X 4 block schedule schools ($n = 56, M = 524.85, SD = 22.75$) and A/B block schedule schools ($n = 27, M = 502.73, SD = 20.30$). The Tukey post hoc test also determined that 4 X 4 block schedule schools had a significantly higher GADOE U.S. History mean score ($n = 56, M = 524.85, SD = 26.03$) in comparison to A/B block schedule schools ($n = 27, M = 502.73, SD = 20.30$).

**Hypotheses**

**Null hypothesis 1.** The first null hypothesis of this study was:

**H$_{1}$:** The school-level African American student enrollment percentage does not significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-16, in a random sample of 163 metropolitan Atlanta high schools.

For school year 2014-15, schools’ percentage of Black students was not significantly associated with their students’ GADOE U.S. History EOCs, $\beta(163) = .085, p = .309$. For school year 2015-16, schools’ percentage of Black students was not significantly associated with their students’ GADOE U.S. History EOCs, $\beta(163) = -.050, p = .483$. Based the lack of significance results for both school years, the first null hypothesis failed to be rejected.

**Null hypothesis 2.** The second null hypothesis of this study was:

**H$_{2}$:** The school-level economically disadvantaged student enrollment percentage (i.e., percentage of students eligible for free/reduced lunch) does not significantly relate to school-

For school year 2014-15, schools’ percentage of economically disadvantaged students was significantly associated with their students’ GADOE U.S. History EOCs, $\beta(163) = -.714$, $p < .001$. For school year 2014-15, schools’ percentage of economically disadvantaged students was significantly associated with their students’ GADOE U.S. History EOCs, $\beta(163) = -.743$, $p < .001$. Based on the significant findings for both school years, the second null hypothesis was rejected.

**Null hypothesis 3.** The third null hypothesis of this study was:

**H03:** The type of high school scheduling (i.e., block or traditional) does not significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-2016, in a sample of 163 metropolitan Atlanta high schools.

For school year 2014-15, results from the multiple linear regression showed that traditional scheduling more so than A/B block scheduling led to increased GADOE U.S. History EOCs, $\beta(163) = .192$, $p = .038$. Results from a one-way ANOVA were significant, $F(2, 161) = 14.84$, $p < .001$. Tukey post hoc tests showed that schools with traditional schedules had a significantly higher mean GADOE U.S. History EOC than 4 X 4 block schedule and A/B block schools and that schools with 4 X 4 block schedules had a significantly higher mean GADOE U.S. History EOC than did schools with A/B block schedules.

For school year 2015-16, results from the multiple linear regression showed that traditional scheduling more so than 4 X 4 and A/B block scheduling led to increased GADOE U.S. History EOCs, $\beta(163) = .149$, $p = .031$ and $\beta(163) = .225$, $p = .002$, respectively. Results from a one-way ANOVA were significant, $F(2, 161) = 11.63$, $p < .001$. The Tukey post hoc test
showed that schools with traditional schedules had a significantly higher mean GADOE U.S. History EOC than 4 X 4 block schedule and A/B block schools, and that schools with 4 X 4 block schedules had a significantly higher mean GADOE U.S. History EOC than did schools with A/B block schedules. Based on the significant findings for both school years, the third null hypothesis was rejected.
CHAPTER FIVE: CONCLUSIONS

Overview

This quantitative correlational study was conducted using school year 2014-15 and 2015-16 school data from 163 metropolitan Atlanta high schools. This study had a three-fold purpose. The first purpose was to examine if the school-level percentage of African American students, the predictor variable, was significantly related to U.S. History EOC scores, the criterion variable. The second purpose was to examine if the school-level percentage of economically disadvantaged students (i.e., students eligible for free/reduced lunch), the predictor variable, significantly influenced U.S. History EOC scores, the criterion variable. The third and final purpose of the study was to examine if the type of school scheduling (i.e., traditional, 4 X 4 block, A/B block), the predictor variable, was significantly associated with U.S. History EOC scores, the criterion variable.

The purpose of this final chapter is to review and explicate on study findings. The Discussion is the first section of the chapter. The chapter continues with an Implication section, followed by a Limitations section. The chapter concludes with a section on Recommendations for future research.

Discussion

The purpose of this quantitative correlational research design was to examine if the school-level variables of percentage of African American students, the percentage of economically disadvantaged students, and type of school scheduling significantly influence student performance on the Georgia Milestones U.S. History end-of-course assessments (EOCs) in 163 high schools located in the Atlanta metropolitan statistical area (MSA). This study had three research questions that concerned findings for two school years, 2014-15 and 2015-16.
The first research question asked:

**RQ1:** To what extent, if any, does the school-level African American student enrollment percentage significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-2016, in a sample of 163 metropolitan Atlanta high schools?

The null hypothesis for the first research question was:

**H01:** The school-level African American student enrollment percentage does not significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-16, in a sample of 163 metropolitan Atlanta high schools.

The null hypothesis for the first research question failed to be rejected. There was not a significant relationship between percentage of African American enrollment and school-level performance on the GADOE U.S History EOCs for the 2014-2015 and 2015-2016 school years. Results from a simultaneous linear regression showed that percentage of Black students was not significantly related to GADOE U.S. History EOCs, $\beta(163) = -0.085$, $p = .309$, for school year 2014-15. Results from a second simultaneous linear regression showed that the percentage of Black students was not significantly related to GADOE U.S. History EOCs, $\beta(163) = -0.050$, $p = .483$, for school year 2015-16.

These null findings do not align with Bronfenbrenner’s (1988) ecological systems model nor with Scheerens’ (1990) school effectiveness model. Percentage of Black students was not a significant school microsystem or process variable that influenced GADOE U.S. History EOCs. Ogbu’s (1995) cultural-ecological theory of minority academic achievement, informed by Bronfenbrenner’s (1988) ecological systems model, Black students’ fear of “acting white” led to
their poor school achievement and performance. Null findings from this study do not support this controversial argument.

There are no published studies that have examined the relationship between high schools’ percentage of Black and economically disadvantaged students and students’ achievement in history courses. The White/Black student achievement gap has been extensively studied (Ladson-Billings, 2014). Findings from the literature on school racial composition (e.g., Condron et al., 2009; Kainz & Pan, 2014; Mickelson, 2015; NCES, 2015) have shown that attending high-density African American schools is significantly associated with poor academic performance among African American students but not Caucasian students. Other studies (e.g., Angioloni & Ames, 2015; Hopson et al., 2014; White et al., 2016) have documented significant associations between incremental increases in the school-level percentage of Black students and decreases in student achievement and performance.

The second research question was:

**RQ2:** To what extent, if any, does the school-level economically disadvantaged student enrollment percentage (i.e., percentage of students eligible for free/reduced lunch) significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-16, in a sample of 163 metropolitan Atlanta high schools?

The null hypothesis for the second research question was:

**H₀2:** The school-level economically disadvantaged student enrollment percentage (i.e., percentage of students eligible for free/reduced lunch) does not significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-16, in a sample of 163 metropolitan Atlanta high schools.
The null hypothesis for the second research question was rejected. The study results showed that, as the percentage percentages of economically disadvantaged students enrolled in the school increased, GADOE U.S. History EOCs decreased. This relationship was significant for the 2014-15 and 2015-16 school years. Results from a simultaneous linear regression on school year 2014-15 data showed that the schools’ percentage of economically disadvantaged students was significantly related to their students’ GADOE U.S. History EOCs, $\beta(163) = -0.714$, $p < .001$. Results from a second simultaneous linear regression using school year 2015-16 data showed that the schools’ percentage of economically disadvantaged students was significantly related to their students’ GADOE U.S. History EOCs, $\beta(163) = -0.743$, $p < .001$. These results indicated that, as the high schools’ percentage of economically disadvantaged students increased, their students’ GADOE U.S. History EOCs decreased for both school years 2014-15 and 2015-16.

Significant results of this study support Bronfenbrenner’s (1988) ecological systems model premise regarding the effects of the microsystem on child development. They further align with Scheerens’ (1990) school effectiveness model argument that school process variables are significantly associated with student achievement and performance. Scholars have used Bronfenbrenner’s (1988) ecological system model as a foundation for their cultural compatibility theories (e.g., Ogbu’s [1995] cultural-ecological theory of minority academic achievement, Spencer’s [2006] phenomenological variant of ecological system theory) to explain how system level variables influence the school achievement of Black students. There has been no attempt to utilize neither Bronfenbrenner’s (1988) ecological systems model nor Scheerens’ (1990) school effectiveness model to develop a comprehensive theory on how poverty on various levels/contexts may affect the school achievement and performance of any student, regardless of
race. These theories have furthermore not been utilized to develop new theories than explain how levels/contexts may influence the school achievement and performance of economically disadvantaged students specifically. Findings from this study may prompt such theoretical work.

Whether socioeconomic or poverty factors may reduce or even eliminate the effects of race on student achievement and performance is an under-examined topic in empirical literature (Biddle, 2014). Studies that have examined effects of poverty - but not race - and student achievement have shown that poverty has an indirect effect on student achievement and performance in that it affects school, administrator, and teacher quality and leads to increased administrator and teacher turnover rates (Munoz & Dossett, 2014; Reardon, 2013). Studies examining the effects of school- versus family-level poverty have shown that school-level poverty plays a larger role on the achievement of students than the effects of family poverty status (Cook, 2015; Munoz & Dossett, 2014; Sandy & Duncan, 2010). The few studies that have examined both poverty and race effects on student achievement have shown that poverty intensifies racial effects on student achievement in high-stakes testing (Elias et al., 2014) or that low-income students have lower achievement and performance than do medium income Black students (Craig, 2016).

The third research question was:

**RQ3:** To what extent, if any, does the type of high school scheduling (i.e., block or traditional) significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-2016, in a sample of 163 metropolitan Atlanta high schools?

The null hypothesis for the third research question was:
**H03:** The type of high school scheduling (i.e., block or traditional) does not significantly relate to school-level performance on the GADOE Milestones U.S. History EOC, for school years 2014-2015 and 2015-2016, in a sample of 163 metropolitan Atlanta high schools.

The null hypothesis for the third research question was rejected. This decision was based on significant findings from the simultaneous linear regressions as well as findings from one-way ANOVAs that were conducted to confirm regression findings. Results from the simultaneous linear regression using 2014-15 data showed that traditional versus A/B block scheduling was significantly associated with GADOE U.S. History EOCs, $\beta(163) = .192, p = .038$. Traditional scheduling more so than A/B block scheduling led to increased GADOE U.S. History EOCs. Results from the second simultaneous linear regression using 2015-16 data further showed that traditional scheduling more so than 4 X 4 block scheduling and A/B block scheduling was significantly associated with higher GADOE U.S. History EOCs, $\beta(163) = .149, p = .031$ and $\beta(163) = .225, p = .002$. Results from the one-way ANOVA conducted on the 2014-15 data were significant, $F(2, 161) = 14.84, p < .001$, as were results from the one-way ANOVA conducted using 2015-16 data, $F(2, 161) = 11.63, p < .001$. Tukey post hoc tests for the two analyses showed that schools with traditional schedules had a significantly higher GADOE U.S. History EOC mean score than did 4 X 4 block schedule schools and A/B block schedule schools and that 4 X 4 block schedule schools had a significantly higher GADOE U.S. History mean score in comparison to A/B block schedule schools.

Significant findings from this study support Bronfenbrenner’s (1988) argument that microsystem factors affect child development. They also suggest that type of school scheduling is an important school-level process variable with regard to student achievement and performance. In Scheerens’ (1990) school effectiveness model, he emphasized policy,
leadership, curricula, assessment and climate as key school-level process variables. While scheduling can ostensibly fall under the category of ‘curricula,’ Scheerens (1990) did not provide detailed information on curricula effects. Results from this study support the need for theory development on the effects of the microsystem and process variable on school scheduling type on student achievement and performance.

In this study, results showed that traditional scheduling more so than either type of block scheduling and 4 X 4 block as compared to A/B block scheduling were significantly associated with increased student history achievement. There are studies that have examined the effects of scheduling on student achievement (e.g., Ellerbrook & Kiefer, 2013; Preston et al., 2016; Veal & Flinders, 2001), including student achievement in history (Gruber & Onwuegbuzie, 2001; Ratcliff et al., 2014). However, in general, school scheduling has received little empirical attention, leading to “suppositions rather than concrete, research based findings and recommendations” (Evans et al., 2002, p. 319).

Findings from this study did align with those found in prior studies. The significantly higher test scores in schools with traditional scheduling as compared to those with 4 X 4 block scheduling align with the findings in the study by Gruber and Onwuegbuzie (2001), conducted with Georgia students. Gruber and Onwuegbuzie (2001) found that traditional-schedule students had significantly higher GADOE test scores in ELA, mathematics, social studies, and science as compared to 4 X 4-block schedule students. Findings with regard to traditional versus 4 X 4 block scheduling further align with the results in studies that utilized U.S. History test scores as the criterion variables (Lawrence & McPherson, 2000; Ratcliff et al., 2014). No studies have examined the effects of 4 x 4 block versus A/B block scheduling on high school achievement in U.S. History. However, results of this study are in line with the study conducted by Lewis et al.
(2005), who found that students attending schools with 4 X 4 block schedules had significantly higher ACT scores than did students at schools having A/B block scheduling.

**Implications**

This study adds to the existing body of research on high-stakes testing and performance at the high school level. This study addressed gaps in the educational literature regarding high school student achievement in U.S. History. There are numerous studies on academic achievement, particularly in ELA and mathematics, with racially diverse and Black students. The extensive focus on ELA and mathematics achievement in the empirical literature was likely in reaction to the NCLB high-stakes testing of these two subjects (Vinovskis, 2015). However, as high-stakes testing has not focused on student achievement in history courses, few studies have focused on it. School learning time was a relevant topic under NCLB; however, its school improvement efforts emphasized extended learning time and not scheduling types (Vinovskis, 2015). This was an oversight on the part of NCLB, as the publication of empirical literature on and subsequent school implementation of block scheduling increased during the era of this Act (Brucato & Gainey, 2014).

A strength of this study is its examination of school-level race and poverty effects on high school student achievement in history. Correlational and VIF findings indicated that race and poverty were distinct factors: they were not collinear. Simultaneous linear regression results showed that school-level poverty but not racial composition negatively affected student achievement in history. These results suggest that school-level racial effects may play less of a role than poverty effects on student achievement in history. Racial effects may be reduced or may even go away completely when student poverty is entered as a factor. Findings with regard to school-level poverty and poorer performance on high-stakes testing in history may prompt
federal, state, and local school stakeholders to provide financial support to low-income schools as well as increase professional development and training opportunities for the school administrators, teachers, and staff who serve such schools.

This study is one of the first of its kind to focus on high school student performance on U.S. History high-stakes testing. Results of this study can assist school stakeholders in increasing their understanding of school-level racial, poverty, and scheduling factors that may or may not play a role in high school student achievement in history. This is especially important for GADOE, as U.S History EOCs are now part of its high-stakes testing initiative. Results may also prompt school stakeholders to devote more of a focus on the benefits of traditional scheduling.

**Limitations**

This study had a few limitations, which pertained to student, teacher, and school factors. School-level data were used, which may have masked important student-level factors. The researcher had no means to determine the students’ prior level of knowledge of U.S. History prior to being enrolled in the course; prior knowledge may have influenced test scores. Although many schools provide pretest data that could be averaged and used to control for prior level of knowledge, these scores are not made public and therefore could not be used in this study. The researcher also had no manner of which to predict or determine the ages of the students whose scores were being used in the study, although all students did fall in the ninth through twelfth grade range. Generally, metropolitan Atlanta high schools offer U.S. History as a junior-level course; however, schools do have the option and thus may offer this course to students earlier or later in their high school careers. Furthermore, students may be enrolled in the course at different years in their high school career if they transfer from another school district where they
are taught courses in a different sequence. The researcher also did not have information on the percentage of students per school who had previously failed the U.S. History course.

Other limitations concerned the teachers at each school. Information on the number of teachers per school who taught this course, student ratings of these teachers, and teacher education and training variables, all of which could influence test scores, could not be accessed. Moreover, the researcher could not access information on the type of teaching (e.g., single teacher, co-teaching) used in the U.S. History courses. A school limitation was lack of researcher knowledge regarding the overall number of days of course instruction the school provided to students prior to them taking the test. Furthermore, there was no way to determine when the schools administered the GADOE U.S. History EOCs. The administration of the GADOE U.S. History EOC may have been related to the type of school scheduling as students at block schedule schools have the opportunity to take the test at the end of the fall and spring semesters, while traditional schedule school students can only take the test at the end of spring semester.

**Recommendations for Future Research**

There are numerous recommendations for future research. There is a need for theory development on the effects of poverty and scheduling on student achievement and performance. Replication studies are necessary, not only for GADOE EOCs in other subjects, but also studies conducted with schools in the state of Georgia and in other states. Studies that examine poverty, race, and scheduling effects on student achievement and performance in urban and rural schools and student populations would be beneficial. Additional studies need to be conducted that examine if poverty factors minimize or eliminate racial effects on student achievement and performance in general and student achievement and performance in history in particular. There
is a need to examine the effects of scheduling types, most notably as it concerns different types of block schedules as well as hybrid schedules, on student achievement and performance in general and study achievement in U.S. History in particular.
REFERENCES


Elias, M. J., White, G., & Stepney, C. (2014). Surmounting the challenges of improving academic performance: Closing the achievement gap through social-emotional and


Education, 5(1), 1-10. Retrieved from
http://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1005&context=psy_fac
Howard, T. C. (2012). How does it feel to be a problem? Black male students, schools, and learning in enhancing the knowledge base to disrupt deficit frameworks. Review of Research in Education, 37(1), 54-86. doi:10.3102.0091732x12462985


http://connection.ebscohost.com/c/articles/83853080/four-effects-high-stakes-testing-movement-african-american-k-12-students


October 4, 2017

IRB Application 3025: Achievement Gap in United States History End-of-Course Assessment Scores in Ga High Schools

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Your study does not classify as human subjects research because it will not involve the collection of identifiable, private information.

Please note that this decision only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued non-human subjects research status. You may report these changes by submitting a new application to the IRB and referencing the above IRB Application number.

If you have any questions about this determination or need assistance in identifying whether possible changes to your protocol would change your application’s status, please email us at [redacted].

[Signature]

Administrative Chair of Institutional Research
The Graduate School