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# Predicting Student State-Mandated Social Studies Test Results

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**Abstract** This study investigated the relationship among variables instructional time configuration, gender, race/ethnicity, and poverty to predict the academic performance of seventh-grade students on the 2019 South Carolina Palmetto Assessment of State Standards (SCPASS). Results of 25,280 student social studies test scores from 112 middle schools, as well as information regarding each school's instructional time configuration, were analyzed. A hierarchical multiple regression analysis showed, when controlling for poverty, the variables instructional time configuration and race/ethnicity were significant, explaining 16% of the variation in student social studies accountability test results, a small effect. Additionally, Black students earned 29 points less, Hispanic students earned 16 points less, and Mixed students earned 11 points less than White students on the test. Analysis of variance (ANOVA) and analysis of covariance (ANCOVA) were also used to illuminate the relationship of these variables on accountability test performance.

**Keywords** accountability, hierarchical multiple regression, instructional time, scheduling, social studies

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## 1. Predicting Student State-Mandated Social Studies Test Results

For over 300 years making the best use of instructional time is an act which has befuddled educational administrators, teachers, and policymakers (Zepeda &Mayers, 2006). Although most states have laws that define the minimum number of days per year, hours per day that students must attend school, and the minimum amount of instructional time, there are no laws defining or dictating the way time is allocated. This enables school leaders to have considerable flexibility in instructional time configurations based specifically on their own prioritized instructional needs and non-instructional activities (Zepeda &Mayers, 2006). It is this flexibility, combined with a lack of specific guidelines regarding instructional time configurations, which has come under constant criticism and been an important issue in a succession of movements to reform education (Powell et al., 1985).

According to Zepeda & Mayers (2006), the latest era of instructional time configuration reform began in the early 1980s. Elected leaders and educational reformers demanded the restructuring of instructional time primarily due to publications such as *A Nation at Risk: The Imperative for Education Reform* (National Commission on Excellence in Education, 1983), *A Place Called School: Prospects for the Future* (Goodlad, 1984), and *Prisoners of Time: Report of theNational Education Commission on Time and Learning* (National Education Commission on Time and Learning, 1994). In response, an unprecedented number of schools moved away from traditional schedules and adopted different configurations touted as a way to maximize instructional time (Canady & Rettig, 1996). For example, in Texas, high schools using block scheduling rose from 4 percent to over 40 percent in a four-year span between 1992 and 1995 (Texas Education Agency, 1999).

Proponents of a block scheduling configuration consider it an instrument to maximize instructional time by (1) reducing the number of students for whom teachers must prepare and with whom teachers interact each day and/or each term; (2) reducing the number of classes, and assignments, tests, and projects that teachers must address during any single day of term; (3) reducing the fragmentation in traditional schedules, a complaint especially pertinent to classes requiring extensive practice and laboratory work; (4) providing teachers with lots of time that allow and encourage the use of active teaching strategies promoting greater student involvement; and (5) allowing students variable amounts of time for learning without lowering standards, and without punishing those who need more or less time to learn (Hottenstein, 1998). In addition, researchers Canady and Rettig (2000), studying reasons why educational leaders chose to adopt block schedules, noted fewer school discipline problems, higher achievement rates for students, and more school productivity.

The following are descriptions of the most used instructional time configurations:

### 1.1 Traditional schedules

Traditional schedules are those with “a fixed number of daily periods of uniform length, with delivery of instruction strictly adhering to departmental classifications” (Hackmann& Valentine, 1998, p. 6). These schedules generally contain from five to ten instructional periods (Hackmann& Valentine, 1998).

### 1.2 Flexible schedules

Flexible schedules are those that are characterized by a move away from fixed-time instructional periods (e.g., 40-50 minutes) towards longer instructional periods (e.g., 75-150 minutes) (Daniel, 2007). These extended amounts of time within flexible instructional time configurations are often associated with inquiry or constructivist pedagogies rather than didactic lecture (Bevevino et al, 1999; Daniel, 2007). The two most used flexible instructional time configurations are block scheduling and alternate day class scheduling or what is referred to as the A/B schedule (Daniel, 2007).

### 1.3 Block schedules

A block scheduling configuration uses blocks of time created from combining instructional time allotted for a traditionally scheduled period (45-minutes) into two or more combined periods (Gullatt, 2006; Hackmann, 2002). This configuration can include periods of all the same length (e.g., 90 minutes) or can adjust the length of time devoted to each time block according to the instructional needs of students (e.g., core academic subjects such as math and language arts may be assigned longer blocks of time while subjects not considered core or academic such as physical education and art may be assigned shorter blocks of time). The length of time of a block can also vary from day to day and week to week. Common block instructional time configurations in middle-level and high school use

what is referred to as a 4x4 (four-by-four) schedules where students take four classes for half an academic year and then four different classes the second half of the academic year (Daniel, 2007).

### 1.4 A/B schedule

Flexible instructional time configurations may also utilize an alternating day schedule. In this arrangement, classes may be assigned to meet on an every-other-day basis with even-numbered and odd-numbered class periods meeting on alternating days (Hackmann, 2002). For example, students may attend one set of classes on certain days of the week and another set of classes on the remaining days.

### 1.5 Impact of Accountability Testing on Social Studies

Educational accountability is another reform effort designed to improve student achievement. The reform has two central features: First, devise curriculum standards and expectations; and second, create assessments (accountability tests) designed to measure how well students meet the curriculum standards and expectations (student achievement) (Madaus& Russell, 2009/2010). The federally mandated legislation the *No Child Left BehindAct* (NCLB, 2002), and continuing with Every *Child Succeeds Act* (ESSA, 2015), has been at the forefront of this effort. However, the primary focus of the legislation is on the content areas of reading/language arts and mathematics. It does not mandate standardized testing in social studies nor does it include social studies in its school performance calculations; and because of this omission, the legislation has had a dramatic impact on social studies instruction. In addition, the adoption of Common Core State Standards in many states added even more pressure on teachers' curricular decisions (Alberti, 2012/2013). These more rigorous standards have caused teachers to focus additional attention on implementing and teaching the English Language Arts and Literacy Standards and Mathematics Standards at the expense of other subject areas (Alberti, 2012/2013).

Past studies show the pressure on schools to perform well in the tested subjects of reading/language arts, mathematics, and science impacts both the schedule (i.e., time allocated to instruction) and the actual amount of time spent teaching social studies (Bailey et al., 2006; Heafner, 2018; Hong & Hamot, 2020; Houser et al., 2017; Kavanagh & Fisher-ari, 2018; Vogler, 2003; Vogler & Virtue, 2007). For example, Bailey et al. (2006) found that not only was the instructional time spent on social studies reduced in Alabama's elementary schools, but the amount of time actually spent on social studies on average was far less than the amount of time allocated by the school district and mandated by the state. In fact, as noted by Bailey et al. (2006), there were weeks in some schools when social studies was not taught at all.

### 1.6 Academic Achievement Gap

Results of state-mandated accountability tests have shown wide gaps in academic achievement based on particular student variables (Baker, 2016; Clotfelter et al., 2009; Fryer & Levitt, 2004; 2005; Kuhfeld et al., 2018; Murnane et al., 2006; Olszewski-Kubilius et al., 2018; Phillips et al., 1998; Reardon &Portilla, 2015). Among these variables is race/ethnicity; specifically, Black-White (Burchinal et al., 2011; Fryer & Levitt, 2004; 2006; Kuhfeld et al., 2018; Paschall et al. 2018; Reardon & Portilla, 2015) and Hispanic-White (Hemphill & Vanneman, 2011; Kuhfeld et al., 2018; Paschall et al. 2018; Reardon & Galindo, 2009). Additionally, researchers studying the student race/ethnicity achievement gap note that it begins to appear during middle school (Mickelson & Greene, 2006; Olszewski-Kubilius et al., 2018).

Poverty is another variable under scrutiny when discussing student achievement gaps in state-mandated tests (Alexander & Jang, 2020; Baker, 2016; Clotfelter et al., 2009; Fernald et al., 2013; Harwell, 2018; Kuhfeld et al., 2018; Murnane et al., 2006; Olszewski-Kubilius et al., 2018; Phillips et al., 1998; Turner & Spain, 2020). This, according to researchers, is because Black and Hispanic students are more likely to experience the negative effects of poverty (e.g., low household income and unemployed family members) than White students (Reeves et al., 2016). Additionally, as noted by Thompson and Suarez (2015), 25% of Black families have zero or negative net worth compared to only 9% of White families. It is quite likely that Black and Hispanic students in poverty face additional unidentified barriers than do White students in poverty (Kuhfeld et al., 2018). Thus, it is important for students' race/ethnicity and poverty level to be accounted for in any model attempting to predict test performance.

### 1.7 South Carolina's Testing Program

Before the national education accountability legislation NCLB (2002) and its successor the ESSA (2015), the state legislature passed the South Carolina Education Accountability Act in 1998 which enacted a review process for evaluating K-12 schools in South Carolina (South Carolina Department of Education, 2009) According to this law, the primary instrument for measuring student progress was the Palmetto Achievement Challenge Test (PACT). In 1999, the PACT was first administered to students in grades 3-8 and scores were categorized as Advanced, Proficient, Basic, or Below Basic. The tests first included only sections in mathematics and English, but in spring 2003 the assessment was expanded to include science and social studies. However, in spring 2007 the state cut back on its testing program and introduced the census testing of social studies and science in grades four and seven. This meant that only students in grades four and seven would be required to take both the social studies and science tests. For students in grades three, five, six, and eight, they would take either the social studies or science test but not both. In June 2008, the assessment system was renamed the Palmetto Assessment of State Standards (PASS). The only major difference between the PACT and the PASS was the categories used to report student scores. Whereas the PACT categorized student scores as Advanced, Proficient, Basic, or Below Basic, student scores on the PASS were to be reported as Exemplary, Met, or Not Met. Individual student scores on these tests would be used to help determine a ranking for the state's School Report Card that rates schools as Excellent, Good, Average, Below Average, and Unsatisfactory (South Carolina Department of Education, 2009).

In 2014, the PASS was changed to the South Carolina Palmetto Assessment of State Standards (SCPASS). Although the SCPASS kept the same student score categories as the PASS, there was a decrease in the number of subject areas tested. Beginning with spring 2015, the SCPASS only included science and social studies tests. (Students were tested in English language arts and mathematics using another assessment system.) Additionally, beginning in 2018, there was a decrease in the grade levels tested—SCPASS assessments in science were only administered to all students in grades four, six, and eight. Social studies assessments were only administered to all students in grades five and seven (South Carolina Department of Education, 2019).

In 2019, the social studies portion of the SCPASS consisted of 50 items for fifth grade and 60 items for seventh grade (South Carolina Department of Education, 2019). Each item was a 1-point, four-option, multiple-choice question aligned to the standards for that particular grade level. In addition, the test contained 6 to 12 embedded field test items. These items were for test development purposes only and were not included in the calculation of student scores (South Carolina Department of Education, 2019).

## 2. Statement of the Problem

The federally mandated NCLB and later ESSA legislation's focus on reading/language arts and mathematics testing outcomes has forced administrators and teachers to allocate more instructional time to these content areas at the expense of other content areas. However, at the time of this study, 28 states, including South Carolina, included social studies as part of their accountability system and mandate scores in this content area to be included as part of a school's review (Mullen & Woods, 2018). If states are mandating social studies to be a part of accountability efforts, in addition to reading, language arts, and mathematics, there needs to be a re-examination in the ways in which scheduling configurations are used to allocate instructional time.

## 3. Purpose of Study

The purpose of this study was to investigate the relationship among variables instructional time configuration, gender, race/ethnicity, and poverty to predict the academic performance of seventh-grade students on a state-mandated social studies accountability test.

### 3.1 Research Question

The following is the study's research question:

How well do the variables instructional time configuration, gender, and race/ethnicity, while controlling for poverty, predict the academic performance of seventh-grade students on a state-mandated social studies accountability test?

The article begins with a description of the study's method, and then an examination of results, followed by a discussion of results in relation to the research question, and concludes with information about the study's limitations and directions for future research.

## 4. Method

The data to answer the research question was obtained through: (1) an examination of 2019 seventh-grade individual student SCPASS social studies test scores from 112 middle-level schools, (2) information provided by the principals (or designates) of those 112 middle-level schools regarding the instructional time configuration used, and (3) South Carolina Poverty Index data.[1]

### 4.1 SCPASS and Poverty Index Data

A data set containing the 2019 seventh-grade individual student SCPASS social studies test scores from the 112 middle-level schools was provided by officials at the South Carolina Department of Education (SCDOE) in response to a written request and signed Memorandum of Understanding. The South Carolina Poverty Index data for 2019 was retrieved from the SCDOE's data website archives. The Poverty Index data served as a covariate in this study—to control for poverty.

### 4.2 Sample

The target population for this study consisted of seventh grade students attending traditional public middle-level schools (excluding charter schools[2] and schools with multiple elementary and secondary grades) in South Carolina who took the SCPASS social studies test in spring 2019. There were 210 schools in 73 school districts that met these criteria; principals (or designates) of 112 schools representing 55 districts agreed to participate in this study. The participating schools are representative of the state in terms of percentage rural and urban and student characteristics of race/ethnicity, income, and past performance on state accountability assessments (South Carolina Department of Education, 2019).

Principals (or designates) of the 112 middle-level schools provided information regarding the instructional time configuration used at their school. This information, in combination with the data set, provided details about the instructional time configuration used and the individual spring 2019 SCPASS social studies test results, including gender, and race/ethnicity of every seventh-grade student who took the test at each participating school. The total sample size for this study was 25,280 students.

Table 1 displays descriptive statistics about the sample, including size, percentage, mean, and standard deviation of the variables instructional time configuration, gender, and race/ethnicity. In terms of instructional time, traditional 45-60 minute block all year (61%) and 61-79 minute block all year (23%) were the configurations most frequently used by the sample school population; hence, most widely used by the sample student population. These instructional time configurations were followed by 80-90 minute block all year (8.2%) and A/B 80-90 minute block all year (7%). Finally, one school used an unnamed "other" instructional time configuration ($N$ = 200, % = .8).[3] In regard to the independent variable gender, the sample population was made up of 51% males and 49% females. Among the different race/ethnicities of students, White (51.9%) and Black (32%) comprised 83.9% of the total sample population. They were followed by Hispanic (10.1%), Mixed (4%), Asian (1.5%), American Native/Alaskan (.3%), and Pacific Islander (.1%).[4]

### 4.3 Data Analysis

A number of analyses of variance (ANOVA) and analyses of covariance (ANCOVA) were conducted to (1) illuminate the relationship of the predictor variables on student social studies accountability test results; and (2) provide a context to understanding the results of the hierarchical multiple regression analysis. After the results of these ANOVAs and ANCOVAs were reviewed, and dummy variables for the nominal categories instructional time configuration and race/ethnicity were created, a hierarchical multiple regression analysis was used to answer the research question.

## 5. Results

### 5.1 Research Question:

*How well do the variables instructional time configuration, gender, and race/ethnicity, while controlling for poverty, predict the academic performance of seventh-grade students on a state-mandated social studies accountability test?*

An ANOVA was used to compare the variable instructional time configuration to the 2019 seventh-grade student SCPASS social studies test scores. This statistic was used because we compared one independent variable (instructional time configuration) with one scale level dependent variable (2019 seventh-grade student SCPASS test scores). Results of the ANOVA showed there was a statistically significant association between instructional time configuration and seventh-grade student SCPASS social studies test scores, $F$ (3, 25076) = 54.34, $p$ = .000, partial eta$^2$ = .006. The Levene's test was used to check the assumption that the variances of the four instructional time configurations were equal. Results showed the Levene's test was significant and therefore the assumption of equal variances was violated. Since the Levene's test was significant, a Games-Howell post hoc test was used. Results of the Games-Howell post hoc test revealed there were significant mean differences ($p$ = .000) between all the combinations of the four instructional time configurations with the exception of the difference between the traditional 45-60 minute block all year and the 61-79 minute block all year instructional time configurations ($p$ = .264).

Additionally, an ANCOVA was conducted on the interaction between instructional time configuration and 2019 seventh-grade student SCPASS social studies test scores using a covariate, 2019 Poverty Index, to control for student poverty level. This was done because poverty has been identified as a variable with potential to significantly impact student achievement (Alexander & Jang, 2020; Anderson, 1993; Guo & Harris, 2000; Turner & Spain, 2020). As shown in Table 2, the result of the ANCOVA showed a statistically significant interaction between seventh-grade SCPASS social studies test scores and instructional time configuration, while controlling for poverty, $F$ (3, 25072) = 16.26, $p$ = .000, partial eta$^2$ = .002. In other words, after controlling for students' poverty level, there was a significant difference among the four instructional time configurations and seventh-grade student SCPASS social studies test scores.

Table 3 presents the means and standard deviations of seventh-grade student SCPASS social studies test scores by instructional time configuration before and after controlling for poverty level. As depicted in Table 3, the A/B 80-90 minute block all year instructional time configuration had the greatest seventh-grade student SCPASS social studies test score mean (642.19) before controlling for poverty, and had the greatest seventh-grade student SCPASS social studies test score mean after adjusting for students' poverty level, but only at 628.93. This configuration was closely followed by the traditional 45-60 minute block all year at 628.68. The 61-79 minute block configuration (625.80) and 80-90 minute block configuration (624.83) had the third and fourth greatest social studies test score mean.

In addition to poverty, the impact of gender and race/ethnicity on student achievement has also been well documented in the literature (Clotfelter et al., 2009; Fryer & Levitt, 2004, 2006; Gill, 2011; Holman, 1995; Hull, 2017; Kohlhass et al., 2010; Thomas & Stockton, 2003). A three-way ANOVA was used to help understand the impact students' gender and race/ethnicity, as well as the instructional time configuration used, had on seventh-grade student SCPASS social studies test scores. As presented in Table 4, the association among the variables instructional time configuration, gender, and race/ethnicity on seventh grade student social studies SCPASS test results were not statistically significant, nor was the association between instructional time configuration and gender. However, there was a statistically significant association between instructional time configuration and race/ethnicity, $F$ (9, 24566) = 1.31, $p$ = .036, partial eta$^2$ = .001. The Levene's test was used to check the assumption that the variances of the four instructional time configurations and four race/ethnicities (White, Black, Hispanic and Mixed) were equal. Results showed the Levene's test was significant and therefore the assumption of equal variances was violated. Since the Levene's test was significant, a Games-Howell post hoc test was used. Results of the Games-Howell post hoc test revealed there were significant mean differences ($p$ = .000) between the combinations of the four instructional time configurations and White students, White and Black students, and Black and Hispanic students.

An ANCOVA was then used to analyze the interaction between instructional time configuration and ethnicity using The Poverty Index data as a covariate to control for student poverty level. As shown in Table 5, the result of the ANCOVA showed a statistically significant interaction between instructional time configuration and ethnicity, while controlling for poverty, $F$ (9, 24566) = 7.26, $p$ = .000, partial eta$^2$ = .003.

Table 6 presents the means and standard deviations of White, Black, Hispanic, and Mixed students on the seventh-grade student SCPASS social studies test before and after controlling for poverty level. White students scored significantly higher on the test than Mixed students, Mixed students scored significantly higher on the test than Hispanic students, and Hispanic students scored significantly higher on the test than Black students regardless of the instructional time configuration used. Also, after controlling for poverty level, there were only slight differences in the test results for White, Black, Hispanic, and Mixed students—with two exceptions. The mean test score for White students using an A/B 80-90 minute instructional time configuration dropped 16.05 points (from 650.48 to 634.43)

after controlling for poverty level. For Black students using an 80-90 minute block configuration, the mean test score rose 11.76 points (from 598.79 to 610.55) after controlling for poverty level.

After assessing the relationship among student social studies accountability test results and predictor variables using ANOVAs and ANCOVAs, a hierarchical multiple regression analysis was then used to answer the research question. First, however, dummy variables had to be created for the nominal categories race/ethnicity and instructional time configuration in order to conduct the regression analysis. Three categorical dummy variables, Black, Hispanic, and Mixed represented student race/ethnicity. For the variable *Black*, 1was entered for students who identified themselves as Black and 0 otherwise. For the variable *Hispanic*, 1 was entered for students who identified themselves as Hispanic and 0 otherwise. For the variable *Mixed*, 1 was entered for students who identified themselves as Mixed and 0 otherwise. The reference category for race/ethnicity was White. Also, three categorical dummy variables, 61-79 Min, 80-90 Min, and A/B 80-90 Min represented instructional time configuration. For the variable *61-79 Min*, 1 was entered for students in schools using a 61-79 minute block all year instructional time configuration and 0 otherwise. For the variable *80-90 Min*, 1 was entered for students in schools using a 80-90 minute block all year instructional time configuration and 0 otherwise. For the variable *A/B 80-90 Min*, 1 was entered for students in schools using an A/B 80-90 minute block all year instructional time configuration and 0 otherwise. The reference category for instructional time configuration was 45-60 Min.

After creating the dummy variables, a hierarchical multiple regression analysis was conducted to investigate how well instructional time configuration and race/ethnicity, while controlling for poverty (using the Poverty Index), predicted the academic performance of seventh-grade students on a state-mandated social studies accountability test. (The assumptions of linearity, normally distributed errors, and uncorrelated areas were checked and met.) Means and standard deviations for student social studies accountability test results and predictor variables are presented in Table 7. Additionally, Table 8 shows the results of the hierarchical multiple regression analysis.

As displayed in Table 8, results of the unstandardized beta coefficients show that for each point student's rate on the Poverty Index, they lose approximately .7 point on the social studies accountability test. Also, results of the unstandardized beta coefficients show Black students earned 29 points less, Hispanic students earned 16 points less, and Mixed students earned 11 points less than the reference category (White students) on the social studies accountability test. With regards to the remaining predictor variable, instructional time configuration, the unstandardized beta coefficients show students in 61-79 minute block all year configurations earn about one point less, students in 80-90 minute block all year configurations earn about three points less, and students in A/B 80-90 block all year configurations earned about one point more than the reference category (traditional 45-60 minute all year) on the social studies accountability test. This information, taking into account *SEB*, coincides with the results of the ANOVA and ANCOVA.

Additionally, regarding predictability of students' academic performance on the social studies accountability test (the focus of the research study), Table 8 shows when the variable poverty was entered alone, it significantly predicted student social studies accountability test results, $F(1, 25278) = 2745.02$, $p = .000$, adjusted $R^2 = .10$. However, as indicated by the $R^2$, only 10% of the variance in student social studies accountability test results could be predicted by knowing the student's poverty level. When the variables instructional time configuration and race/ethnicity were added, they significantly improve the prediction, $\Delta R^2 = .06$, $F(6, 25272) = 284.07$, $p = .000$. The entire group of variables significantly predicted student social studies accountability test results,$F(7, 25272) = 661.98$, $p = .000$, adjusted $R^2 = .16$. This is a small effect (Cohen, 1988).

The standardized beta weights and significant values, presented in Table 8, indicate which variables contribute most to predicting student social studies accountability test results when poverty, instructional time configuration, and race/ethnicity are entered together as predictors. Results show the variables Black (-.26), poverty (-.24), Hispanic (-.09), and Mixed (-.04) have the highest beta weights and are significant negative predictors of student social studies accountability test results (score decrease). Only the variable A/B 80-90 minute block all year instructional time configuration is significant and has a beta weight (.01) indicating it is a positive predictor of student social studies accountability test results (score increase).

## 6. Discussion

### 6.1 Research Question

How well do the variables instructional time configuration, gender, and race/ethnicity, while controlling for poverty, predict the academic performance of seventh-grade students on a state-mandated social studies accountability test?

Results of an ANOVA comparing the sample's four most frequently used instructional time configurations by the sample school population to the 2019 seventh-grade student SCPASS social studies test scores, and an ANCOVA using the 2019 Poverty Index to control for student poverty level, found a significant difference among the instructional time configurations and the seventh-grade student SCPASS social studies test scores. Students in schools using an A/B 80-90 minute block all year or a traditional 45-60 minute block all year schedule configuration earned significantly higher seventh-grade student SCPASS social studies test scores than students in schools using either a 61-79 minute block all year schedule configuration or an 80-90 minute block all year scheduling configuration. This finding refutes previous research concluding block-scheduled students perform better on standardized tests than traditionally scheduled students (Cobb et al., 1999; Evans et al., 2002; Hess et al., 1999; Mattox et al., 2005, Payne & Jordan, 1996; Queen et al., 1996), as well as studies that either conclude there are no significant differences in student performance with regard to the scheduling configuration used at the school (Duel, 1999; Lare et al., 2002; Snyder, 1997; Veal & Schreiber, 1999) or traditionally scheduled students outperform block-scheduled students (Arnold, 2002; Gruber & Onwuegbuzie, 2007; Knight et al., 1999; Lawrence & McPherson, 2000; Pisapia & Westfall, 1997).

This finding suggests that increasing the quantity of instruction time does not necessarily lead to higher state-mandated test scores. Both before and after controlling for student poverty level, the instructional time configurations with the greatest amount of class time per week (61-79 minute block all year and 80-90 minute block all year schedule) had the lowest student achievement performance levels while the instructional time configurations with the least amount of class time per week (A/B 80-90 minute block all year and traditional 45-60 minute block all year schedule) had the highest performance levels. While the research literature addressing the relationship of achievement and instructional time configuration impact is sparse with regard to middle-level social studies testing scenarios, the findings of this study support those of similar studies (Gainey &Brucato, 1999; Lewis et al., 2003). Evidence that longer and more frequent instructional periods fail to adequately support average attention spans and does not insure a greater retention of general knowledge in core areas (Gould, 2003; Gullatt, 2006) seems to support the study's finding that the schedules with the greatest amount of instructional time per week allocated to social studies (61-79 minute block all year and 80-90 minute block all year schedule) have the lowest student achievement level of all the instructional time configuration types. The finding also suggests that for social studies, students seem to retain more information either though relatively short daily instructional periods or by using longer instructional periods with at least a day in between to allow for individual assessment and analysis before the next formal instructional period (Lewis et al., 2003).

After addressing the relationship between instructional time configuration and student social studies accountability test results, attention was focused on the variables gender and race/ethnicity using a three way ANOVA comparing the sample's four most frequently used instructional time configurations by the sample student population's gender and race/ethnicity to the 2019 seventh-grade student SCPASS social studies test scores followed by an ANCOVA on the interaction among instructional time configuration, student gender, and student race/ethnicity using the 2019 Poverty Index to control for student poverty level. Results showed a significant interaction among the variables instructional time configuration, student race/ethnicity, and the seventh-grade student SCPASS social studies test scores. White students, both before and after controlling for poverty, scored significantly higher on the seventh-grade student SCPASS social studies test than Mixed students, Mixed students scored significantly higher than Hispanic students, and Hispanic students scored significantly higher on the test than Black students regardless of the instructional time configuration used at the school. This result is consistent with general research findings that subgroup membership impacts achievement (Holman, 1995; Kohlhaas et al., 2010; Thomas & Stockton, 2003), and is consistent with specific research addressing the race/ethnicity academic achievement gap (Clotfelter et al., 2009; Hull, 2017; Paschall et al., 2018; Phillips & Chin, 2004; Reardon & Galindo, 2009).

Additionally, results show Hispanic and Black students, while controlling for poverty level, scored higher on the seventh-grade student SCPASS social studies test in the instructional time configuration meeting daily for the longest period of time (80-90 minute yearlong block schedule) than the other instructional time configurations. This finding coincides with previous research showing Hispanic and Black students perform better in block schedules with

longer, concentrated periods of time than a traditional instructional time configuration (Candy & Rettig, 1995; Carroll, 1994; Evans, 2005; Fisher & Frey, 2007; Gill, 2011). Also, research on social studies instruction shows that longer class periods allow teachers increased opportunities for group activities and in-class projects (Bryant & Bryant, 2000; DiBiase& Queen, 1999; Hamdy&Urich, 1998; Johnson & Johnson, 1989) and to abandon lectures and utilize strategies more compatible with individualized instruction (Slavin et al., 1989). Research has also shown that while wanting for classmates to complete formal assessments, the extended time blocks provide exceptional students time to relate, connect, and reflect on information utilizing metacognitive strategies such as logs and journals (Bryant & Bryant, 2000; DeBono, 1985; Robbins et al., 2000). However, results also revealed there was no significant association either between instructional time configurations and gender or among the variables instructional time configuration, gender, and race/ethnicity. Therefore, gender was not used as a predictor variable in the hierarchical multiple regression analysis.

Lastly, a hierarchical multiple regression analysis was conducted. Results showed that when controlling for poverty, the variables instructional time configuration and race/ethnicity were significant, explaining 16% of the variation in student social studies accountability test results. This, according to Cohen (1988), was a small effect. Additionally, results showed the variables Black (-.26), poverty (-.24), Hispanic (-.09), and Mixed (-.04) had the highest beta weights and were significant negative predictors of student social studies accountability test results (score decrease). Only one variable in the model, A/B 80-90 minute block all year instructional time configuration, was significant and had a beta weight (.01) indicating it was a positive predictor of student social studies accountability test results (score increase).

Results of the hierarchical multiple regression analysis also indicated poverty was a significant predictor of accountability test results. However, according to the model, the strongest significant predictor of student social studies accountability test results was race/ethnicity. More specifically, the difference between Black and White students' social studies accountability test results, and to a lesser, but also significant extent, the difference between Hispanic and White students' social studies accountability test results and the difference between Mixed and White students' social studies accountability test results. The model's unstandardized beta coefficients show Black students earned 29 points less, Hispanic students earned 16 points less, and Mixed students earned 11 points less than White students on the social studies accountability test. Finally, with regard to the remaining predictor variable, instructional time configuration, only the 80-90 minute block all year and A/B 80-90 minute block all year time configurations were significant. The unstandardized beta coefficient shows, and confirmed using an ANOVA and ANCOVA, students in an A/B 80-90 minute block all year instructional time configuration earned at least one point more on the social studies accountability test than students engaged in any other instructional time configuration.

### 6.2 Limitations

The scope of this study was limited to South Carolina public middle-level schools that contained grade seven. Schools classified as charter schools and schools with multiple elementary and/or secondary grades were not included. Since, at the time of the study, South Carolina assessed social studies state-mandated test results as part of a school's report card calculation, caution must be used in generalizing social studies achievement in states that either do not assess social studies or do not assess it at the middle-level.

Further, because the results of this study considered instructional time configurations and achievement in social studies only at the seventh-grade, results could not be generalized beyond this grade level. Additionally, because this study was a "snapshot," only how instruction time is configured over the course of a school year was considered. The analysis was limited to the most used instructional time configurations. Finally, data was only available at the school level. Therefore, intervening variables such as differences in how time was used within schedules/classrooms, instructional strategies, teacher quality, or the amount of engaged learning time were not addressed.

### 6.3 Conclusion and Future Research

The study was designed to answer the research question: How well do the variables instructional time configuration, gender, and race/ethnicity, while controlling for poverty, predict the academic performance of seventh-grade students on a state-mandated social studies accountability test? Results of a hierarchical multiple regression analysis showed the variables instructional time configuration, poverty and race/ethnicity were significant, explaining 16% of the variation in student social studies accountability test results; and, according to Cohen (1988), this was a small effect.

Results showed Black students earned 29 points less, Hispanic students earned 16 points less, and Mixed students earned 11 points less than White students on the test. Additionally, only the A/B 80-90 minute block all year instructional time configuration was a significant positive predictor of student social studies accountability test results; students in that instructional time configuration earned at least one point more on the social studies accountability test than students engaged in any other instructional time configuration.

Although somewhat frustrating, the results of this study should invoke optimistic possibilities for advocates of middle level education. In their foundational position paper, *The successful middle school: This we believe* (Bishop & Harrison, 2021), members of the Association for Middle Level Education (AMLE) advoke for a responsive, flexible block schedule entirely controlled by the teaching team. The idea being the teaching team should decide, daily, based on instructional objectives, how time should be proportioned out among the teachers of the various content areas. In other words, to be most effective, a scheduling configuration should constantly change based solely on the instructional needs of the teaching team. However, as shown by the results of this study, and revealed by the results of a recent survey of middle school teachers in the Southeast United States (see Alverson et.al, 2019), most schools and teaching teams are utilizing schedules consisting of daily periods, whether it is traditional or a block schedule, of uniformed length. Thereby, not taking advantage of the educational possibilities a malleable, and constantly transforming, scheduling configuration can help with meeting instructional needs of students and goals of teaching teams.

If middle school teaching teams adopted a scheduling configuration consistent with the vision of the AMLE, results of the study would seem to indicate social studies instruction and student achievement would thrive in its implementation. According to this study, students seem to grasp social studies content better when utilizing relatively short daily instructional periods—a daily, flexible block schedule could conceivably provide the other content area teaching team members more instructional time to meet their educational objectives. And, with regards to another major finding of this study, because the configuration is flexible, social studies teachers of primarily Hispanic and Black students could utilize longer periods of time; thereby, providing all students with an educational experience in line with the vision described by the AMLE.

Even though this study has provided valuable information about the predictability of the variables instructional time (scheduling) configuration, race/ethnicity, and poverty has had on students' social studies test performance, many questions remain. For example, what additional variables could help explain more of the variation in social studies accountability test results? What differences are there in students' grades and state-mandated testing performance in block instructional time configurations compared with the traditional time configuration? What are teachers' perspectives regarding traditional and block instructional time configurations and student achievement on state-mandated tests? What differences are there in the instructional practices used by teachers in meeting state standards in block and traditional instructional time configurations? Finally, what differences are there in how teachers in block and traditional time configurations are addressing the race/ethnicity achievement gap?

It must be noted that this study was conducted one year before the COVID-19 pandemic. Researchers currently studying the impact of COVID-19 on the K-12 education system have documented the disastrous impact the pandemic has had on students' mental health (American Academy of Pediatrics, 2012; Tomkunas et al., 2023; U.S. Department of Health & Human Services, 2021). as well as students' academic achievement (Dorn et al., 2021; Lewis et al., 2021; Tomkunas et al., 2023). Data suggests students fell behind in both reading and mathematics achievement in 2020 and have yet to catch up (Dorn et al., 2021; Lewis et al., 2021). With regards to social studies, results show eighth grades fell behind in 2022 compared with the 2018 U.S. history and civics scores on the National Assessment for Educational Progress (Schwartz, 2023). Post COVID-19 would have provided an excellent opportunity to conduct this study again now that schools are "returning to normal." However, the SCPASS stopped assessing social studies after 2019 and state officials have no plans to again assess social studies in the elementary or middle grades.

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**Footnotes**

[1]The South Carolina Poverty Index is a calculation that ensures that student achievement among districts and schools across the state are being compared with districts and schools with similar student and demographic characteristics. The index is based on free and reduced-price lunch data and Medicaid eligibility data. It was developed in direct response to a mandate of the Code of Laws of South Carolina, Section 59-18-900(C) which required the state to set criteria for academic performance ratings and performance indicators and to establish guidelines for statistical analysis for data-reporting purposes.

[2]There were 1470 seventh grade students from 22 Charter Schools who took the SCPASS social studies test in spring 2019.

[3]Students in the school using the unnamed "Other" instructional time configuration were removed from further calculations because they made up only .8% of the total sample population.

[4]Asian, American Native/Alaskan and Pacific Islander students were excluded from further calculations because they collectively comprised only 1.9% of the total sample population.

**Table 1**

*Descriptive Statistics of Seventh-Grade Student SCPASS Social Studies Test Scores by Instructional Time Configuration, Gender, and Race/Ethnicity*

| Variable | *N* | % | *M* | *SD* |
|---|---|---|---|---|
| Instructional Time Configuration | | | | |
| Trad 45-60 min blk all year[a] | 15433 | 61.0 | 627.87 | 53.26 |
| 61-79 min blk all year[b] | 5803 | 23.0 | 626.39 | 53.07 |
| 80-90 min blk all year[c] | 2079 | 8.2 | 621.22 | 52.33 |
| A/B 80-90 min blk all year[d] | 1765 | 7.0 | 642.19 | 57.78 |
| Other[e] | 200 | 0.8 | 624.96 | 53.19 |
| Gender | | | | |
| Male | 12886 | 51.0 | 629.83 | 57.11 |
| Female | 12394 | 49.0 | 626.34 | 49.76 |
| Race/Ethnicity | | | | |
| White | 13128 | 51.9 | 642.27 | 54.27 |
| Black | 8096 | 32.0 | 605.02 | 44.28 |
| Hispanic | 2562 | 10.1 | 621.86 | 50.39 |
| Mixed | 1012 | 4.0 | 629.46 | 50.95 |
| Asian | 382 | 1.5 | 672.89 | 50.04 |
| American Native/Alaskan | 64 | 0.3 | 616.36 | 55.54 |
| Pacific Islander | 36 | 0.1 | 615.61 | 62.07 |

*Note*. [a]68 schools used this configuration. [b]24 schools used this configuration. [c]11 schools used this configuration. [d]8 schools used this configuration. [e]1 school used this configuration.

**Table 2**

*Analysis of Covariance for Seventh-Grade Student SCPASS Social Studies Test Scores as a Function of Instructional Time Configuration, Using Poverty Level as a Covariate*

| Source | *df* | *MS* | *F* | *p* | Partial eta$^2$ |
|---|---|---|---|---|---|
| InstrTime | 3 | 61234.03 | 23.72 | .000 | .003 |
| Poverty | 1 | 4091646.67 | 1584.97 | .000 | .039 |
| InstrTime*Poverty | 3 | 41979.55 | 16.26 | .000 | .002 |
| Error | 25072 | 2581.52 | | | |

**Table 3**

*Adjusted and Unadjusted Means and Variability for Seventh-Grade Student SCPASS Social Studies Test Scores as a Function of Instructional Time Configuration, Using Poverty Level as a Covariate*

| | *Unadjusted* | | | | *Adjusted* | |
|---|---|---|---|---|---|---|
| Instructional Time Configuration | *N* | % | *M* | *SD* | *M* | *SE* |
| Trad 45-60 min blk all year | 15433 | 61.5 | 627.87 | 53.26 | 628.68 | 0.41 |
| 61-79 min blk all year | 5803 | 23.1 | 626.39 | 53.07 | 625.80 | 0.67 |
| 80-90 min blk all year | 2079 | 8.3 | 621.22 | 52.33 | 624.83 | 1.14 |

| | | | | | |
|---|---|---|---|---|---|
| A/B 80-90 min blk all year | 1765 | 7.0 | 642.19 | 57.78 | 628.93 |
| | 1.40 | | | | |

**Table 4**
*Three-Way Analysis of Variance for Seventh-Grade Student SCPASS Social Studies Test Scores as a Function of Instructional Time Configuration, Gender, and Race/Ethnicity*

| Source | *df* | *MS* | *F* | *p* |
|---|---|---|---|---|
| | Partial eta$^2$ | | | |
| InstrTime | 3 | 10847.66 | 4.26 | .005 |
| | .001 | | | |
| Gender | 1 | 777.16 | .31 | .581 |
| | .000 | | | |
| Race/Ethnicity | 3 | 996457.02 | 391.03 | .000 |
| | .046 | | | |
| InstrTime*Gender | 3 | 1207.17 | .48 | .701 |
| | .000 | | | |
| InstrTime*Race/Ethnicity | 9 | 3341.37 | 1.31 | .036 |
| | .001 | | | |
| InstrTime*Gender*Race/Ethnicity | 9 | 5082.96 | 2.0 | .225 |
| | .000 | | | |
| Error | 24566 | | | |

**Table 5**
*Analysis of Covariance for Seventh-Grade Student SCPASS Social Studies Test Scores as a Function of Instructional Time Configuration and Race/Ethnicity, Using Poverty Level as a Covariate*

| Source | *df* | *MS* | *F* | *p* |
|---|---|---|---|---|
| | Partial eta$^2$ | | | |
| InstrTime | 3 | 5133.54 | 2.15 | .032 |
| | .000 | | | |
| Race/Ethnicity | 3 | 84160.47 | 35.21 | .000 |
| | .004 | | | |
| Poverty | 1 | 499659.18 | 209.02 | .000 |
| | .008 | | | |
| InstrTime*Race/Ethnicity*Poverty | 9 | 17359.50 | 7.26 | .000 |
| | .003 | | | |
| Error | 24566 | 2390.51 | | |

**Table 6**

*Adjusted and Unadjusted Instructional Time Configuration Means and Variability by Race for Seventh-Grade Student SCPASS Social Studies Test Scores, Using Poverty Level as a Covariate*

| | White | | | | | Black | | | | | Hispanic | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Unadjusted | | | Adjusted | | Unadjusted | | | Adjusted | | Unadjusted | | | Adjusted | |
| Instr Time | *N* | *M* | *SD* | *M* | *SE* | *N* | *M* | *SD* | *M* | *SE* | *N* | *M* | *SD* | *M* | *SE* |
| Trad 45-60 min blk all year | 8109 | 640.99 | 54.42 | 638.24 | .55 | 4909 | 605.93 | 43.58 | 609.26 | .76 | 1532 | 621.43 | 49.91 | 622.47 | 1.26 |
| 61-79 min blk | 2583 | 643.79 | 52.51 | 640.05 | 1.02 | 2119 | 604.25 | 45.30 | 606.67 | 1.14 | 707 | 621.39 | 50.38 | 621.72 | 1.84 |
| 80-90 min blk | 1004 | 637.43 | 51.09 | 635.60 | 1.58 | 776 | 598.79 | 45.13 | 610.55 | 2.36 | 193 | 622.39 | 51.77 | 624.87 | 3.63 |
| A/B 80-90 min blk | 1267 | 650.48 | 58.40 | 634.43 | 1.67 | 272 | 610.68 | 43.83 | 609.13 | 3.02 | 126 | 628.67 | 54.22 | 621.50 | 4.58 |

| | Mixed | | | | |
|---|---|---|---|---|---|
| | Unadjusted | | | Adjusted | |
| Instr Time | *N* | *M* | *SD* | *M* | *SE* |
| Trad 45-60 min blk all year | 576 | 628.66 | 50.78 | 627.99 | 2.04 |
| 61-79 min blk | 276 | 630.50 | 51.30 | 626.68 | 3.01 |
| 80-90 min blk | 68 | 626.81 | 52.77 | 627.10 | 5.94 |
| A/B 80-90 min blk | 81 | 632.72 | 50.80 | 631.10 | 5.79 |

**Table 7**

*Means and Standard Deviations for Student Social Studies Accountability Test Results and Predictor Variables (N = 25280)*

| Variable | *M* | *SD* |
|---|---|---|
| Social Studies Test Results | 628.12 | 53.66 |
| Predictor variable | | |
| 1. Poverty Index | 60.73 | 17.78 |
| 2. Black[a] | .32 | .47 |
| 3. Hispanic[a] | .10 | .30 |
| 4. Mixed[a] | .04 | .20 |
| 5. 61-79 Min[b] | .23 | .42 |
| 6. 80-90 Min[b] | .08 | .27 |
| 7. A/B 80-90 Min[b] | .07 | .25 |

*Note.* [a]Reference category for race/ethnicity variables is White. [b]Reference category for schedule configuration variables is 45-60 Min.

**Table 8**

*Hierarchical Multiple Regression Analysis Predicting Student Social Studies Accountability Test Results from Race/Ethnicity and Instructional Time Configuration, When Controlling for Poverty (N = 25280)*

| Variable | *B* | *SEB* | β | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|---|
| Step 1 | | | | .10 | .10 |
| Poverty Index | -.95 | .02 | -.22** | | |
| Constant | 685.48 | 1.14 | | | |
| Step 2 | | | | .16 | .06 |
| Poverty Index | -.72 | .02 | -.24** | | |
| Black[a] | -29.44 | .73 | -.26** | | |
| Hispanic[a] | -16.48 | 1.07 | -.09** | | |
| Mixed[a] | -11.63 | 1.61 | -.04** | | |
| 61-79 Min[b] | -.96 | .76 | -.01 | | |
| 80-90 Min[b] | -2.92 | 1.15 | -.02** | | |
| A/B 80-90 Min[b] | 1.14 | 1.26 | .01* | | |
| Constant | 683.86 | 1.17 | | | |

*Note.* [a]Reference category for race/ethnicity variables is White. [b]Reference category for schedule configuration variables is 45-60 Min.

$R^2 = .16$, $F(7, 25272) = 661.98$, $p < .001$

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