COLLEGE READINESS OF BLACK AND WHITE STUDENTS IN READING, MATHEMATICS, AND BOTH SUBJECTS: A TEXAS, MULTIYEAR INVESTIGATION

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Abstract

Analyzed in this investigation was the degree to which differences were present in college readiness in reading, mathematics, and in both subjects between Black and White students. Texas, statewide data were analyzed for five school years (i.e., 2012-2013, 2013-2014, 2014-2015, 2015-2016, and 2016-2017) to determine whether trends in college readiness rates of Black and White students were present in reading, mathematics, and both subjects. It was found that, in all five school years, White students were significantly more college ready from a statistical standpoint in comparison to Black students in reading, mathematics, and in both subjects. Effect sizes for these differences were all in the large range, indicating large practical differences in the college readiness skills of these two groups of students. Implications for policy and practice, as well as recommendations for future research are provided.

INTRODUCTION

Many policies have influenced education over the past 50 years. In the beginning, civil rights activists in the United States fought for equal access to education for all students, and as a result, the Elementary and Secondary Education Act (ESEA,1965) was enacted with the intent of improving educational equity for all disadvantaged students (Kantor, 1991; Malin, Bragg, & Hackmann, 2017). Since the first implementation in 1965, the ESEA has been reauthorized (1978, 1981, 1994, 2001, 2015), and with each reauthorization, a new focus in education has been established (e.g., Title I, learning objectives, rigorous learning standards, curriculum, accountability measured from standardized assessments, and college and career readiness). The focus of ESEA adaptations has consistently been to increase equity in learning for all U.S. students (Bush, 2001; ESEA, 1965; Every Student Succeeds Act, n.d.; Gardner et al., 1983).

In 2001, The Bush legislation reauthorized the ESEA and established The No Child Left Behind (NCLB) Act. Renewed attention to ethnic/racial achievement gaps in the United States by quantifying achievement levels for subgroups within and between schools was a result of the enactment of NCLB (Lubienski & Crocket, 2007). Furthermore, provisions emerged to ensure students receive access to full educational opportunities and increased outcomes.

As a result of the mandates of the NCLB Act, annual assessments in reading and in mathematics were used to determine whether educational performance for U.S. students improved (NCLB, 2001, 2002). Essentially, standardized test scores in reading and in mathematics began to serve as two of the main measures of student learning (Barnes & Slate, 2013; Hoffman, Assaf, & Paris, 2001). Therefore, educators and policymakers were able to determine whether students mastered grade-level learning standards (Hoffman et al., 2001). More importantly, educators and policymakers were better able to determine whether students' preparation for the next level of learning, higher education (Hossler & Vesper, 1993; Kuh, 2007; Malin et al., 2017; Stage, 1988; Wyatt & Mattern, 2011).

College Readiness

In recent decades, the number of students in the United States pursuing higher education has increased; however, inequalities exist among students entering and completing post-secondary education (Long, 2013; Martinez & Klopott, 2005). Educational inequity, by way of socio-structural inequity (e.g., poverty, racial segregation, and unequitable access to high-quality schools) are barriers that must be addressed by policymakers and educational leaders to increase the overall educational attainment and college readiness for historically, underserved populations (Castro, 2013; Rumberger & Palardy, 2005). Moreover, the academic successes of underserved populations depend on educators comprehending the conceptual differences between college eligibility and college readiness (Zulmara, Bissell, Hafner, & Katz, 2007).

Conley (2007a, 2012) defined college readiness as the level of preparation or training a student needs to qualify for and succeed in a credit bearing, entry-level college course; the college course cannot be a remedial college course. Therefore, to be considered college ready, students must acquire certain skills, content knowledge, and behaviors before leaving high school (Gigliotti, 2012). Essentially, all schools must prepare their students for college success (Every Student Succeeds Act, 2015).

Because of state and federal legislation, students in the United States have experienced academically advanced curriculum and higher accountability measures (Barnes, Slate, & Rojas-

LeBouef, 2010; Malin et al., 2017). Policymakers intended for the more rigorous curriculum and increased accountability measures to improve not only high school graduation rates, but also, college readiness rates, yet across the country, college readiness rates remain low (Barnes et al., 2010). Additional researchers (e.g., Cabrera et al., 2006; Wimberly & Noeth, 2005) indicated students' academic achievement attainment by the end of Grade 8 had an even greater influence on college readiness than high school achievement. Thus, for students to be college ready upon high school graduation, they not only need to achieve academic success in high school through a rigorous curriculum, knowledge of college expectations, and higher-level learning standards, but students should also achieve academic success by the end of Grade 8 (ACT, 2005; Conley, 2005, 2007a, 2007b; Horn, 1997; Roderick, Nagaoka, & Coco, 2009).

Importantly, more students aspire to attend college, but college enrollment has not translated into substantial increases in the share of Black students who earn 4-year college degrees (Harris, Hines, & Hipolito-Delgado, 2016; Roderick et al., 2009). Further, in spite of the best efforts and intentions of policymakers and educators, substantial disparities in college readiness and college enrollment among groups of students remain. Roderick et al. (2009) focused on improving college access and readiness for low-income and ethnic/racial minority students in urban high schools. Roderick et al. examined the most common ways of assessing college readiness: (a) coursework required for college admission, (b) achievement test scores, and (c) grade point averages. Student performance on all three indicators of college readiness revealed statistically significant ethnic/racial disparities. Specifically, Roderick et al. (2009) reported only about one third of 2002 graduates met minimum college readiness criteria, and less than 23% of Black graduates compared with 40% of White graduates. Moreover, Black students needed high schools that stress the importance of (a) content knowledge and basic skills; (b) core academic skills; (c) non-cognitive, or behavioral skills; and (d) college knowledge—the ability to search effectively for and apply to college (Roderick et al., 2009).

Even with greater requirements for high school graduation, Long, Latarola, and Conger (2009), reported nearly one third of U.S. college freshmen are unprepared for college-level math. Long et al. further suggested that Black students who were economically disadvantaged needed more remedial coursework in college. To ascertain how much the gaps in mathematics were determined by high school level coursework, Long et al. analyzed data regarding students in Florida public postsecondary institutions by examining "the contribution of the highest mathematics course taken in high school to racial, socioeconomic, and gender gaps in readiness for college-level math" (p. 2). Differences among college-going students in the highest mathematics course taken explain 28% to 35% of Black, Hispanic, and poverty gaps in readiness and over 75% of the Asian advantage. Also, Black students in poverty received lower returns to mathematics courses, suggesting differential educational quality (Long et al., 2009). Therefore, Long et al. suggested leveling race and poverty gaps in courses being taken may have deep effects on narrowing gaps in college readiness. Revealed in the analysis was that by ensuring Black students take the same mathematics courses as White students, the college readiness gap between Black and White students could be reduced by 28%.

Kowski (2013) investigated whether high school performance predicted college mathematics placement. He reviewed college readiness literature related to high school mathematics requirements and college placement testing. Kowski analyzed parts of the high school transcript to assess mathematics college readiness (e.g., overall GPA, mathematics GPA, the number of mathematics classes taken, the number of years of mathematics, the highest level of mathematics). Moreover, Kowski examined student data from a college mathematics placement

test to determine mathematics college readiness for 659 first-time, full-time students in a New Jersey suburban community college. Kowski discovered students' mathematics college readiness was influenced by the level of math classes taken in high school, grade point average, and the socioeconomic status of the high school community. College readiness was partially influenced by the mathematics state exam. As such, Kowski (2013) suggested that high school students need to take more rigorous mathematics courses in high school to be better prepared for college.

In a similar study, using the test data from approximately 1,700 high school students from a Southern California urban district, Houser and An (2015) analyzed the effects that the academic (i.e., California Standards Test scores in mathematics, science, and ELA; and the California High School Exit Exam mathematics) and demographics factors (i.e., gender, race/ethnicity, language, socioeconomic status) may have on the Early Assessment Program test. In California, high school juniors take the California Standards Test and the California High School Exit Exam. The results of the test predict college ready results on the Early Assessment Program test that determine whether students are college ready for a California State University. Although most of the factors were not statistically significant predictors of college readiness, the mathematics California Standards Test did contribute to predicting those students who are college ready.

Concerning reading and writing, McCormick and Hafner (2017) evaluated college freshmen perceptions of the gap between high school English coursework and college-level coursework. They surveyed freshman students in various first-year English courses at seven California State University campuses. McCormick and Hafner (2017) established that 74% of the students who took an AP course in high school believed they were more prepared for college level coursework. Students who wrote one or two essays per month in high school believed they were more prepared for college English. Overall, McCormick and Hafner determined that the type of English courses taken and the amount of writing influenced students' readiness for college.

Preparing students for life beyond high school is important (Bowers & Foley, 2018; Kowski, 2013; Long et al., 2009). To increase the number of Texas high school graduates who are college and career ready, state legislators passed the bill, Advancement of College Readiness in Curriculum (Texas Higher Education Coordinating Board & Texas Education Agency, 2009). The Texas Education Agency and the Texas Higher Education Coordinating Board developed College and Career Readiness Standards (CCRS) in the areas of English/Language Arts, mathematics, science, and social studies. These standards made up the knowledge and skills students needed to complete entry level courses at college in Texas.

In an analysis of data from the Texas Education Agency's Academic Excellence Indicator System, Moore et al. (2011) examined scores for all students and each ethnic/racial subgroup in reading, mathematics, and both subjects combined to determine college ready graduate rates. In their study, only one third of the students were college ready in both subjects, and statistically significant differences were present in reading, mathematics, and both subjects among Black and White students. Strong achievement differences were present across ethnic/racial groups. As a result, they suggested educational policies should be reexamined.

A key factor in college readiness is preparation for the rigorous coursework (Martinez, Baker, & Young, 2017; Tierney & Sablan, 2014). A central goal of schooling has been to promote and support skill development and academic achievement for all students (Schiller & Muller, 2003). Hart (2005) asked high school graduates and college students to evaluate their own level of college preparation. Approximately 30% of college students reported gaps in reading skills and approximately 42% of college students reported gaps in mathematics skills.

In a Texas statewide, multiyear investigation, Barnes and Slate (2014) examined whether the academic achievement gaps were present in college readiness among Black, Hispanic, and White Texas public high school graduates for the 2006-2007, 2007-2008, and 2008-2009 school years. In their study in all three school years, statistically significant differences were present among all three ethnic/racial groups. White students, as compared to Black students, achieved higher college readiness rates in reading, mathematics, and in both students. Both White and Black students increased their college-readiness rates over the three years; however, White students achieved higher levels of student academic achievement in college readiness each school year.

College readiness is also present when students take the ACT. The college readiness benchmarks on the ACT determine whether students will pass a credit-bearing college course. According to the ACT (2016) report on college and career readiness, 11% of Black students and 49% of White students met at least three or more of the ACT college readiness benchmarks. Most recently in 2017, the ACT conducted a national report to look at how students are achieving in the college and career readiness ACT standard. Data of more than 2 million U.S. high school students who took the ACT test in 2017 were analyzed. Results were that 47% of the students were college-ready in reading and 41% of the students were college ready in math. Additionally, in 2017, 20% of Black students met the ACT college readiness benchmarks in reading and 13% of Black students met the ACT college readiness benchmarks in math. In contrast, 58% of White students met the ACT college readiness benchmarks in reading and 51% of White students met the ACT college readiness benchmarks in math.

To delve deeper into the relationship of the ACT and college readiness, Harwell, Moreno, and Post (2016) examined the relationship between the ACT college mathematics readiness standard and college mathematics achievement. They used a sample of students in 4-year postsecondary institutions in the US who took at least three years of ACT recommended mathematics high school coursework. In their investigation, students were three times more likely to earn at least a B in their first-year college mathematics course if they met the high school mathematics coursework standard.

Statement of the Problem

Upon entering school, Black students underperform academically when compared to their White peers (Lee & Burkham, 2002; Yeung & Pfeiffer, 2009) with the gap usually widening over time (Entwisle, Alexander, & Olson 2005; Fryer & Levitt, 2004). Historically, White students tend to score higher than Black students in multiple academic domains such as reading and math (Potter & Morris, 2017). The National Association of Educational Progress (2015) reported that 17% of Grade 12 Black students and 46% of Grade 12 White students scored at or above the proficient level in reading. Concerning mathematics, 7% of Grade 12 Black students and 32% of Grade 12 White students scored at or above the proficient level. Each year almost one third of graduating students from secondary public schools are not prepared for rigorous college level coursework (Arnold, Lu, & Armstrong, 2012; Barnes & Slate, 2010; Bettinger & Long, 2005). Since the passing of the NCLB Act, Black students still do not perform as well as White students in mathematics assessments (Plucker, Burroughs, & Song, 2010; Venzant, Chambers, & Huggins, 2014).

Closing the achievement gap is an issue continuing to affect the educational system (Chapa, Galvan-De Leon, Solis, & Mundy, 2014). Lotkowski et al. (2004) contended the strongest predictors of college persistence and degree attainment are prior academic achievement and course

selection. However, nonacademic factors (e.g., race/ethnicity) can influence academic performance (Hearn, 1991; Lotkowski et al., 2004; Pritchard & Wilson, 2007; Welton & Martinez, 2013). Although developments have been made to improve college access and success rates across groups of students, Long (2013) noted that students from ethnic/racial groups remain underprepared for college-level coursework.

Purpose of the Study

The first purpose of this study was to examine the differences present in reading college readiness between Black and White students. A second purpose was to determine the differences that existed in mathematics college readiness between Black and White students. A third purpose was to ascertain the differences present in college readiness in both subjects between Black and White students. Texas, statewide data were analyzed for five school years (i.e., 2012-2013, 2013-2014, 2014-2015, 2015-2016, and 2016-2017) to determine the degree to which trends were present in the reading, mathematics, and both subjects in relation to the college readiness rates of Black and White students.

Significance of the Study

The majority of high school graduates in the United States are not academically prepared for the rigor of postsecondary education (Conley, 2007a, 2007b; Flippo, 2011; Hunt, Boyd, Gast, Mitchell, & Wilson, 2012; Martinez et al., 2017). Yet, all students need to be prepared for life after high school (Harris, Mayes, Vega, & Hines, 2016). Researchers (e.g., Barnes & Slate, 2014; Moore et al., 2011) have revealed differences in achievement between Black and White students. If differences exist in college readiness between Black students and White students, researchers must uncover that and determine why the differences exist.

Monitoring college ready progress allows teachers and administrators to identify students who are not on target and implement academic interventions to help close the learning and achievement gaps. Understanding college readiness achievement rates informs colleges and universities concerning student instructional needs. Students who are accurately placed in college courses that are appropriately matched to their achievement levels are more likely to succeed in college coursework (Belfield & Crosta, 2012; Scott-Clayton, 2012).

Research Questions

The following research questions were investigated in this study: (a) What is the difference in reading college readiness rates between Black and White students?; (b) What is the difference in mathematics college readiness between Black and White students?; (c) What is the difference in both subjects college readiness between Black and White students?; (d) What trend is present in reading college readiness for Black and White students over the five school years of data analyzed?; (e) What trend is present in mathematics college readiness rates for Black and White students over the five school years of data analyzed?; and (f) What trend is present in both subjects college readiness rates for Black and White students over the five school years of data analyzed? The first three research questions were repeated for the 2012-2013, 2013-2014, 2014-2015, 2015-2016, and 2016-2017 school years; whereas, the last three research questions constituted

comparisons across all five school years. Accordingly, 18 research questions were addressed in this study.

METHODS

Research Design

A non-experimental, causal comparative research design (Johnson & Christensen, 2012) was used in this study. In this investigation, the independent and dependent variables had already occurred; therefore, the independent variable could not be manipulated. Furthermore, extraneous variables were not controlled. In this investigation, the independent variable was the ethnicity/race (i.e., Black and White) of students. The dependent variables were college readiness rates in reading, in mathematics, and in both subjects.

Participants and Instrumentation

Test questions on the State of Texas Assessments of Academic Readiness (STAAR) End of Course (EOC) Algebra I and English II assessments gauge the understanding of key concepts required for success at the next level. All test questions on the STAAR exams count toward determining whether a student has met the passing standard as well as the college and career readiness standard (Texas Education Agency, 2017a). Students on track to meet the college readiness standard, score at the Master's level meaning that students demonstrated mastery of and have strong knowledge of the coursework (i.e., Index 4; Texas Education Agency, 2017a; 2017b). Students who meet the Final Level II Satisfactory Academic Performance on STAAR meet grade level passing standards and are considered college ready (Texas Education Agency, 2017a). Data were obtained from the Texas Education Agency Texas Academic Performance Report database in an Excel format. To conduct statistical analyses, the data were converted and recoded into a Statistical Package for the Social Sciences (SPSS) data file.

RESULTS

Prior to conducting inferential statistics to determine whether differences were present in college readiness in reading, mathematics, and in both subjects between Black and White students, checks were conducted to determine the extent to which these data were normally distributed (Onwuegbuzie & Daniel, 2002). Although some of the values were indicative of non-normally distributed data, a decision was made to use parametric dependent samples *t*-tests to answer the research questions. Statistical results will now be presented by school year, in order of the research questions previously delineated.

Results for Research Question 1 Across All Five School Years

For the 2012-2013 school year, the parametric dependent samples *t*-test revealed a statistically significant difference, $t(596) = -26.89$, $p < .001$, Cohen's $d = 1.23$, in reading college readiness between Black and White students. The effect size for this difference was large (Cohen, 1988). A statistically significantly higher percentage of White students, 75.64%, were college ready in reading than Black students, 57.50%. Readers are directed to Table 1 for the descriptive statistics for this analysis.

Table 1

Descriptive Statistics for College Readiness in Reading of Black Students and White Students for the 2012-2013 Through the 2016-2017 School Years

School Year and Ethnicity	*n* of schools	*M*	*SD*
2012-2013			
Black	597	57.50	16.48
White	597	75.64	12.88
2013-2014			
Black	622	54.50	17.71
White	622	70.79	14.20
2014-2015			
Black	619	54.53	17.74
White	619	70.87	14.18
2015-2016			
Black	545	26.73	16.96
White	545	54.26	18.58
2016-2017			
Black	544	26.76	17.00
White	544	54.32	18.54

Concerning the 2013-2014 school year, the parametric dependent samples *t*-test yielded a statistically significant difference, $t(621) = -24.73$, $p < .001$, Cohen's $d = 1.01$, in reading college readiness between Black and White students. The effect size for this difference was large (Cohen, 1988). A statistically significant higher percentage, 70.79%, of White students were college ready in reading than were Black students, 54.50%. Descriptive statistics for this analysis are contained in Table 2.1.

With respect to the 2014-2015 school year, a statistically significant difference, $t(618) = -24.75$, $p < .001$, Cohen's $d = 1.02$, was revealed in reading college readiness between Black and White students. The effect size for this difference was large (Cohen, 1988). Again, a statistically significant higher percentage, 70.87%, of White students were college-ready in reading than were Black students, 54.33%. Delineated in Table 2 are the descriptive statistics for this analysis.

Regarding the 2015-2016 school year, a statistically significant difference, $t(544) = -38.61$, $p < .001$, Cohen's $d = 1.55$, was again yielded in reading college readiness between Black and White students. The effect size for this difference was large (Cohen, 1988). Similar to the previous four school years, a statistically significantly higher percentage, 54.26%, of White students were college-ready in reading than were Black students, 26.73%. Table 2.1 contains the descriptive statistics for this analysis.

For the 2016-2017 school year, the parametric dependent samples *t*-test revealed a statistically significant difference, $t(543) = -38.61$, $p < .001$, Cohen's $d = 1.55$, in reading college readiness between Black and White students. The effect size for this difference was large (Cohen, 1988). Similar to the previous four school years, a statistically significant higher percentage, 54.32%, of White students were college-ready in reading than were Black students, 26.76%. Revealed in Table 2 are the descriptive statistics for this school year.

Results for Research Question 2 Across All Five School Years

Concerning the 2012-2013 school year, the parametric dependent samples *t*-test procedure yielded a statistically significant difference between Black and White students in their mathematics college readiness, $t(592) = -32.63$, $p < .001$, Cohen's $d = 1.47$. The effect size for this difference was large (Cohen, 1988). A statistically significantly higher percentage of White students, 75.43%, were college ready in mathematics than Black students, 52.73%. Table 2 contains the descriptive statistics for this analysis.

Table 2

Descriptive Statistics for College Readiness in Mathematics of Black Students and White Students for the 2012-2013 Through the 2016-2017 School Years

School Year and Ethnicity	*n* of schools	*M*	*SD*
2012-2013			
Black	593	52.73	16.71
White	593	75.43	14.10
2013-2014			
Black	620	58.18	17.94
White	620	79.13	12.43
2014-2015			
Black	618	58.25	17.93
White	618	79.16	12.43

2015-2016			
Black	544	21.26	16.45
White	544	48.32	19.17
2016-2017			
Black	543	21.29	16.46
White	543	48.37	19.15

Regarding the 2013-2014 school year, a statistically significant difference, $t(619) = -32.98$, $p < .001$, Cohen's $d = 1.36$, was revealed in mathematics college readiness between Black and White students. The effect size for this difference was large (Cohen, 1988). A statistically significantly higher percentage, 79.13%, of White students were college-ready in mathematics than were Black students, 58.18%. Delineated in Table 2 are the descriptive statistics for this analysis.

With respect to the 2014-2015 school year, a statistically significant difference, $t(617) = -32.85$, $p < .001$, Cohen's $d = 1.65$, was yielded in mathematics college readiness between Black and White students. The effect size for this difference was large (Cohen, 1988). Congruent with the previous two school years, a statistically significant higher percentage, 79.16%, of White students were college-ready in mathematics than were Black students, 58.25%. Descriptive statistics for this analysis are contained in Table.2.

Concerning the 2015-2016 school year, a statistically significant difference, $t(543) = -38.36$, $p < .001$, Cohen's $d = 1.51$, was again present in mathematics college readiness between Black and White students. The effect size for this difference was large (Cohen, 1988). A statistically significantly higher percentage, 48.32%, of White students were college-ready in mathematics than were Black students, 21.26%. Readers are referred to Table 2 for the descriptive statistics for this analysis.

For the 2016-2017 school year, the parametric dependent samples *t*-test procedure yielded a statistically significant difference, $t(542) = -38.35$, $p < .001$, Cohen's $d = 1.52$, in mathematics college readiness between Black and White students. The effect size for this difference was large (Cohen, 1988). Similar to the previous four school years, a statistically significant higher percentage, 48.37%, of White students were college-ready in mathematics than were Black students, 21.29%. Table 2 contains the descriptive statistics for this analysis.

Results for Research Question 3 Across All Five School Years

With respect to the 2012-2013 school year, the parametric dependent samples *t*-test revealed a statistically significant difference, $t(580) = -27.95$, $p < .001$, Cohen's $d = 1.36$, in college-readiness in both subjects between Black and White students. The effect size for this difference was large (Cohen, 1988). A statistically significant higher percentage, 63.99%, of White students were college-ready in both subjects than were Black students, 41.52%. Revealed in Table 3 are the descriptive statistics for this analysis.

Table 3

Descriptive Statistics for College Readiness in Both Subjects of Black Students and White Students for the 2012-2013 Through the 2016-2017 School Years

School Year and Ethnicity	*n* of schools	*M*	*SD*
2012-2013			
Black	581	41.52	16.64
White	581	63.99	16.38
2013-2014			
Black	616	40.71	18.55
White	616	63.25	16.26
2014-2015			
Black	614	40.75	18.56
White	614	63.30	16.26
2015-2016			
Black	544	18.86	16.02
White	544	46.03	19.32
2016-2017			
Black	543	18.88	16.02
White	543	46.08	19.31

Concerning the 2013-2014 school year, a statistically significant difference, $t(615) = -33.01$, $p < .001$, Cohen's $d = 1.29$, was yielded in college-readiness in both subjects between Black and White students. The effect size for this difference was large (Cohen, 1988). A statistically significant higher percentage, 63.25%, of White students were college-ready in both subjects than were Black students, 40.71%. Descriptive statistics for this analysis are presented in Table 3.

Regarding the 2014-2015 school year, a statistically significant difference, $t(1575) = -12.45$, $p < .001$, Cohen's $d = 2.44$, was again yielded in college-readiness in both subjects between Black and White students. The effect size for this difference was large (Cohen, 1988). Again, a statistically significant higher percentage, 63.30%, of White students were college-ready in both subjects than were Black students, 40.75%. In Table 3 the descriptive statistics for this analysis are listed.

For the 2015-2016 school year, a statistically significant difference, $t(543) = -40.32$, $p < .001$, Cohen's $d = 1.53$, was revealed in college-readiness in both subjects between Black and White students. The effect size for this difference was large (Cohen, 1988). Similar to the previous three school years, a statistically higher percentage, more than twice as high, 46.03%, of White students were college-ready in both subjects than were Black students, 18.86%. Contained in Table 3 for the descriptive statistics for this analysis.

With respect to the 2016-2017 school year, a statistically significant difference, $t(542) = -40.30$, $p < .001$, Cohen's $d = 1.53$, was yielded in college-readiness in both subjects between Black and White students. The effect size for this difference was large (Cohen, 1988). Congruent with the previous four school years, the percentage of White students who were college-ready in both subjects, 46.08%, was more than twice as high as the percentage of Black students who were college-ready in both subjects, 18.88%. Descriptive statistics for this analysis are presented in Table 3.

Research Question for Trends Across All School Years

The final research questions regarding the analysis of college readiness in reading, mathematics, and in both subjects between Black and White students for all five school years of data will now be addressed. Trends existed in college readiness rates in reading, in mathematics, and in both subjects between Black and White students. White students were statistically significantly more college ready in reading, mathematics, and in both subjects in all five school years of the study. In each school year, a consistent gap in achievement between Black and White students was evident, in relation to college readiness in reading, mathematics, and in both subjects,

The gap in college readiness in reading increased by approximately 9.00 percentage points from the first year of the study to the last year of the study. In the 2012-2013 school year, the gap in college readiness in reading was 18.14%. In the 2016-2017 school year, the gap in college readiness in reading was 27.56%. In the 2013-2014 and 2014-2015 school years, the gap was consistent (i.e., 16.29% and 16.34%). Also, in the last two school years of the study (i.e., 2015-2016 and 2016-2017), the gap in college readiness in reading was consistent (i.e., 27.50% and 27.56% respectively). In comparing the first school year of the study (i.e., 2012-2013) to the last school year of the study (i.e., 2016-2017), the gap between Black and White students in college readiness in reading increased by approximately 9.00 percentage points. Figure 1 displays a graphical representation of this trend.

Figure 1. Average reading college readiness for Black students and White students for the 2012-2013 through the 2016-2017 school years.

Concerning mathematics, the gap in college readiness remained consistent in the first three school years of the study (i.e., 22.70% in 2012-2013, 20.95% in 2013-2014, and 20.91% in 2014-2015). However, in the 2015-2016 school year, the gap increased by approximately 6.00%. In the last two school years of the study, the gap remained consistent (27.06% in 2015-2016 and 27.08% in 2016-2017). Overall, the gap in college readiness in mathematics increased by approximately 4.00 percentage points from the first school year of the study (i.e., 2012-2013) to the last school year of the study (i.e., 2016-2017). The five school year trend is represented in Figure 2.

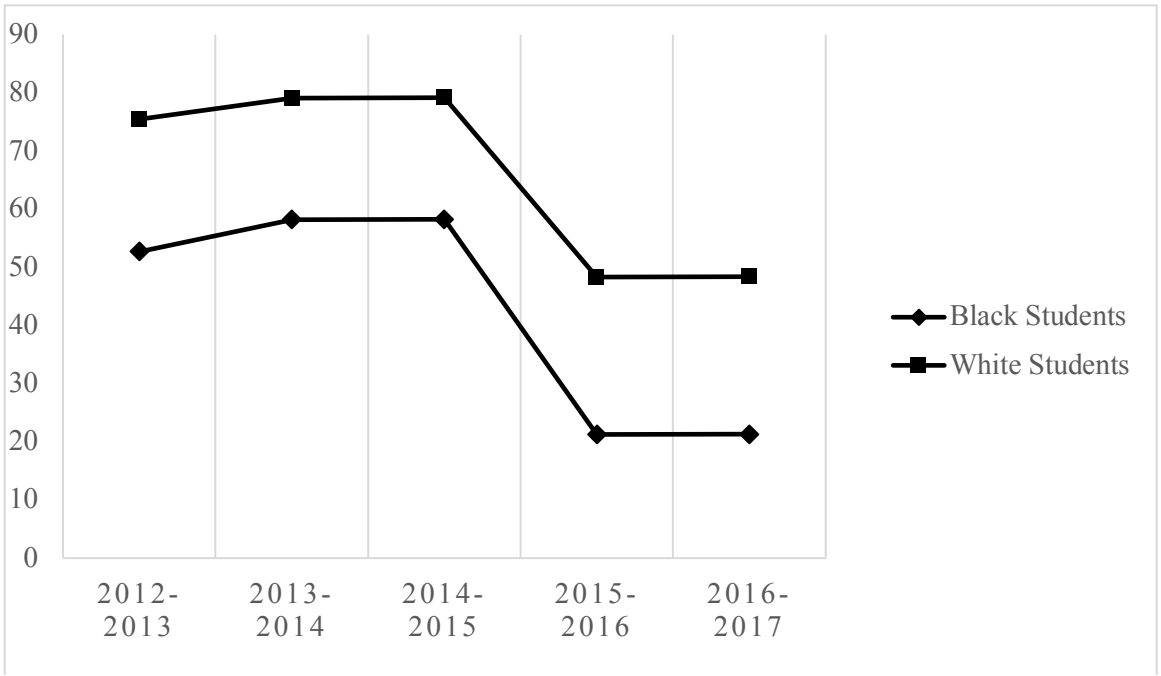

Figure 2. Average mathematics college readiness for Black students and White students for the 2012-2013 through the 2016-2017 school years.

In college readiness in both subjects, the gap between Black and White students remained consistent for the first three school years of the study. In the 2012-2013 school year, the gap was 22.47%. The following year the gap was 22.54%. In the 2014-2015 school year, the gap between Black and White students was 22.55%. In the 2015-2016 school year, the gap increased by almost 5.00%. Overall, the gap in college readiness in both subjects increased by 4.73 percentage points from the first school year of the study (i.e., 2012-2013) to the last school year of the study (i.e., 2016-2017). Figure 3 reveals a graphical representation of this trend.

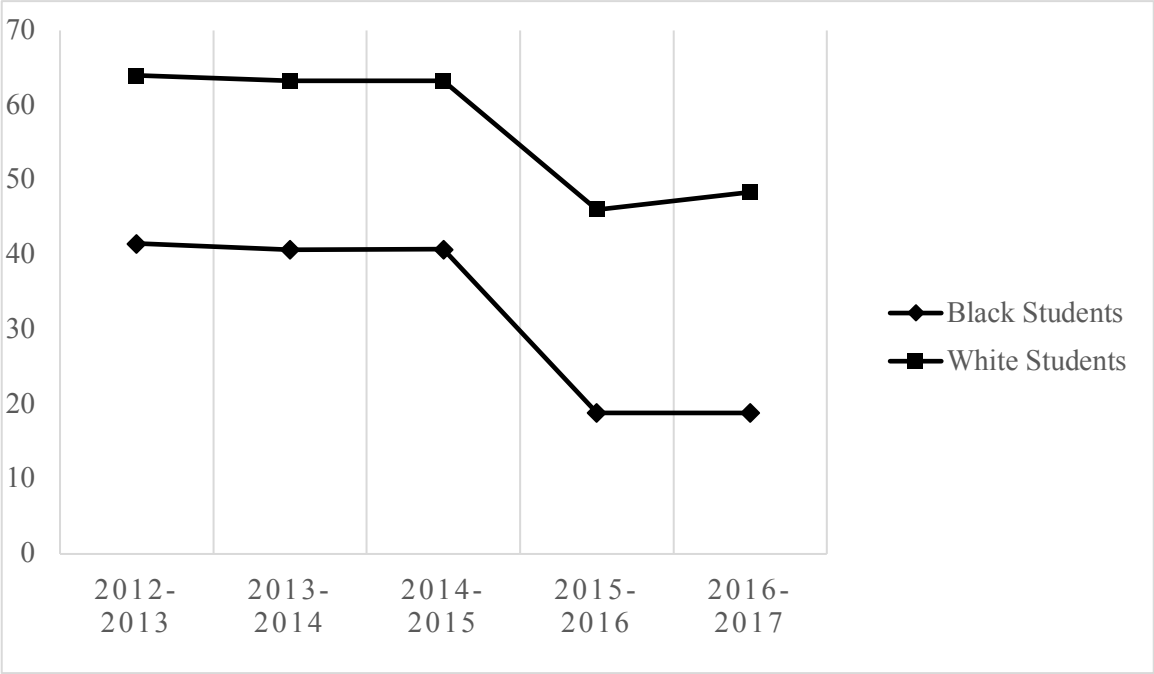

Figure 3. Average mathematics college readiness for Black students and White students for the 2012-2013 through the 2016-2017 school years.

The performance standards for the STAAR have scheduled, yearly increases (Texas Education Agency, 2017c). The standard to meet grade level performance increased from the 2014-2015 school year to the 2015-2016 school year. In the 2012-2013 through the 2014-2015 school years, to meet satisfactory performance in reading, students had to score at least 3750; to meet satisfactory performance in mathematics, students had to score at least 3500 (Texas Education Agency, 2017c). In the 2015-2016 school year, to meet grade level performance standards, students had to meet the scale score of 4000 in reading and in mathematics (Texas Education Agency, 2017c). The increase in the passing standard can affect the college readiness of students, for if less students meet the passing standard then less students will inevitably meet the college readiness standard. As readers can see from Figures 1, 2, and.3, college readiness in all subjects for both Black and White students dropped from the 2014-2015 school year to the 2015-2016 school year.

DISCUSSION

In this investigation, differences in college readiness in reading, mathematics, and in both subjects between Black and White students in Texas public schools was investigated. Archival data from the Texas Academic Performance Reports were obtained and analyzed. College readiness data in reading, in mathematics, and in both subjects were analyzed for the 2012-2013, 2013-2014, 2014-2015, 2015-2016, and 2016-2017 school years. In all five school years, White students were statistically significantly more college ready than were Black students in reading, mathematics, and in both subjects. Based upon the results of this investigation, too few Black students, compared to White students, are college ready in reading, mathematics, and in both

subjects. Table 4 contains a summary of the results for the effect sizes for the college readiness differences between Black and White students in reading, mathematics, and in both subjects for the five school years.

Table 4

Summary of Results for the Effect Sizes for the College-Readiness Differences in Reading, Mathematics, and in Both Subjects Between Black and White Students in Their College Readiness

College Readiness and School Year	Effect Size	Lower Achieving Group
Reading		
2012-2013	Large	Black
2013-2014	Large	Black
2014-2015	Large	Black
2015-2016	Large	Black
2016-2017	Large	Black
Mathematics		
2012-2013	Large	Black
2013-2014	Large	Black
2014-2015	Large	Black
2015-2016	Large	Black
2016-2017	Large	Black
Both Subjects		
2012-2013	Large	Black
2013-2014	Large	Black
2014-2015	Large	Black
2015-2016	Large	Black
2016-2017	Large	Black

Statistically significant differences were present in reading college readiness between Black and White students in all five school years. White students were statistically significantly more college ready in reading than were Black students. The size of the difference was large in reading college readiness between Black and White students in each school year of the study. In the first three school years of the study (i.e., 2012-2013, 2013-2014, and 2014-2015), at least 50.00% of Black students were college ready in reading: 57.50% in 2012-2013, 54.50% in 2013-2014, and 54.53% in 2014-2015. Yet, in the 2015-2016 school year and in the 2016-2017 school year, only 26.73% and 26.76% of Black students were college ready in reading.

In all five school years, White students were more college ready in mathematics than Black students. Effect sizes for the mathematics college-readiness differences were large in all five school years. Similar to the reading results, in the first three school years of the study, at least 50.00% of Black students were college ready in mathematics: 52.73% in 2012-2013, 58.18% in 2013-2014, and 58.25% in 2014-2015. However, in the last two school years, the average percentage of Black students who were college ready in mathematics decreased: 21.26% were college ready in the 2015-2016 school year and 21.29% were college ready in the 2016-2017 school year.

Concerning college readiness in both subjects, Black students were statistically significantly less college ready than were White students in all five school years. Effect sizes for the both subjects college readiness differences were large in all five school years. In no year of the study were at least 50% of Black students college ready in both subjects: 41.52% in 2012-2013, 40.71% in 2013-2014, 40.75% in 2014-2015, 18.86% in 2015-2016, and 18.88% in 2016-2017.

Connections with Existing Literature

Similar to previous researchers (e.g., ACT, 2016; Barnes, 2010; Barnes & Slate, 2014; Barton & Coley, 2010; Vanneman et al., 2009), White students continue to have higher levels of college readiness in comparison to Black students. Barnes and Slate (2014) examined the college readiness rates in reading, in mathematics, and in both subjects using data from the Texas Academic Excellence Indicator System. Barnes and Slate analyzed the college readiness rates for Black, Hispanic, and White students. Barnes and Slate reported the college readiness rates in reading, mathematics, and in both subjects for White students were higher than the college readiness rates in reading, mathematics, and in both subjects for Black students. For five school years (i.e., 2012-2013, 2013-2014, 2014-2015, 2015-2016, and 2016-2017) the results from our study were consistent with the results attained by Barnes and Slate (2014).

Barnes (2010) conducted research to determine the differences in college readiness between Black, Hispanic, and White public high school graduates in Texas over the course of three school years. During the school years, students in Texas took the Texas Assessment of Knowledge and Skill (TAKS) assessment. To evaluate college readiness, the Higher Education Readiness Standards for exit level TAKS English language arts and mathematics were analyzed. Concerning the differences in college readiness between Black and White students in all three school years (i.e., 2006-2007, 2007-2008, and 2008-2009) examined in Barnes' study, it was found that White students, in comparison to Black students, were more college ready in reading, mathematics, and in both subjects. Findings of the Barnes study are similar to the findings of this study as more White students than Black students met the college readiness standards in reading, mathematics, and in both subjects.

Implications for Policy and Practice

Based upon the results of this multiyear, statewide investigation, several implications for policy and practice can be made. First, given the low percentages of students who were determined to be college ready, educators and policymakers need to examine the rigor in middle schools (Allensworth, Gwynne, Moore, & de la Torre, 2014) and in high schools. The results of this investigation do not support the notion that a level of significant rigor exists in middle schools or

high schools for preparing students to be college ready. Additionally, higher education leaders will need to determine the resources students will need to succeed in college and continue to work with high schools to align academic expectations and standards (Cline, Bissell, Hafner, & Katz, 2007; Perin, 2018). A barrier to academic success between Black and White students lies in the achievement gap (Texas Higher Education Coordinating Board, 2006). When determining academic outcomes, many factors need to be considered, from the role of family and economic resources to the quality of schools attended (Duncan & Murname, 2011; Halpern-Manner, Warren, & Brand, 2009; Potter & Morris, 2017).

Recommendations for Future Research

Several recommendations for future research can be made. First, because this study was based entirely on Texas student data, the degree to which the results revealed within would be generalizable to students in other states is not known. As such, researchers are encouraged to replicate this investigation in other states. Second, the sole focus of this investigation was on Black and White students. The college-readiness, or lack thereof, of other major ethnic/racial groups of students such as Hispanic and Asian warrants examination. Researchers are encouraged to investigate the degree to which other ethnic/racial groups of students and underrepresented groups such as English Language Learners are college ready.

A third recommendation would be to address whether gender differences are present in college readiness. To what degree are high school boys and girls similar or dissimilar in their college readiness skills? Determining the college readiness differences in reading and in mathematics between boys and girls will allow researchers to see not only how ready boys and girls are for college, but to also determine whether gaps in reading and mathematics achievement between boys and girls are decreasing.

CONCLUSION

The purpose of this research study was to investigate differences in college readiness in reading, mathematics, and in both subjects between Black and White students. Texas, statewide data were analyzed for five school years (i.e., 2012-2013 through 2016-2017) to determine the degree to which trends were present in the reading, mathematics, and both subject scores, which relate to college readiness among Black and White students. Inferential statistical procedures revealed the presence of statistically significant differences between Black and White students in reading and mathematics college readiness. Statistically significant differences also existed between Black and White students in both subjects. In all five school years, White students were significantly more college ready in reading, mathematics, and in both subjects than were Black students, from a statistical perspective. Large effect sizes were present in all instances and were reflective of large degrees of practical relevance with respect to a lack of college readiness for Black students. Sixty-four years after Brown v. Board of Education, achievement gaps still exist between Black students and White Students. Educational policymakers and legislators should consider necessary changes and improvements to reduce or eliminate this achievement gap before another decade passes.

REFERENCES

ACT. (2005). *College readiness begins in middle school*. Iowa City, IA: Author.

Allensworth, E. M., Gwynne, J. A., Moore, P., & de la Torre, M. (2014). *Looking forward to high school and college: Middle grade indicators of readiness in Chicago public schools*. Chicago, IL: University of Chicago Consortium on School Research.

American College Test. (2017). The condition of college & career readiness in 2017. *ACT Policy Report*. Ames, IA: Author.

Arnold, K. D., Lu, E. C., & Armstrong, K. J. (2012). The ecological view of college readiness. *ASHE Higher Education Report*, *38*(5), 91-107.

Barnes, W. B. (2010, August). *College readiness rates of Black, Hispanic, and White high school graduates in Texas* (Doctoral dissertation). Retrieved from ProQuest, LLC. (UMI Number 3441933)

Barnes, W., & Slate, J. R. (2010). College-readiness: The current state of affairs. *Academic Leadership, 8*(4).

Barnes, W., & Slate, J. R. (2014). College-readiness rates in Texas: A statewide, multiyear study of ethnic differences. *Education & Urban Society, 46*(1), 59-87. doi:10.1177/0013124511423775

Barnes, W., Slate, J., & Rojas-LeBouef, A. (2010). College-readiness and academic preparedness: The same concepts? *Current Issues in Education, 13*(4). Retrieved from http://cie.asu.edu/

Barton, P. E., & Coley, R. J. (2010). *The Black-White achievement gap: When progress stopped*. Princeton, NJ: Educational Testing Services.

Belfield, C., & Crosta, P. (2012). *Predicting success in college: The importance of placement tests and high school transcripts* (Working Paper 42). New York, NY: Community College Research Center, Teachers College Columbia University.

Bettinger, E. P., & Long, B. T. (2005). Remediation at the community college: Student participation and outcomes. *New Directions for Community Colleges*, *2005,* 17-26. doi:10.1002/cc.182

Bowers, D., & Foley, V. P. (2018). Advanced placement and dual enrollment as related to college readiness and retention at a Tennessee university. *Journal of Academic Administration in Higher Education, 14*(1), 5-10.

Bush, G. W. (2001). *No Child Left Behind.* Washington, DC: Office of the President of the United States.

Cabrera, A. F., Deil-Amen, R., Prabhu, R., Terenzini, P. T., Lee, C., & Franklin, R. E., Jr. (2006). Increasing the college preparedness of at-risk students. *Journal of Latinos and Education, 51*(2), 79-97. doi:10.1207/s1532771xjle0502_2

Castro, E. L. (2013). Racialized readiness for college and career: Toward an equity-grounded social science of intervention programming. *Community College Review, 41*, 292-310. doi:10.1177/0091552113504291

Chapa, M., Galvan-De Leon, V., Solis, J., & Mundy, M. (2014). College readiness. *Research in Higher Education Journal, 25*, 1-5. Retrieved from http://files.eric.ed.gov/fulltext/EJ1055338.pdf

Cline, Z., Bissell, J., Hafner, A., & Katz, M. L. (2007). Closing the college readiness gap. *Leadership,* 30-33.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Conley, D. T. (2005). *College knowledge: What it really takes for students to succeed and what we can do to get them ready.* San Francisco, CA: Jossey-Bass.

Conley, D. T. (2007a). *Redefining college readiness, Volume 3*. Eugene, OR: Educational Policy Improvement Center.

Conley, D. T. (2007b). The challenge of college readiness. *Educational Leadership, 64*(7), 23-39

Conley, D. T. (2012). *A complete definition of college and career readiness.* Eugene, OR: Educational Policy Improvement Center.

Cresswell, J. (2009). *Research design: qualitative, quantitative, and mixed methods approaches* (3rd ed.). Thousand Oaks, CA: Sage.

Duncan, G. J. and Murnane. R. J. (2011). *Whither opportunity? Rising inequality, schools, and children's life chances*. New York: Russell Sage.

Elementary and Secondary Education Act (ESEA) of 1965, Pub. L. No. 89-10, 79 Stat. 27 (1965).

Entwisle, D. R., Alexander, K. L., & Olson, L. O. (2005). First grade and educational attainment by Age 22: A new story. *American Journal of Sociology, 110*, 1458-1502.

Every Student Succeeds Act (ESSA). (n.d.). Retrieved from https://www.ed.gov/essa?src=rn

Flippo, R. F. (2011). Transcending the divide: Where college and secondary reading and study research coincide. *Journal of Adolescent & Adult Literacy, 54*, 396-401.

Fryer, R. G., & Levitt, S. D. (2004). Understanding the Black-White test score gap in the first two years of school. *The Review of Economics and Statistics, 86*, 447-464.

Gall, J. P., Gall, M. D., & Borg, W. R. (2007). *Educational research: An introduction* (8th ed.). New York, NY: Pearson.

Gigliotti, J. (2012). Rice University: Innovation to increase student college readiness. *Continuing Higher Education Review, 76*, 166-174.

Halpern-Manner, A., Warren, J. R., & Brand, J. E. (2009). Dynamic measures of primary and secondary school characteristics: Implications for school effects research. *Social Science Research,* 38, 397-411.

Harris, P. C., Hines, E. M., & Hipolito-Degado, C. P. (2016). Counselor educator perceptions: College and career readiness of African-American Males. *The Journal of Counselor Preparation and Supervision, 8*(3). Retrieved from http://dx.doi.org/10.7729/83.1133

Harris, P., Mayes, R. D., Vega, D., & Hines, E. M. (2016). Reaching higher: College and career readiness for African American males with learning disabilities. *Journal of African American Males in Education, 7*(1), 52-69.

Hart, P. (2005). *Rising to the challenge: Are high school graduates prepared for college and work? A study of recent high school graduates, college instructors, and employers*. Retrieved from http://www.achieve.org/files/pollreport_0.pdf

Hearn, J. C. (1991). Academic and nonacademic influences on the college destinations of 1980 high school graduates. *Sociology of Education, 64*, 158-171.

Hoffman, J. V., Assaf, L. C., & Paris, S. G. (2001). High-stakes testing in reading: Today in Texas, tomorrow? *Reading Teacher, 54*, 482-492.

Horn, L. J. (1997). *Confronting the odds: Students at risk and the pipeline to higher education* (Report No. NCES-98-094). Washington, DC: US Government Printing Office.

Hossler, D., & Vesper, N. (1993). An exploratory study of the factors associated with parental saving for postsecondary education. *Journal of Higher Education*, *64*, 140-165.

Hunt, P. F., Boyd, V. S., Gast, L. K., Mitchell, A., & Wilson, W. (2012). Why some students leave college during their senior year. *Journal of College Student Development, 53*, 737-742.

Jencks, C., & Phillips, M. (1998). *The Black-White test score gap*. Washington, DC: Brookings Institution.

Johnson, R. B., & Christensen, L. (2012). *Educational research: Quantitative, qualitative, and mixed approaches* (4th ed.). Thousand Oaks, CA: Sage.

Kantor, H. (1991). Education, social reform, and the state: ESEA and federal education policy in the 1960s. *American Journal of Education, 100*(1), 47-83. Retrieved from http://www.jstor.org/stable/1085652

Kowski, L. E. (2013). Does high school performance predict college mathematics placement? *Community College Journal of Research and Practice, 37*, 514-527. doi:10.1080/10668926.2012.754730

Kuh, G. D. (2007). What student engagement data tell us about college readiness. *Association of American Colleges & Universities, 9*(1), 4-8.

Lee, V. E., & Burkham, D. T. (2002) *Inequality at the starting gate: Social background differences in achievement as children begin school*. Washington, DC: Economic Policy Institute.

Long, A. P. (2013). Introduction: Improving postsecondary access, persistence, and completion in the United States. In L. Perna, & A. Jones (Eds.), *The state of college access and completion: Improving college success for students from underrepresented groups* (pp. 77-97). New York, NY: Routledge Books.

Long, M. C., Latarola, P., & Conger, D. (2009). Explaining gaps in readiness for college-level math: The role of high school courses. *Education Finance and Policy, 4*(1), 1-33.

Lotkowski, V. A., Robbins, S. B., & Noeth, R. J. (2004). The role of academic and non-academic factors in improving college retention. *ACT Policy Report*. American College Testing ACT Inc.

Lubienski, S. T., & Crockett, M. (2007). NAEP mathematics achievement and race/ethnicity. In P. Kloosterman & F. Lester (Eds.), *Results from the Ninth Mathematics Assessment of NAEP* (pp. 227-260). Reston, VA: National Council of Teachers of Mathematics.

Malin, J. R., Bragg, D. D., & Hackmann, D. G. (2017). College and career readiness and the Every Student Succeeds Act. *Educational Administration Quarterly, 53*, 809-838. doi:10.1177/0013161X17714845

Martinez, M., & Kloptt, S. (2005). The link between high school reform and college access and success for low-income and minority youth. *Bridging Youth Policy, Practice and Research.* Washington, DC: American Youth Policy Forum and Pathways to College Network.

Martinez, R. R., Baker, S. B., & Young, T. (2017). Promoting career and college readiness, aspirations, and self-efficacy: Curriculum field test. *The Career Development Quarterly, 65*, 173-188. doi:10.1002/cdq.12090

Moore, G. W., Slate, J. R., Edmonson, S. L., Combs, J. P., Bustamante, R., & Onwuegbuzie, A. J. (2011). High school students and their lack of preparedness for college: A statewide study. *Education and Urban Society, 42*, 817-838. doi:10.1177/0013124510379619

National Assessment of Educational Progress (2015). *2015: Mathematics and reading at grade 12*. Retrieved from www.nationsreportcard.gov/reading_math_g12_2015/

No Child Left Behind (NCLB) Act of 2001, Pub. L. No. 107-110, 115 Stat. 1425 (2002).

Onwuegbuzie, A. J., & Daniel, L. G. (2002). Uses and misuses of the correlation coefficient. *Research in the Schools, 9*(1), 73-90.

Perin, D. (2018). Teaching academically underprepared students in community colleges. In J. S. Levin & S. T. Kater (Eds.), *Understanding community colleges*, 2nd ed., (pp. 87–103). New York, NY: Routledge.

Plucker, J. A., Burroughs, N., & Song, R. (2010). *Mind the (other) gap! The growing excellence gap in K-12 education.* Bloomington, IN: Indiana University, Center for Evaluation and Education Policy.

Potter, D., & Morris, D. P. (2017). Family and schooling experiences in racial/ethnic academic achievement gaps: A cumulative perspective. *Sociological Perspectives, 60*(1), 132-167. doi:10.1177/0731121416629989

Pritchard, M. E., & Wilson, G. S. (2007, Spring). Predicting academic success in undergraduates. *Academic Exchange Quarterly*, 201-206.

Rasinski, T. V., Chang, S., Edmondson, E., Nageldinger, J., Nigh, J., Remark, L., . . . Rupley, W. H. (2016). Reading fluency and college readiness. *Journal of Adolescent & Adult Literacy, 0*(0), 1-8. doi:10.1002/jaal.559

Roderick, M., Nagaoka, J., & Coca, V. (2009). College readiness for all: The challenge for urban high schools. *Future of Children, 19*(1), 185-210.

Rumberger, R., & Palardy, G. (2005). Does segregation still matter? The impact of student composition on academic achievement in high school. *The Teachers College Record*, *107*, 1999-2045.

Schiller, K. S., & Muller, C. (2003). Raising the bar and equity? Effects of state high school graduation requirements and accountability policies on students' mathematics course taking. *Education Evaluation and Policy Analysis, 25*, 299-318.

Scott-Clayton, J. (2012). *Do high-stakes placement exams predict college success?* (CCRC Working Paper No. 41). New York, NY: Columbia University, Teachers College, Community College Research Center.

Slate, J. R., & Rojas-LeBouef, A. (2011). *Calculating basic statistical procedures in SPSS: A self-help and practical guide to preparing theses, dissertations, and manuscripts.* Ypsilanti, MI: NCPEA Press.

Stage, F. K. (1988). University attrition: LISREL with logistic regression for the persistence criterion. *Research in Higher Education, 29*, 343-357.

Texas Education Agency. (2017a). *2017 Accountability manual for Texas public school districts and campuses.* Retrieved from http://tea.texas.gov/2017accountabilitymanual.aspx

Texas Education Agency. (2017b). *STAAR End-of-Course (EOC) Assessments: Program overview.* Retrieved from https://tea.texas.gov/WorkArea/DownloadAsset.aspx?id=25769811978

Texas Education Agency. (2017c). *State of Texas Assessments of Academic Readiness End-of-Course assessments performance standards chart*. Retrieved from https://tea.texas.gov/student.assessment/staar/performance-standards/

Texas Higher Education Coordinating Board. (2006). *Closing the gaps goals and targets summary*. Retrieved from http://www.thecb.state.tx.us/reports/PDF/

Texas Higher Education Coordinating Board, & Texas Education Agency. (2009). *Texas College and Career Readiness Standards.* Retrieved from http://www.thecb.state.tx.us/collegereadiness/crs.pdf

Tierney, W. G., Sablan, J. R. (2014). Examining college readiness. *American Behavioral Scientist, 58*, 943-946. doi:10.1177/0002764213515228

United States Department of Education. (2010). *A blueprint for reform: The reauthorization of the Elementary and Secondary Education Act*. Washington, DC: Author.

Vanneman, A., Hamilton, L., Anderson, J. B., & Rahman, T. (2009). *Achievement gaps: How Black and White students in public schools perform in mathematics and reading on the National Assessment of Educational Progress (NCES 2009-455).* Washington, DC: National Center for Education Statistics.

Venzant Chambers, T. T., & Huggins, K. S. (2014). School factors and racial opportunity cost for high-achieving students of color. *Journal of School Leadership, 24*(1), 189-225.

Welton, A. D., & Martinez, M. A. (2013). Coloring the college pathway: A more culturally responsive approach to college readiness and access for students of color in secondary schools. *Urban Review, 46*, 197-223. doi:10.1007/s11256-013-0252-7

Wimberly, G. L., & Noeth, R. J. (2005). College readiness begins in middle school. *ACT Policy Report*. Retrieved from www.act.org/research/policy/index.html

Wyatt, J. N., & Mattern, K. D. (2011). *Low-SES students and college outcomes: The role of AP fee reductions* (Research Report 2011-9). Retrieved from https://research.collegeboard.org/sites/default/files/publications/2012/7/researchreport-2011-9-low-ses-college-outcomes-ap-fee-reductions.pdf

Yeung, W. J., & Pfeiffer, K. M. (2009). The Black-White test score gap and early home environment. *Social Science Research, 38*, 412-437.

Zulmara, C., Bissell, J., Hafner, A., & Katz, M. (2007). Closing the college readiness gap. *Leadership Magazine, 37*(2), 30-33.

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