NEED HELP FINDING YOUR PLACE IN AP CALCULUS? SEEK G.U.I.D.A.N.C.E.

by

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ABSTRACT

JENNIFER NICOLE JOHNSON. Need Help Finding Your Place in AP Calculus? Seek G.U.I.D.A.N.C.E. (Under the direction of DR. CHANCE W. LEWIS)

This qualitative study explores the lack of African American students enrolled in AP Calculus courses in North Carolina public high schools. It considered the perception of student-counselor relationships, academic advising practices, and identity of high school counselor participants. In-depth interviews were conducted with three, African American, female high school counselors with five to twenty-four years of experience in high school counseling. The data yielded five domains: characteristics of a school counselor, expected duties of a school counselor, criteria to become an AP Calculus student, student-counselor relationships, and academic advising practices and the outcomes. From the domains, twenty-seven themes were generated: empathetic, open-minded, organized, flexible, creative, knowledgeable, serving the holistic needs of students, classroom guidance activities, non-counselor duties, resource, enrollments, interventions, advocacy, completion of prerequisite courses, exceptions to the rule, teacher recommendation, AP agreement, importance, trust, connections, race, alternatives, methods, encouragement, benefits, awareness, and partnership. Recommendations include update all stakeholders of the role and purpose of school counselors, professional development for school counselors, and an integrated curriculum for school counselors and administrators.

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DEDICATION

This work is dedicated to my mother, brother, and grandfather. I know each of them are watching over me from Heaven and I hope I have made them proud!

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LIST OF ABBREVIATIONS

AIG	academically/intellectually gifted
AP	advanced placement
APC	AP Calculus
APCE	AP Calculus exams
ASCA	American School Counselor Association
CRT	Critical Race Theory
EOC	end of course
EOG	end of grade
GAO	Government Accountability Office
HBCU	historically Black colleges and universities
IRB	institutional review board
NC	North Carolina
NCDPI	North Carolina department of public instruction
NCEC	North Carolina education cabinet
PHS	public high schools
SES	socio-economic status
SLEO	special law enforcement officer
STEM	Science, Technology, Engineering, and Mathematics
U.S.	United States

CHAPTER ONE: INTRODUCTION

Introduction

Inadequate preparation of Black students in high school mathematics courses significantly impacts the United States' ability to fill Science, Technology, Engineering, and Mathematics (STEM) jobs. This study examined the school counselors of marginalized students that are oppressed through systemic inequities in education, specifically their enrollment in AP Calculus in high school. Through the lens of Critical Race Theory, this study explored the impact, if any, high school counselors' referral processes have on Black students enrolling in AP Calculus. Using qualitative case study methods, this study yielded techniques that school counselors can implement in their academic advising sessions to encourage Black students to enroll in AP Calculus and other honors level mathematics. The study also provided tools that students can utilize to advocate to their school counselor to enroll in AP Calculus. Finally, the study suggested ways that parents can create a relationship with their child's school counselor that will help support their child's educational pathways, including enrollment in higher level mathematics.

Background

The National Association of Manufacturing and Deloitte website (2021) estimates that the U.S. will have 3.5 million Science, Technology, Engineering, and Mathematics (STEM) jobs in the year 2025; however, even with the emphasis placed on STEM education, two million of the positions will remain vacant. These STEM jobs will be unoccupied due in part to Black students' inadequate preparation in STEM-related career fields (Chen & Soldner, 2013; Neuhauser, 2015; Smithsonian Science Education Center, 2018). These unfulfilled positions decrease the performance of the United States on a global level (U.S. Department of Education, n.d.) in

addition to limiting technical and industrial growth (Deming & Noray, 2018). Research (National Science Foundation, 2018; Tyson et al., 2007; Wang, 2013) indicates that the successful completion of STEM courses in high school is predictive of a student pursuing and receiving a STEM degree in college. Black students continue to lag behind their White counterparts' enrollment in honors and advanced placement (AP) STEM courses (Musu-Gillette, et al., 2017). Consequently, the number of Black students pursuing STEM degrees in post-secondary education is lower than any other race/ethnic group (Musu-Gillette, et al., 2017).

Nationwide in the 2015-2016 school year, 14% of U.S. high schools did not offer Algebra I (U.S. Department of Education Office for Civil Rights, 2018) and only 50% of public high schools offered AP Calculus (U.S. Department of Education Office for Civil Rights, 2018). Access to AP Calculus dwindles to 38% of high schools that have a high enrollment – 75% or more – of Black students (U.S. Department of Education Office for Civil Rights, 2014). The lack of access to complete the course sequence of Math I, II, III, and Pre-Calculus impacted Black students' access and their ability to select AP Calculus as their final mathematics course of completion.

The opportunity gap between Black students and their White counterparts is not only concerned with the lack of access to mathematics courses, but also the course-taking patterns permitted to students. There is dire need for an increase in the amount of higher-level mathematics courses offered in public high schools, regardless of the student body demographics of the school (Riegle-Crumb & Grodsky, 2010; Sciarra, 2010). For Black students with access to higher level mathematics courses, additional work is needed to support Black students' enrollment in upper-level mathematics courses, in schools where they are offered and ultimately decrease the opportunity gap between Black students and their White counterparts (Long et al.,

2012). According to the report, *Paths Through Mathematics and Science: Patterns and Relationships in High School Coursetaking* (Brown et al., 2018), there was no mandated pathway through mathematics courses on a national scale. In 2009, students completed over 1000 sequences of mathematics courses (Brown et al., 2018); within those various sequences, many freshmen students (58%) began with Algebra I – or the equivalent, Math I – and continued with Geometry (46%) and Algebra II (39%) during their sophomore and junior years, respectively. The senior year for these students was not as uniform, as some (16%) took a higher-level math course, such as statistics, trigonometry, or Algebra III, while others (15%) took Calculus. However, a larger number of students (28%) opted out of taking a fourth math during their senior year altogether (Brown et al., 2018). At the time of the study, four units of mathematics was not required of students, but colleges look for the senior level mathematics course from their competitive applicants (Brown et al., 2018). Since 2018, most states have individualized their mathematics course obligations requirements for students. Public schools in North Carolina, Florida, Georgia, and Texas require their students to complete four units of mathematics to meet graduation requirements, including Algebra I, Geometry, Algebra II, and an additional upper-level mathematics course (e.g., Pre-Calculus, Statistics, or AP Calculus). New York only requires their students to complete three units of mathematics which includes Algebra I, Geometry, and Algebra II (Education Commission of the States, 2019).

The United States Government Accountability Office (GAO) released the report, *K-12 Education: Public High Schools with More Students in Poverty and Smaller Schools Provide Fewer Academic Offerings to Prepare for College* (Nowicki, 2018), which categorized the student demographics of low poverty (0-24.9% on free and reduced lunch) schools versus high poverty (75-100% on free and reduced lunch) schools. In the 2015-2016 school year, 6% of

Black students attended a low poverty school, while the amount was almost five times higher for Black students attending a high poverty school at 29%. The report also included data that confirmed the negative correlation between the decreased number of advanced high school math courses and the increased poverty level. The study revealed 85% of low poverty school students had access to Calculus while only 50% of high poverty school students had access to Calculus. The access dropped significantly as the amount of free and reduced lunch percentages increased. Essentially, access to AP Calculus is contingent upon the socio-economic status of Black students attending a high poverty school, thereby negatively impacting the STEM degree production necessary to support the US's workforce needs.

School counselors play a pivotal role in advising Black students to enroll in AP level mathematics courses but approximately 19.3% of the nation's public high schools do not have a school counselor (U.S. Department of Education Office for Civil Rights, 2018) and 9.4% of those schools enroll the largest Black student population (Bryant, 2015). In North Carolina, 9.7% of public high schools do not have a school counselor on staff (U.S. Department of Education Office for Civil Rights, 2018). In fact, 1.6 million students attend a school with a Special Law Enforcement Officer (SLEO) but not a school counselor. When compared to their White counterparts, Black students are 1.2 times more likely to attend a public high school with an employed SLEO but no school counselor (U.S. Department of Education Office for Civil Rights, 2016). This disproportionate effect place marginalized students at a greater risk to be overcriminalized in school rather than be supported academically or mentally.

For Black students with access to a school counselor, a challenge within public education is how to increase Black students' likelihood to enroll in AP level mathematics courses. The role of school counselors in student advising is pivotal to the course selection process. Hines et al.

(2011), as quoted in *School Counselors and College Readiness Counseling*, credited school counselors' "lack of college readiness counseling preparation in school counselor training programs" (Gilfillan, 2018, p. 1) as a major reason why school counselors may be inadequately prepared to advise students with AP course selection (Council of National School Counseling & College Access Organizations, 2016).

The 2021-2022 student to school counselor ratio for the United States was 408:1 but the American School Counselor Association (ASCA) recommends 250:1. The ratio for the State of North Carolina was lower than the national ratio but still higher than the recommended, at 326:1, and in other states, the ratio was as high as 694:1 (ASCA, 2020). The role of the school counselor as stated on the ASCA website is "through leadership, advocacy and collaboration, school counselors promote equity and access to rigorous educational experiences for all students" (ASCA, 2018, para. 2). However, the number of students compared with the number of counselors makes meeting the demand of their role challenging. In the 2015-2016 Civil Rights Data Collection report, *STEM Course Taking* (U.S. Department of Education Office for Civil Rights, 2018), Blacks represented 16% of the nation's public high school enrollment but only accounted for 8% of enrolled students in AP Calculus courses nationwide. Given this discrepancy, it is important to investigate the role of high school counselors in promoting equity for AA students who enroll in AP Calculus.

Statement of the Problem

Injustices in education, such as lowered expectations (Andrews & Gutwein, 2017; Gershenson et al., 2016; Rojas & Liou, 2017; Webb & Thomas, 2015) and lack of access to AP courses (Kolluri, 2018; Whiting & Ford, 2009; Young, 2016), continue to widen the opportunity gap for Black students. The underrepresentation of Black students enrolled in AP Calculus

courses persists nationwide. Individuals affected by this systemic oppression include students and parents/guardians. To increase the enrollment of Black students in AP Calculus courses and ensure their successful completion, the goal of this study is to create techniques that will improve referral processes of high school counselors and establish methods to improve the lines of communication between students, parents, and school counselors. Success is achievable with counselors working with students and their families toward the goal of Black students enrolling and successfully completing AP Calculus.

Florida, Georgia, New York, and Texas had one thing in common, the most Black students at public high schools to complete the AP Calculus exam in 2018 (CollegeBoard, 2018). Texas had the largest enrollment at 1,271 students, followed by New York with 1,187 students, Georgia with 1,063 students, and Florida with 1,101 students (CollegeBoard, 2018), all of whom sat for the AP Calculus exam. In the same year, North Carolina had 994 Black students enrolled in AP Calculus but only 566 sat for the exam. When compared to the total enrollment of Black students in public high schools – Florida 189,705, Georgia 184,592, New York 132,421, Texas 193,086, and North Carolina 110,502 – the rate at which Black students enrolled in AP Calculus was significantly disproportionate to the total enrollment (Florida Department of Education, 2017; Georgia Department of Education, 2019; New York State Education Department, 2019; Public Schools of North Carolina, 2019; Texas Education Agency, 2017).

Table 1

2018 Enrollment of Black Students in Public High Schools (PHS), AP Calculus (APC), and AP Calculus Exams (APCE)

State	Total (PHS)	Total (APC)	Percentage (APC/PHS)	Total (APCE)	Percentage (APCE/APC)
Florida	189,705	1,101	0.5804%	1,101	100%
Georgia	184,592	1,063	0.5759%	1,063	100%
New York	132,421	1,187	0.8964 %	1,187	100%

Table 1 (continued)

2018 Enrollment of Black Students in Public High Schools (PHS), AP Calculus (APC), and AP Calculus Exams (APCE)

State	Total (PHS)	Total (APC)	Percentage (APC/PHS)	Total (APCE)	Percentage (APCE/APC)
Texas	193,086	1,271	0.6583%	1,271	100%
North Carolina	110,502	994	0.8995%	566	56.94%

According to the Statistical Profile from the Public Schools of North Carolina State Board of Education Department of Public Instruction, the total of students in North Carolina public high schools was 452,832 (2020b). According to the *Report to the North Carolina General Assembly* (Public Schools of North Carolina State Board of Education Department of Public Instruction, 2020a), there were a total of 9,144 students enrolled in AP Calculus in North Carolina during the 2020-2021 school year; of those, only 753 were Black. The number of Black students enrolled in AP Calculus in the 2020-2021 school year was a miniscule 0.166% compared to the overall student population of the total high school population. The disproportionality of Black students in AP Calculus is alarming and requires immediate and effective intervention to address the racism that continues to subjugate Black students' access to STEM careers. The need for school counselors to advocate for change to eliminate barriers that exclude Black students from AP Calculus is imperative to both support students and positively impact the STEM workforce in NC and beyond. Therefore, this study specifically explored the referral processes by North Carolina high school counselors to recommend Black students for enrollment in AP Calculus.

Purpose of the Study

Education persists in providing many life opportunities that Black students could not otherwise access. Oftentimes, however, Black students' ability is determined by their race and/or

socioeconomic status. In many ways educational structures have created the same impediment for these students' enrollment in AP Calculus courses. The purpose of this study is as follows: first, to analyze school counselors' relationships with Black students, second to analyze school counselors' relationships with Black students' parents/guardians; third, to analyze referral processes used by high school counselors when advising Black students; and fourth, to analyze school counselors' perceptions regarding Black students' mathematics ability. All analyses will be used to determine the factors that school counselors use when referring Black students in AP Calculus in public, rural and urban high schools in the South. The goal of the present study is to provide school counselors with methods to improve their relationship with Black students and their parents/guardians, in addition to, offering recommendations that will make the referral processes used to places students in advanced math classes more equitable for Black students.

Theoretical Framework

This research study is influenced by the academic framework of Critical Race Theory (CRT) which examined the role of school counselors as it correlates to the disproportionate number of Black students enrolled in AP Calculus courses. This theory is a structure that will allow the problem to be identified, the data to be analyzed, and solutions to be established. Critical Race Theory explains existing academic referral processes result in Black students, when compared to their White counterparts, deficient enrollment in AP Calculus.

The theoretical framework of critical race theory was first introduced by Black lawyer Derrick Bell in the 1970s as an extension of the critical legal studies movement (Delgado & Stefancic, 1998) but has evolved into other fields of study, including education (Ladson-Billings, 1998). Delgado and Stefancic (2001) associated six tenets with critical race theory: that racism is ordinary, interest convergence, race is a social construct, differential racialization,

intersectionality, and voice of color (pgs. 7-9). This study will focus on four of the six tenets: racism is ordinary, race is a social construct, differential racialization, and intersectionality.

Because racism has become ordinary for most Blacks in the United States, it is now interpreted as the standard, which has caused a challenge to address and repair the issue (Delgado and Stefancic, 2001). The scarcity of Black students in AP Calculus has become a pattern throughout public high school classrooms. Systemic racism and injustices are impediments Black students continue to face when enrolling in AP Calculus.

The second tenet of Critical Race Theory is the idea that race is socially constructed or "culturally invented" and sometimes used to subjugate and manipulate people of color (Britannica Encyclopedia, 2021). Society has the tendency to scrutinize others based on their race without considering their aptitude or other nonracial factors (Delgado and Stefancic, 2001). In this study, Black students have been marginalized due to their race as it pertains to their enrollment in AP Calculus.

The third tenet of CRT, differential racialization, is society's method of placing Blacks in a bottle on the shelf and picking them up if, or when, needed. This tenet of Critical Race Theory deals with the evolution of Blacks in the classroom, specifically their role as a student. Despite national data that clearly demonstrates the chasm between Black and White students' access to AP Calculus, the educational system has yet to address the need to increase the number of Black students in AP Calculus classes; therefore, the necessity for structural changes will continue to be avoided.

Intersectionality, the fourth tenet, spotlights the identity of an individual being more than a single entity, looking past race and acknowledging their distinctive life events (Delgado and Stefancic, 2001). School counselors should consider how the needs of Black students differ due

to an array of influences. The intersectionality of school counselors is also a component to the research study as they rely on their different lived experiences but are trained in counseling theory and techniques to be responsive to the whole student, to successfully advise Black students about their academic choices and how they can impact their career outcomes.

To conclude, the theoretical framework of Critical Race Theory provides a unique lens to examine this research study. Four of the six tenets of Critical Race Theory: racism is ordinary, race is a social construct, differential racialization, and intersectionality, provide a framework to the study that helps clarify the problem. Stakeholders, which include students, school counselors, parents, and school leaders, are challenged to distinguish when there are inequities in education, recognize institutional racism, and establish techniques to determine how to change outcomes.

Overview of Methods

A qualitative case study research design (Merriam, 2002) was used to conduct this study. Data was collected through in-depth interviews with high school counselors from urban and rural, public high schools in the South. The school counselors recalled referral processes used with Black students when advising them on which mathematics course selections to take in the upcoming school year. This method of research provided the researcher a better understanding of the participants' thoughts and perceptions of their referral processes as they unfolded during the transcribing process. Analysis by the researcher to reveal the common themes from interviews with school counselors which provided insight of their referral processes with Black students.

Research Questions

This study explored the following research questions:

A. How do high school counselors perceive their relationship with Black students as an influence of the course-taking patterns of Black students?

B. How do high school counselors perceive their relationship with Black students' parents/guardians as an influence of the course-taking patterns of Black students?

C. Do high school counselors' referral processes with Black students influence their decision to enroll in advanced placement mathematics courses at their school?

D. How does school counselors' perceptions, regarding Black students, influence their referral processes when counseling Black students?

Subjectivity Statement

As an 8th grader, I enrolled in Algebra I, and throughout high school, I continued taking honors level mathematics courses. My 8th grade Algebra I class consisted of two Black girls, inclusive. My freshman year, I took Honors Geometry where I was the only Black student in the class; I had a Black friend who was in another class period. My sophomore year I took Algebra II (there was no Honors level at that time) which consisted of six Black students. My junior year, Honors Pre-Calculus class was comprised of four Black girls. My senior year I was the only Black person in my AP Calculus class of fourteen students. I was successful at Algebra I and received the Math Award for having the highest-class average. I struggled some in Honors Geometry but earned a final grade of B. Algebra II and Honors Pre-Calculus were easy, but AP Calculus was more challenging, even though I completed the class with a grade of B and received college credit on the AP Calculus Exam. One common theme in all my math classes between 8th grade and senior year was the small number of Black students in them: two, one, six, four, and one.

Upon completion of my undergraduate and master's degrees, I taught high school mathematics for nine years (2007-2016). Throughout my teaching career, there were disproportionately higher numbers of Black students in the lower-level mathematics courses and

lower numbers in the upper-level courses. For example, there were eight Black students in Pre-Algebra but none in Honors Algebra II. Of the eight Black students in Pre-Algebra, I did not refer them to enroll in advanced math classes. While I was the only Black teacher in the Math Department and sometimes the school, I followed the norm and seldomly went against the status quo. Honors Pre-Calculus and AP Statistics each had only one Black student enrolled. Although each of the schools I taught at were predominately White, they had a significant percentage, 21.5% and 18.7%, of Black students. However, these students were not enrolled in Honors or AP level math courses. The disproportionality of Black and White students was clearly a problem in all the mathematics courses I enrolled in and taught. Given the significant problem, why was it not addressed? With the push for STEM Education and increased diversity within college and university STEM majors and graduates, Blacks still substantially lagged behind their White counterparts. How can a school prepare Blacks for STEM majors if they do not enroll in Honors and AP level mathematics courses in high school?

Twenty years since my senior year of high school and after nine years of teaching regular, honors, and AP Mathematics courses, I decided to pursue my Ph.D. in Curriculum and Instruction with a concentration in Urban Education to research why Black students are less likely to enroll in Honors and AP level mathematics courses and develop solutions to positively address the problem. My study focused on school counselors' perceptions, and because I do not have a background in school counseling, I felt hesitant to interview them. My intentions were not to criticize school counselors but rather to highlight the opportunities they have that can potentially lead to more effective counseling practices to benefit Black students. These opportunities would also provide school counselors help to improve the enrollment of Black students in AP Calculus courses.

Definition of Terms

The terms significant to this qualitative study can be unfamiliar to people who are not in the educational field. There may also be vocabulary terms that are interchangeable. For clarity, terms have been defined below:

Academic Advising. The direction students receive from school counselors that guides them in the selection of their mathematics courses. The practice of academic advising occurs during the individual student meetings leading up to course registration for the upcoming school year. School counselors inform students of the possible mathematics courses to ensure their post-secondary career (ASCA, 2017).

Advanced Placement (AP) Courses. AP courses give high school students the opportunity to experience a college level course, while still in high school. High schools offer a variety of AP courses, including AP Calculus, during the school year that students can enroll. If students can pass the AP exam at the end of the course, they can receive college credit (CollegeBoard, n.d.).

College & Career Readiness. When students transition from high school, they face enormous change. The educational training received in high school prepares them for their next phase of life, whether it is college or a career. Students able to master the requirements of a basic college mathematics course, without requiring a remedial course, are believed to be college and career ready (The Hunt Institute, 2015).

Course-taking pattern. The sequential order of courses for mathematics is somewhat universal from middle through high school. Middle school math courses consist of sixth, seventh, and eighth grade math content and Math I. High school math courses consist of Math I, Math II, Math III, Math IV, Pre-Calculus, AP Calculus, AP Statistics, and math alternatives (North Carolina Department of Public Instruction, 2022). The chosen plan of how students fulfill their

mathematics course requirements in middle and high school is their course taking pattern (Finkelstein et al., 2012).

Disproportionality. The underrepresentation of Black students in AP Calculus when compared to the number of Black students represented in the school's overall population (National Education Association, 2020).

School Counselor. Certified/licensed educators who enhance the achievement of all students by creating programs that improve student outcomes. They advocate for students and collaborate with parents and teachers to encourage equity and access for all students (ASCA, 2018).

Tracking. Grouping students into advanced placement, honors, regular, or foundational mathematics courses based on their mathematical ability (Hallinan, 1994).

CHAPTER 2: REVIEW OF LITERATURE

Significant research (Lee & Lindsay, 2018; McDonald, 2014) has been conducted about why Black students are not represented in AP Calculus. This literature review began with Black students in U.S. high schools, examined the national and North Carolina Black-White gap in 8th grade and Algebra I/Math I test scores, and students' course-taking patterns. The review then continued with Black students' personal beliefs about their access to AP Math courses and their ability to perform the work, tracking mechanisms utilized by educational systems to track courses taken by Black students, as well as the inherent systemic racism in education. The literature then reviewed the high school counselor's role and involvement, in addition to, providing insight on the relationships between the school counselor and school administration as well as the school counselor and student.

Black Students in U.S. High Schools

The Black-White opportunity gap in mathematics has continued to be an issue avoided by educational leaders for decades (Mitchell, 2018). "Reducing the black-white test score gap would do more to promote racial equality than any other strategy that commands broad political support" (Fryer & Levitt, 2004, p. 3). Research (Barr, 2015; Lawler, 2016; Logan & Burdick-Will, 2016; Yeh, 2016) concludes two possible causes of the achievement gap are socio-economic status and the quality of schools within minority neighborhoods. Both factors, although they may seem insignificant, are substantial in the education of minority students because both affect the access that Black students have compared to their White peers.

Minority students' socio-economic status (SES) predisposes them to negative outcomes compared to their White counterparts, as they do not have access to all the resources needed to be successful. Brown-Jeffy (2008, pp. 401-402) stated, "Socio-economic status has the strongest

influence on student academic achievement indicating that an individual's poverty status has a greater influence on their academic achievement than any other characteristics." When students come from low SES backgrounds, academic performance is generally near the bottom of their priority list, outranked by sports and part-time jobs. Also in low SES households, parental involvement is very slim to none, due to their multiple job employment, just to make ends meet (Jensen, 2009). In some cases, students may have a part-time job to help with some of the financial burdens on the family. Unlike students in high SES households, low SES students have more factors dictating their performance level.

The North Carolina Education Cabinet (NCEC), whose membership includes – the Governor, President of the UNC System, Superintendent of Public Instruction, the Chairman of the State Board of Education, the President of the NC Community College System, the Secretary of Health and Human Services, the President of the NC Independent Colleges and Universities, and the Secretary of Commerce (governor.nc.gov, 2023) – had a target date of 2010 to eliminate the Black-White achievement gap on the National Assessment of Educational Progress, North Carolina End-of-Grade (EOG), and End-of-Course (EOC) standardized tests (Thompson & O'Quinn, 2001). At the end of the 2000-2001 school year (NCDPI, 2019), the Black-White achievement gap in North Carolina public schools, for students at or above Level III on 8th-grade math EOG tests, was a 23.9 percentage point gap. In addition, the achievement gap increased, when based on Algebra I scores, to a 27.5 percent gap between Black and White students. Fast-forward to the targeted date of the 2009-2010 school year, minimal improvement was shown over the ten-year period; there was an 18.3 percentage point gap for the 8th-grade Math EOG and 23.2 percentage point gap for Algebra I. At the end of the 2017-2018 school year, the achievement gap was noticeably higher than the previous two referenced school years.

The 8th-grade Math EOG yielded a 33.4 percentage point gap, while a 31.3 percentage point gap was observed with the Math I (equivalent to Algebra I) EOC scores. In the 2021-2022 school year, there was a 32.6 percentage point gap between Black and White students for the 8th grade Math EOG and 24.6 percentage point gap for the Math EOC scores.

Table 2

8th grade Math EOG and Algebra I/Math I Black-White Score Gap

	School Year	Black-White Score Gap
8th grade Math EOG	2000-2001	23.9 percentage points
	2009-2010	18.3 percentage points
	2017-2018	33.4 percentage points
	2021-2022	32.6 percentage points
Algebra I/Math I EOC	2000-2001	27.5 percentage points
	2009-2010	23.2 percentage points
	2017-2018	31.3 percentage points
	2021-2022	24.6 percentage points

While the purpose of the NCEC was to eliminate the Black-White achievement gap by 2010, the substantial increase in the 2017-2018 percentage point gap suggests the need to reexamine the criteria recommended to eliminate the achievement gap. More notable is the less than one percentage point decrease in the 2021-2022 school year for the 8th grade Math EOG and the 6.7 percentage point decrease in the 2021-2022 school year for the Math I EOC.

Thompson and O'Quinn (2001) provided ten areas, described as "sensible steps, no magic" (p. 4) that could terminate the Black-White achievement gap: (a) early childhood education; (b) quality of teachers; (c) class size; (d) grouping practices; (e) representation in curriculum tracks; (f) bridging cultures; (g) expectations; (h) accountability; (i) student services support; and (j) desegregation. The first half of the areas were particularly centered on the student and teacher dynamics within the school, while the latter half focused on the resources that would improve the Black-White achievement gap. All steps were imperative to the overall success of Black students and the status of the Black-White achievement gap.

Upon entering kindergarten, the academic achievement level of Black students was significantly less than their White counterparts (Thompson & O'Quinn, 2001). When implemented, early childhood programs present affirmative outcomes for Black students (Dodge, Bai, Ladd, & Muschkin, 2016). Teacher quality also influenced the Black-White achievement gap, as many Black students attend schools that have a significant presence of beginning teachers (Gregory, Skiba, & Noguera, 2010) who are often limited by their limited knowledge of the subject matter and how to effectively teach their students (Kim & Seo, 2018). Students could also benefit from smaller class sizes in K–3 grades, most beneficial for Black students (Finn, 2002), but highly unlikely, due to the inadequate supply of highly qualified teachers. Teachers must also be cognizant of how students are grouped within their classrooms; placing low-performing students with other low-performing students does not yield results indicative of their ability and perpetuates a culture of low expectations (Slavin, 1987). Working collectively with grouping practices is the underrepresentation of Black students in curriculum tracks, specifically Advanced Placement courses. Although Blacks represent 16% of the nation's public high school enrollment, they only account for 8% of enrolled students in AP Calculus courses, nationwide (U.S. Department of Education Office for Civil Rights, 2018).

Black students enter schools that are extremely different from their home environment and, many times, they must adapt to the dominant culture of the school. Research (Delpit, 1995; Gregory & Weinstein, 2008; Stough et al., 2015; Thompson & O'Quinn, 2001) indicates that teachers should also learn to acclimate their classroom lessons to be culturally responsive to their students' needs. When teachers form relationships with Black students, it cultivates an atmosphere for the student to succeed. Extending from the relationship, high expectations are maintained by the teacher; when met, Black students receive approval from their teachers, which

ultimately holds them accountable for their education and increases the desire to excel. When teachers and administrators observe that students are not meeting the high expectations, reinforcements should be provided to help fill the gap, such as tutors, summer enrichment programs, and alternative teaching methods to avoid grade retention. Finally, schools in North Carolina are not well integrated (Batchelor, 2015; Simmons & Ebbs, 2001). Segregation occurs between and within schools, especially when the school has a population of 80% or more Black students. There are also significantly fewer financial resources when AP classes within the school do not match the demographics of the school. Either scenario place students at a greater disadvantage. Black students have not been provided the same resources as White students; consequently, there is nothing separate but equal in these unjust, educational circumstances (Thompson & O'Quinn, 2001).

In conclusion, any goal to decrease the Black-White achievement gap has not been attained, which has resulted in Black students falling even further behind their White counterparts. The 'sensible steps, no magic' (Thompson & O'Quinn, 2001) areas of improvement have yet to shift the Black-White achievement gap. Moving forward, investigated the course-taking patterns of Black high school students to better understand and address the gap.

Students' Course-Taking Patterns

During a student's high school matriculation, they are generally expected to take a compilation of mathematics courses, including, but not limited to, Algebra I, Algebra II, Geometry, and a fourth level math course. The enrollment and successful completion of these courses serve as a precursor for enrollment in AP Calculus as the fourth level mathematics course. However, as indicated earlier, the representation of Black students in higher-level mathematics courses do not align with the depiction of their White counterparts.

A significant extension of the Black-White achievement gap is the disproportionality in course-taking patterns between Black and White students. The 2015-2016 Civil Rights Data Collection released the STEM Course Taking Report (U.S. Department of Education Office for Civil Rights, 2018) which illustrated the widely inconsistent enrollment numbers of Black students in high school mathematics compared to their White counterparts. In the 2015-2016 school year, Blacks represented 16% of the high school enrollment, while Whites accounted for 51%. The report continued to break down the racial demographics of students enrolled in each level of mathematics classes. Algebra I students were broken into two categories, grades 9-10 and grades 11-12, and defined as students who completed the course within their freshman or sophomore year or did not complete the requirement until their junior or senior year. Other math courses included: Geometry, Algebra II, and Advanced Mathematics, which covers "trigonometry, trigonometry/algebra, trigonometry/analytic geometry, trigonometry/mathematics analysis, analytic geometry, mathematics analysis, mathematics analysis/analytic geometry, probability and statistics, and pre-calculus" (p. 11), and Calculus.

According to the STEM course-taking report (2018), the racial demographic breakdown of course enrollment was as follows: 45% of White and 18% of Black students took Algebra I their 9th or 10th grade year; 37% of White and 19% of Black students took Algebra I their 11th or 12th grade year; 49% of White and 17% of Black students took Geometry; 52% of White and 15% of Black students took Algebra II; 56% of White and 13% of Black students took Advanced Mathematics; and 58% of White and 8% of Black students took Calculus.

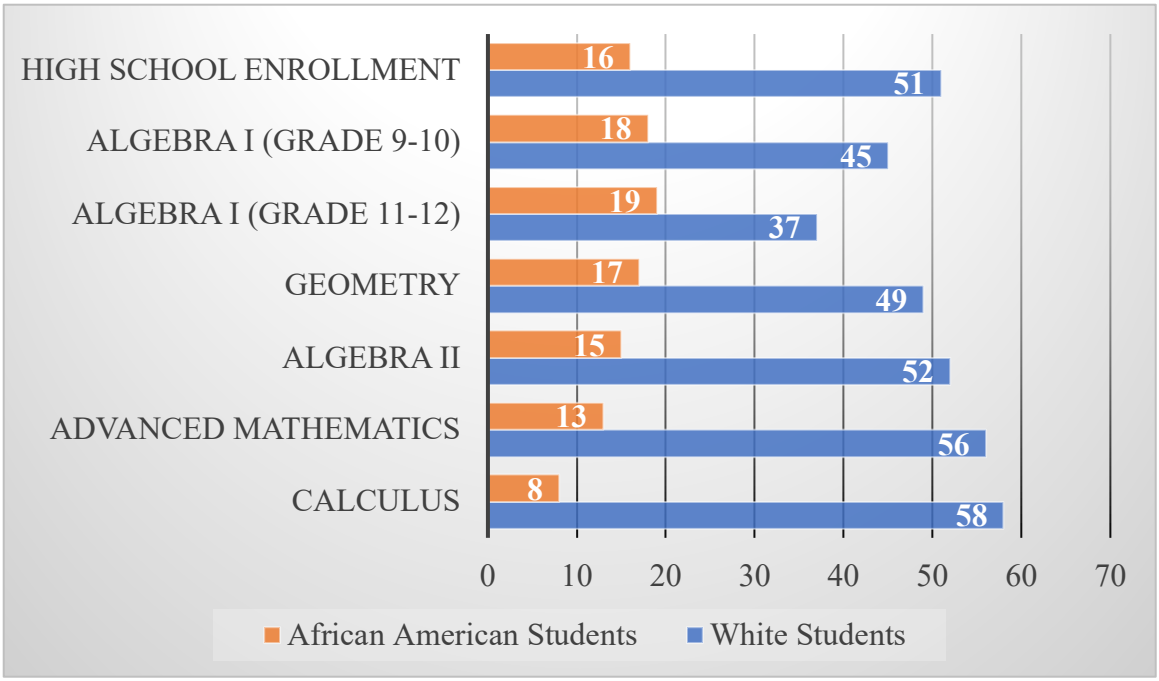

Figure 1: *Percentage of students enrolled in high school mathematics courses, nationwide, in the 2015-2016 school year.*

Several reasons can be attributed to the course-taking patterns noted in the 2018 report as studied in Cha's (2015) article, *Exploring disparities in taking high level math courses in public high schools*. Cha's research identified student characteristics including "demographics and family background" in addition to school characteristics, including "location, student composition, school socioeconomic status (SES), size, and school absenteeism" (p. 7), as the causes affecting high school mathematics course selection. Within the study, Cha (2015) used student demographics characteristics, which included the students' race and gender, while family background focused on the parents' socioeconomic status, highest level of education, and beliefs of their child's performance in school. After analyzing the data from 5,049 students from 431 public high schools, Cha (2015) concluded that five factors—student race, parents' thoughts of their child's academic achievement, parents' socioeconomic status, school location, and school socioeconomic status—were statistically significant in the disproportion of students taking higher level math courses.

While the enrollment and completion of the collection of math courses is indicative of a student enrolling in AP Calculus, course timing is also imperative. The number of Black students who took Algebra I in the 11th and 12th grades extremely limited the number of mathematics courses they could complete in high school. Therefore, the students could not take AP Calculus prior to high school graduation.

Black Students and Early Access

Some students have the opportunity to take Algebra I in the 8th grade of middle school, which allows them access to AP Calculus in high school. When this opportunity is provided, the student has an improved likelihood to be placed on the pathway to AP Calculus. While every student does not have access to Algebra I in the 8th grade, there are alternatives that could ensure enrollment in AP Calculus by the end of their high school enrollment. Algebra I is often referred to as the "gateway math course" (Atkins, 2016; McGowan et al., 2017; Snipes & Finkelstein, 2015). Early access to Algebra I may seem like a simple concept, but most school systems implement a barrier to keep some students out, unless invited to enroll. Students enrolled in Algebra I/Math I during their 8th grade year of middle school are more likely to be eligible for the advanced mathematics courses in high school (Doughtery et al., 2015; Smith, 1996). The students also have a greater likelihood to continue toward the path of Advanced Placement mathematics courses.

The traditional middle school mathematics course sequence is 6th, 7th, and 8th grade math, followed by Algebra I, Geometry, Algebra II, Pre-Calculus, and Calculus in high school (Brown et al., 2018). Nationwide, every state mandates that each high school student completes at least two units of mathematics as part of their high school graduation requirements (Colorado Department of Education, 2019; Education Commission, 2019; Massachusetts Department of

Elementary and Secondary Education, 2019; Pennsylvania Department of Education, 2019). Algebra I is one of the two required courses for each state, with the exception of ten states that did not specifically list Algebra I as a graduation requirement (Alaska Department of Education & Early Development, n.d.; Colorado Department of Education, 2019; Education Commission, 2019; Iowa Department of Education, 2019; Maine Department of Education, 2018; Massachusetts Department of Elementary and Secondary Education, 2019; Missouri Department of Elementary & Secondary Education, 2019; Montana Office of Public Instruction, n.d.; North Dakota Department of Public Education, n.d.; Pennsylvania Department of Education, 2019; Rhode Island Department of Education, 2019; State of Vermont Agency of Education, 2019). Given that Algebra I is a gateway course, early access to Algebra I/Math I must be provided to Black students.

So, how can early access to Algebra I/Math I be granted to Black students? Berry (2008) recommended that academic program opportunities be increased by inspecting rules and procedures of math teachers and educate the public's awareness about Black students' encounters in mathematics. Expanding academic programs will provide Black students with early contact to advanced mathematics, which will allow them access to upper-level mathematics opportunities. When early access to Algebra I is not available, alternative opportunities like compacting math courses at the middle school level or allowing students to double up in math courses at the high school level (California Department of Education Sacramento, 2015) must be provided, which would therefore increase the likelihood of Black students' enrollment in AP Calculus.

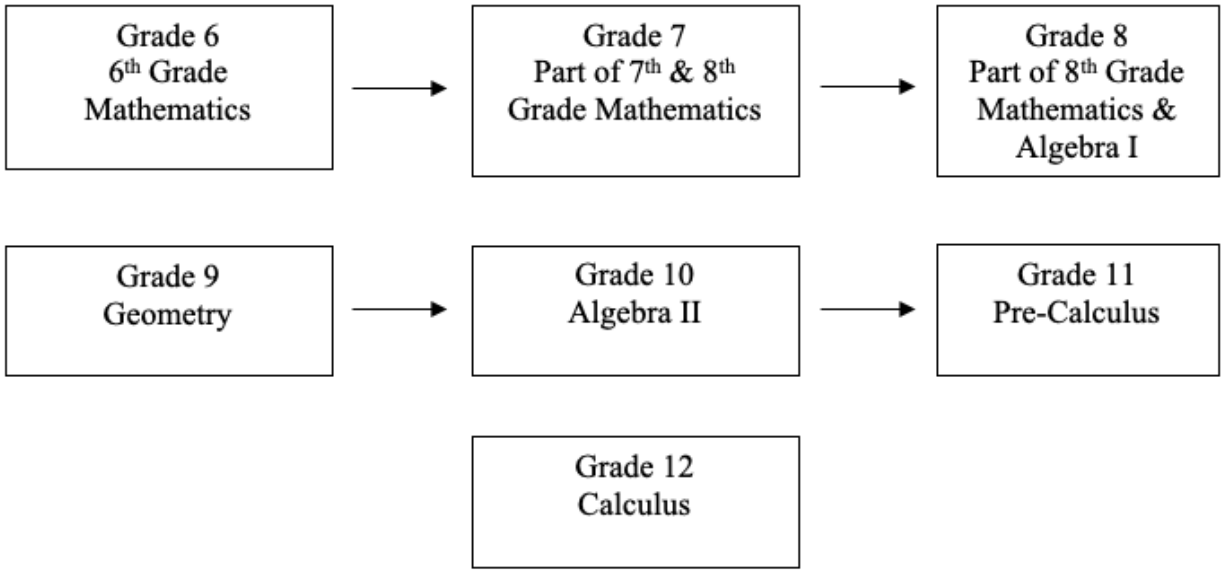

Figure 2: *Compacting math courses at the middle school level. Data from California's Mathematics Framework Appendix D.*

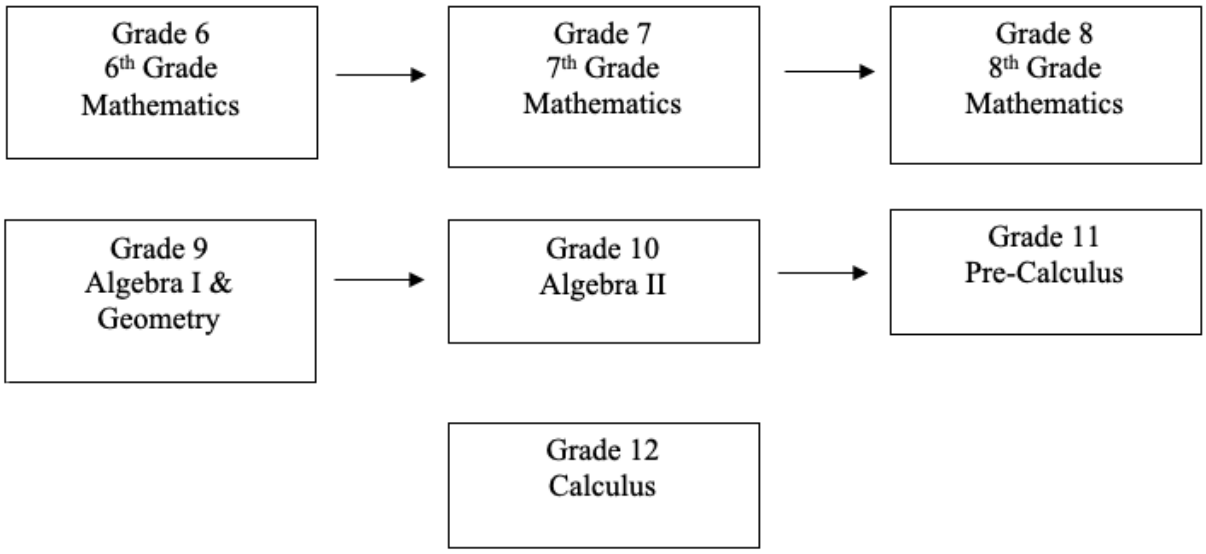

Figure 3: *Doubling up on math courses at the high school level. Data from California's Mathematics Framework Appendix D.*

Students' Personal Beliefs

While access is a factor for Black students' pathway to AP Calculus, their personal beliefs influence their choice to enroll. Black students fail to believe in their own ability to be

successful in mathematics. The stereotype of ‘who is good at math’ has been indoctrinated in Black students for decades. Breaking this chain of false narratives is imperative to the increase of Black students’ AP Calculus enrollment.

Students aspire to imitate people they see as resilient, clever, and helpful, even if these people were not the best students while in school (Walker, 2006). Walker also implied that Black peer groups do not endorse academic achievement, which makes taking advanced mathematics classes unpopular. Thompson & Davis’ (2013) research concluded that peer influence was one of the most persuasive dynamics affecting mathematics meaningfulness. Peer influence can negatively affect some Black students’ decisions to challenge themselves with advanced mathematics courses. How can that factor be minimized? Harris (2006) deduced in his study, *I (Don't) Hate School: Revisiting Oppositional Culture Theory of Blacks' Resistance to Schooling*, that there is evidence that Black students have a desire to learn; however, they have not obtained the abilities essential for educational achievement. Such abilities include, but are not limited to, time management, prioritization, critical thinking, organization, and self-motivation.

What one thinks of him or herself most commonly defines who they are—so how do students feel about their ability to do mathematics? According to Walker (2007), students who possess an unwavering belief in their own mathematical ability achieve higher academic success. Walker continued that educators must enlarge their thinking about who can do math, because even teachers’ perceptions limit Black students’ belief in their ability to do advanced mathematics. Further research (Thompson & Lewis, 2005) suggested there is a need to acquire a greater perception of the different roles that peers play in Black students’ mathematics achievement. Garibaldi (1992, p. 7) stated, “When we publicly recognize the successful

academic experiences of young Black men, we simultaneously raise their self-concept, self-esteem, and academic confidence." Public recognition is one way to improve students' personal beliefs about their mathematical ability.

Changing the narrative of who can do mathematics or who is good at mathematics is crucial to the enrollment of Blacks in AP Calculus. Black students must reclaim their confidence in their ability to do mathematics. Both actions can make possible a place in AP Calculus for Black students.

Racial and Course Tracking

Tracking students can be defined as "a method used by many secondary schools to group students according to their perceived ability, IQ, or achievement levels" (National Association of Secondary School Principals, 2006). This method ultimately leads to students being racially segregated throughout their secondary educational career. Quite often, Black students end up navigating the academic world separated from their White counterparts.

Students can be tracked as early as third grade into the Academically/Intellectually Gifted (AIG) program. "The term tracking refers to the practice of assigning students to instructional groups on the basis of ability" (Hallinan, 1994, p. 79). Course tracking begins and continues from that point through the end of their high school career. Once the student is classified as AIG, the classification follows them into middle school. After middle school, AIG students continue to take advanced courses, specifically mathematics, and many honors and AP level courses. Tracking results in racial segregation for Black students from third grade through twelfth grade, perpetuating an entire group on the basis of their perceived ability (Hallinan, 1994).

Course tracking is also associated with early access to Algebra I in the eighth grade. Students who begin eighth grade with Algebra I/Math I are on a pathway of eligibility to enroll

in advanced math classes in high school. According to Smith (1996), students who had the opportunity to access Algebra I in a middle school setting had a greater likelihood to continue in advanced mathematics courses throughout high school.

Ultimately, tracking negatively impacts students because they are labeled and confined to a small cluster of their peers. This classification limits students' potential to learn from other students in their classes, ultimately categorizing students based on perceived profiles and thereby perpetuating segregated classrooms in public education.

Systemic Racism in Education

Three decades of public education has seen little progress of Black students enrolling in Algebra I in 8th grade, which corresponds to an underlying problem in education: systemic racism. Racism has been defined as "the marginalization or oppression of individuals because of their race" (Slater, 2021, p.1). Systemic racism is the perpetuation of rules, guidelines, and policies to privilege some populations while unfairly disfavoring another. Merriam-Webster (n.d.) defines systemic racism as "the oppression of a racial group to the advantage of another as perpetuated by inequity within interconnected systems (such as political, economic, and social systems)." Racism of any kind is detrimental to the success of Black students in upper-level mathematics courses. The significance of systemic racism creates racial inequities in many areas, particularly education. Systemic racism is a result of the racial disparities that have resulted from over 400 years of marginalizing Black, Indigenous, and People of Color (Slater, 2021). A tenet of Critical Race Theory is that racism is normal. Slater (2021) made the association that systemic racism has become so entrenched in public exchanges that it, too, has become normal. Structural racism, interchangeably used with systemic racism, has limited Black students' learning opportunities (Carter & Reardon, 2014) as early as elementary school (Madkins & Morton,

2021). For generations, key recipients of achievement in mathematics have been limited to White males (Chen & Buell, 2018). Systemic racism has progressed into mathematics classroom as a means of promoting inequity and excluding Black students from AP math courses (Martin, 2019), thereby perpetuating the exclusion of Black students from taking AP Calculus and advancing into STEM careers. Black students need advocates to help them navigate ways to break down systemic racism within their schools.

High School Counselors' Role

One of the greatest advocates a student can have in high school is their school counselor. School counselors are the bridge between the student, teacher, parent, and administration. High school counselors have many roles in their schools, however, the role of advocacy for students is of the utmost importance.

While the role of school counselors in AP course enrollment varies from one high school to the next, P. Davis et al. (2013) posits "school counselors are in a unique position to reverse institutional barriers and challenge the deficit thinking that propagates AP equity and excellence gaps for African American students" (p. 33). School counselors' role is to support all students in achieving academic excellence, but there continues to be a disparity in the enrollment of Black students in AP Calculus (ASCA, 2018). The ASCA defines the role of the school counselor as the following: "Through leadership, advocacy and collaboration, school counselors promote equity and access to rigorous educational experiences for all students" (p. 1). Although school counselors are tasked with astronomical expectations including unmanageable student-counselor ratios, data indicates they are falling short of attaining their goal. Given that Black students comprise 16% of the public high school population and only account for 8% of the nation's public high school enrollment in AP Calculus (U.S. Department of Education Office for Civil

Rights, 2018), the data clearly indicates that school counselors need new tools to effectively advise Black students. The role of school counselors has evolved over time and expanded to include a more "holistic approach to the development and success of Black students" (Ohrt et al., 2009, p. 63). School counselors have several obligations to students; however, one major responsibility is improving the enrollment of underrepresented students in AP courses (Akos et al., 2007; ASCA, 2018; Ohrt et al., 2009).

High school counselors are tasked with many responsibilities that support students' mental health and academic success. High school counselors, in addition to teachers and parents, form a student's village to help support their life goals. The counselor role is a critical and necessary component to students' academic achievement.

Black School Counselors

Black school counselors account for only 11% of public school counselors throughout the United States, Black students make up 15% of the K-12 population. In contrast, White school counselors account for 74% of public school counselors, while White students make up 45% of the population (ASCA, 2020). Najarro (2022) emphasized how diverse school counselors can benefit the educational and vocational growth of students. In some cases, counselors could restrict students' post-secondary possibilities by allowing their personal prejudices to interfere. The article continued with Eric Sparks, ASCA's deputy executive director, expressed the need to reach out to Historically Black Colleges and Universities (HBCUs) to increase awareness of the school counseling program, and marketing the profession at high school career fairs.

Jones (2021) emphasized the role of Black counselors in her article on EdSource.org. Critics allude to the fact that representation does not make a difference with students. Black students struggle to find people that look like them in education, making student-counselor

relationships even harder to build and the need for connection nonexistent. Dr. Lisa Andrews, a professor of counseling in California, quoted, “Black counselors can build strong relationships with students and help increase students’ engagement in school” (para. 4). Dr. Andrews also expressed that it is Black counselors that have been the greatest advocate for Black students. Jones also quoted Loretta Whitson, California’s Association of School Counselors executive director, “If we want to support Black students, hiring school counselors of the same race can build trust with students, as well as their parents” (para. 13).

The need for more Black school counselors is imperative for Black students and other students of color. Fletcher et al. (2022) offered fundamental suggestions, when implemented could increase the number of Black school counselors: (a) approach schools that have a counseling program “with a focus on cultural competence, anti-racism, and equity” (“Moving Forward: Priming the Mental Health Pipeline” section); (b) persuade Black students while they are in high school to choose counseling as a post-secondary option; (c) urge classroom teachers that connect with their students outside the classroom to research school counseling; (d) collaboration between school counselor professors and other higher education personnel that manage “Black affinity spaces” (“Moving Forward: Priming the Mental Health Pipeline” section) to introduce the school counselor program and its benefits; (e) develop a school counseling alliance at the high school level to appeal to the students; and (f) work in partnership with other educator initiatives to enroll Black students in school counseling programs. Fletcher et al. (2022) believed the need to increase the number of Black school counselors was not only vital for students, but also necessary to educate their non-Black coworkers with how to be successful when working with Black students.

High School Counselors' Involvement

High school counselors' advocacy for students is a priority and requires varying levels of involvement by the students' support team. The involvement of high school counselors is not confined to the school setting but rather supports the whole student, inside and outside of school. The next section explored ways in which high school counselors can be effectively involved with their students to ensure successful high school careers.

The engagement of parents and communities must be enhanced to build unbiased educational systems and improve student success (Holcomb-McCoy, 2007 as cited in Griffin & Steen, 2010). Epstein's theory of involvement (Epstein, 1995) includes all three entities—school, family, community—and how the school counselor works collaboratively with each group to ensure the successful academic outcome of the student. Epstein's theory explored below connects the following areas: parenting, communicating, volunteering, learning at home, decision making, and collaborating with the community (Griffin & Steen, 2010).

Epstein's parenting classification pertains to school counselors assisting students' families in the importance of being cognizant of their child's opportunities of educational advancement. Essentially, school counselors provide information, support, and direction for families to create home settings that enrich student learning. Epstein indicated, communication, the second tenet, is the key to any successful relationship; therefore, keeping the lines of communication open and accessible between parents and students, students and school counselors, and parents and school counselors, is critical for student success. Volunteering, Epstein's third tenet, allows for the partnership—school, family, community—to evolve and for each group to benefit from the effort. With his fourth tenet, learning at home, Epstein specified that school counselors support families with information and resources to be knowledgeable

about the school's academic expectations of their child, thus providing them with critical information to support learning at home. Epstein's tenet on decision making ensured that all parties, school, family, and community are provided the opportunity to share input on school committees. Finally, collaborating with the community distinguishes which services and resources could potentially help to meet the needs of the school and the students' family.

Successful involvement of all groups can be measured by the interaction of participants – student, parent, school counselor, and community partners. Each member must work together to impact student success, and the school counselor is the key element to build and facilitate common goals to support students.

School Counselors and Academic Advising

One major support that school counselors offer high school students is academic advising. School counselors provide students with a strong foundation to attain their highest potential throughout high school and long after graduation. School counselors' commitment to their students' academic achievement is of the utmost importance.

In Shi & Brown's (2020) research study, 852 school counselors from 944 schools participated, using the 2009 High School Longitudinal Study. The study explored three research questions: "(1) What are school counselors' average caseloads? (2) How do school counselors spend their time? (3) After controlling for school demographic variables, how do school counselors' caseload and use of time relate to schools' academic outcomes?" (p. 4). The results for the first two research questions were attained using descriptive statistics and frequency analyses; hierarchical multiple regression models were applied to answer the last research question.

The first research question yielded the following result, the average student to school counselor caseload for 85% of the school counselors in the study was 455:1, almost double the recommended, 250:1 (ASCA, 2020). The outcome of the second research question revealed that school counselors spend 11–20% of their time providing students with (a) college counseling, (b) scheduling, and (c) personal/social/academic/career development; 6–10% of their time was used with (d) school/personal problems, (e) career planning, (f) testing, and (g) other counseling activities; and less than 5% of their time was devoted to (h) job placement/job skill development and (i) noncounseling activities (Shi & Brown, 2020, p. 4). The third research question was examined using three different regression models with a different academic outcome as the dependent variable–ninth grade retention, percentage of students enrolled in AP courses, and percentage of seniors who went to a 4-year, bachelor's-granting institution (p. 4). The first model linked a higher percentage of ninth graders retained in school with the increased time school counselors spent on activities (b) and (i). The second model associated the more time school counselors spent on activities (e), (h), (i), and (b) the number of students enrolled in AP courses decreased. The last model connected the more time school counselors spent on activities (b), (d), (i), and (g) the percentage of seniors to attend a 4-year college diminished.

While this study highlighted three different academic outcomes–ninth grade retention, AP course enrollment, and seniors joining a 4-year university, Shi & Brown (2020) presented a juxtapose to the academic outcome of AP course enrollment in the third research question. The more time school counselors spent on college counseling, and school/personal problems, the likelihood of students enrolling in AP courses increased. This conclusion also connects with the dependent variable of seniors attending 4-year colleges, as "AP preparation is directly linked

with college preparation" (p. 6). Thus, the more time school counselors can devote to advising students on their post-secondary plans the higher the possibility of collegebound seniors.

School Counselor-Principal Dynamics

In conjunction with high school counselors' role with students is the counselor's role with school administration. High school counselors can be pulled in different directions, but their foremost obligation is to the student. In the next section, the dynamics between high school counselors and their school administration is examined.

Each entity of a school is required to ensure positive outcomes for students. However, the role of the school counselor is sometimes misaligned by the duties expected of them by the school principal(s). The preparation of school principals on how to utilize school counselors is very minimal, as there are no specific strategies (National Policy Board for Educational Administration, 2015). Many times, school counselors must advise school principals of their role within the school (McConnell et al., 2020).

The way a school counselor views their role versus the way their role is viewed by the principal can be very different. Some principals see counselors as a 'think outside the box' leader and part of the school's administrative team (Amatea & Clark, 2005). However, other principals delegate unrelated tasks to school counselors (Kirchner & Setchfield, 2005) such as the facilitating school wide testing or helping with student discipline (Fitch et al., 2001; Zalaquett & Chatters, 2012). While school counselors view their main role as an advocate for students, they know that school principals frequently ignore that role and delegate unsuitable responsibilities to them (Evans et al., 2011). When distinct responsibilities are established between the school counselor and principal, counselors are better positioned to support student success (Ponec & Brook, 2000).

Although there is often a discrepancy in the understanding of the school counselor's role, the benefits of a collaborative school counselor-principal relationship far outweigh the alternative. Research (Young et al., 2013; Rock et al., 2017) includes benefits such as an improvement in student success, more favorable school atmosphere, and utilization of each group's abilities and resources for the advancement of the school's mission. As in any collaboration, there may be some barriers for each group to overcome, such as contradictory views while building mutual respect (Bardhoshi et al., 2014) or developing constant, direct lines of communication (CollegeBoard, 2009). Ultimately, when school counselors and principals have a shared belief and support of each other's roles in schools, the impact will not only be seen within the school but also within in the school community.

Successful collaboration between school counselors and their principals is required to build a foundation for effective change with student success. Distorting the roles of responsibility between the two entities can perpetuate the cycle of systemic racism that permeates the educational system. Advocacy and effective support for students by school counselors is required to positively impact student-counselor relationships.

School Counselors-Student Relationships

Trust is the foundation for which any relationship will blossom, and school counselor-student relationships are no exception to this rule. When establishing a school counselor-student relationship, the student must be assured that the school counselor is a trusted partner who will both advocate for them and keep their confidences. In time, that relationship can prosper and become a foundational part of the student's academic success.

Lincoln Chafee (n.d.) quoted, "Trust is built with consistency." The foundation for a successful school counselor-student relationship is trust (Holland, 2015), along with consistency

of the counselor's availability and encouragement provided to the student. Establishing a trusting relationship involves both the counselor and student understanding the expectations and responsibilities of each other and their intentions in the relationship (Bryk & Schneider, 2002; Schneider et al., 2014). Holland (2015) further suggested four components of intention: having value for each other, the capability to do your job, doing the right thing when no one is looking, and going above and beyond what is required. The creation and maintaining of genuine relationships between school counselors and students can enhance the students' learning potential and attainment as well as reduce disciplinary challenges (Crosnoe et al., 2004; O'Connor, 2018). The school counselor-student relationship can also enhance a students' sense of belonging in a school community. Students face many difficulties during high school and knowing that a school counselor is advocating on their behalf can improve their academic success. Following, the purpose of the student-school counselor relationship, in the context of promoting mathematics achievement is explored.

Purpose of Student-Counselor Relationships

School counselors are tasked to use their influence to implement a holistic approach that challenges systemic barriers to AP access, promotes collaboration among educators, and provides a system of counseling interventions to bolster student achievement (Camizzi et al., 2009; Steen & Noguera, 2010; Tucker et al., 2010). Successful student-counselor relationships are supported by school counselors' holistic approach. The purpose of the student-counselor relationship is to build a trusting, supportive, collaborative environment based on a holistic approach of supporting the whole student, both inside and outside the classroom. Working together, students and school counselors can utilize a school-student-parent infrastructure design to promote student success to help students enroll in and completion of AP Calculus.

School counselors serve as gatekeepers of advanced mathematics courses (Cicourel & Kitsuse, 1963; Schultz & Erickson, 1982, Hart & Jacobi, 1992), effectively tracking minoritized students and their outcomes (Smith, 2011). Although school counselors are, theoretically, unbiased when counseling students, personal biases do emerge and Black students are frequently disadvantaged (Francis et al., 2019; Linnehan et al., 2011). Because of the school counselor's critical role in AP course enrollment, researchers (Ndura et al., 2003; Ohrt et al., 2009) have suggested that school counselors are uniquely positioned to reverse institutional barriers and challenge the deficit thinking that propagates AP equity and excellence gaps for Black students.

By utilizing their influence, Camizzi et al. (2009) found that school counselors played an integral role in directing minority and economically disadvantaged students in the selection of more rigorous coursework. Similarly, school counselors are uniquely positioned to support the academic, career, and personal/social needs of all students, including those who are traditionally underserved. As such, school counselors must be aware of the institutional barriers like discrimination, racism, and oppression, that may affect students' educational attainment. They must serve as social justice advocates (House & Martin, 1998) for underrepresented groups and act as agents for systemic change within educational systems (ASCA, 2005).

Literature suggests that school counselors be "culturally responsive" (Lee, 2001) so they will have the necessary skills to influence students from all diverse backgrounds. To become culturally responsive, student advocates and school counselors would have to begin "facilitating educator awareness of systemic factors that may impinge upon student progress" (p. 260) in addition to "facilitating the professional development among teachers and school administrators of culturally responsive approaches to education" (p. 260). To successfully implement both functions, school counselors would have to implement trainings for teachers and administrators

to teach culturally responsive techniques they would be able to execute during their interactions with students. Throughout these trainings, counselors would assess teachers' own personal cultural biases and the potential effects on their students. Also, within the trainings, counselors would identify methods to integrate culturally diverse practices into the curriculum.

Conclusion

Chapter two provided background information about the prevalence of systemic racism in public education, and the consequences that continue to positively influence students in the majority in higher level mathematics, while negatively affecting the enrollment of minority students in higher-level mathematics. History has documented the struggles and setbacks that Black students have endured, including lack of early access to Algebra I and being racially tracked into lower-level math courses. The Brown vs. Board of Education (1954) of Topeka distinguished that "separate but equal" education was anything but equal for Black students, with the continuing disparity of Black students in AP Calculus the most prominent example (Corwin et al., 2004). Because of the school counselor's critical role in AP mathematics enrollment, researchers have suggested that school counselors are in a unique position to reverse institutional barriers and challenge the deficit thinking that propagates the AP equity and excellence gaps for Black students (Ndura et al., 2003; Ohrt et al., 2009).

School counselors are tasked with the responsibility to provide guidance to all students, but the purpose of this study is concerned with school counselors' specific responsibility to Black students. School counselors must first arduously advocate for their role to provide unbiased counseling to Black students, and school administration training programs for principals must include accurate information about the responsibilities that school counselors must have in schools. School counselors' prominent role is singularly responsible for building

the infrastructure of school administration, community, parent, student, counselor support to help students and parents to successfully navigate the path to upper-level mathematics. When school counselors can fulfill the multifaceted roles above, being culturally responsive to the needs of their students, is the most equitable pathway to help Black students finding their place in AP Calculus.

CHAPTER THREE: METHODOLOGY

Introduction

This study focused on the experiences of high school counselors and the specific referral practices utilized by them to recommend Black students for AP Calculus enrollment. In addition, this study also explored the role of Black students, parents and/or guardians, and their collaborations with school counselors, as it relates to the guidance received in the decision of the students' mathematics course selection. While this study spotlighted school counselors, it also provided contextual information concerning how Black students access and interact with them and the resources they provide. Counselors provided contextual info about the ways they built advocacy relationships between themselves and the students' parents/guardians and how those connections supported the overall academic success of students.

Mathematics helps students develop the critical thinking skills required for any job (Firdaus et al., 2015) and is critically important for the success of students pursuing STEM careers (Kelly, 2012). However, students who do not complete honors and/or AP mathematics courses in high school are ill-prepared for STEM careers and often lack the critical thinking skills required after they graduate from high school. The lack of Black students referred to enroll in AP Calculus (Oakes et al., 1992; Oakes & Guiton, 1995) or any other advanced level mathematics course has positioned the United States at a disadvantage by losing up to 90% of STEM field jobs to overseas companies (Lancaster & Xu, 2017). Thus, the research questions that led this study are as follows:

A. How do high school counselors perceive their relationship with Black students as an influence of the course-taking patterns of Black students?

B. How do high school counselors perceive their relationship with Black students' parents/guardians as an influence of the course-taking patterns of Black students?

C. Do high school counselors' referral processes with Black students influence their decision to enroll in advanced placement mathematics courses at their school?

D. How does school counselors' perceptions, regarding Black students, influence their referral processes when counseling Black students?

The qualitative research design used for this study was a qualitative case study, which is "an intensive description and analysis of a phenomenon or social unit such as an individual, group, institution, or community (Merriam, 2002, p. 8). Interviews were conducted with three high school counselors (case studies) to increase understanding into the referral processes used by high school counselors with Black students (phenomenon). This qualitative research method provided the opportunity for school counselors to divulge their referral practices, successful and/or unsuccessful, during the interviews. Themes were extracted from the counselors' interviews, which provided potential methods for school counselors for implementation to improve the enrollment and successful completion of AP Calculus by Black students.

This research method is applicable for the study as it aligned with the characteristics of qualitative research design (Merriam, 2002). The first characteristic of qualitative research design was for the researcher to determine how participants perceive their experience (how school counselors distinguish their referral practices). The second characteristic was for the researcher to be the key means of collecting and analyzing the data. The third characteristic was the process is inductive (p. 5), which meant the researcher used the gathered data to develop generalizations about the phenomenon. The last characteristic was "the product is richly descriptive" (p. 5), which meant the findings were presented using words and quotes from the

data collection that would express what was discovered through the research process. Thus, the interviews with the high school counselors consisted of highly structured questions that asked them to recall various encounters they had experienced while counseling students, but specifically their encounters with Black students, in the context of their referral processes of math course selections.

Site and Participants

Smith et al. (2009) suggested having three to six participants for a study as an equitable sample size. A sample of high school counselors was chosen purposefully for this study, utilizing referrals from a school administrator (Smith et al., 2009). "A purposeful sample is one that provides a clear criterion or rationale for the selection of participants, or places to observe, or events, that relates to the research questions" (Ezzy, 2002, p. 74). Additional counselor participants were added to the study using snowball sampling, which is considered the referral of participants by current participants (Smith et al., 2009); in this study, the additional participants were obtained using suggestions from the first school counselor participant. Criteria for school counselor participants included the following:

A) Licensed school counselor with at least three years of experience

B) Consistent contact with freshmen and sophomore students

C) Collaborated with the middle school about high school course selections

D) Served in urban or rural, public high schools in the South

Since the study was focused on school counselors, I chose to use counselors who have had at least three years of experience in their job, so they were familiar with the student body of the school and the mathematics coursework completion requirement for students within the state of North Carolina. School counselor participants also had experience with students' option to

strategically double up on mathematics in separate semesters to get a student back on track with the college and career readiness pathway. The school counselor participants also had experience working with the 8th-grade class of middle school feeder schools, on their upcoming high school registration of courses. Lastly, the counselor participants in this study have worked at either an urban or rural, public high school located in North Carolina school districts with urban characteristics. In both cases, the participants' respective schools had some of the same challenges, such as inadequate funding, lack of highly qualified teachers, and decreased student academic achievement as urban intensive schools (Milner, 2012).

High School A was a predominantly Black high school, with a total enrollment of 991 students (Civil Rights Data Collection, 2017). The demographic breakdown was American Indian/Alaska Native (0.3%), Asian (2.3%), Black (46.7%), Hispanic (20.8%), Native Hawaiian/Other Pacific Islander (0.0%), Two or More Races (4.5%), and White (25.3%). Of the 991-person student body, only 15 students were enrolled in AP Calculus, which consisted of Asian (6.7%), Black (6.7%), Hispanic (13.3%), and White (73.3%) (Civil Rights Data Collection, 2017). High School A was located within a school district with non-similar demographics. The overall student enrollment of the school district was 20,584 students, with the following demographic breakdown: American Indian/Alaska Native (0.2%), Asian (2.7%), Black (14.3%), Hispanic (13.3%), Native Hawaiian/Other Pacific Islander (0.1%), Two or More Races (3.7%), and White (65.7%). Within the district, there was a total of 182 students enrolled in AP Calculus, with the following demographic breakdown: American Indian/Alaska Native (0.0%), Asian (8.2%), Black (2.2%), Hispanic (5.5%), Native Hawaiian/Other Pacific Islander (0.0%), Two or More Races (1.6%), and White (82.4%).

High School B was a predominantly White high school, with a total enrollment of 1,330 students. The demographic breakdown was American Indian/Alaska Native (0.2%), Asian (1.6%), Black (3.4%), Hispanic (8.1%), Native Hawaiian/Other Pacific Islander (0.0%), Two or More Races (4.0%), and White (82.8%). Of the 1,330-student body, only 24 students are enrolled in AP Calculus, which consisted of Two or More Races (4.2%) and White (95.8%), while Asian, Black, Hispanic, American Indian, and Native Hawaiian/Other Pacific Islander were not enrolled at all (Civil Rights Data Collection, 2017). High School B was located within a school district with very similar demographics. The overall student enrollment was 5,014 students, with the following demographic breakdown: American Indian/Alaska Native (0.1%), Asian (1.5%), Black (3.9%), Hispanic (10.3%), Native Hawaiian/Other Pacific Islander (0.1%), Two or More Races (4.4%), and White (79.8%). Within the district, the total number of students enrolled in AP Calculus was the same as High School B, with the exact demographic breakdown.

Procedure

Before data collection, but after the dissertation proposal defense, an application was submitted to the Institutional Review Board (IRB) at UNC Charlotte, to receive approval to interview human subjects for this research study. Files submitted for the IRB process included: letter of interest email and interview protocol. Once I received IRB approval, the study came to a halt due to the COVID-19 pandemic. The process to schedule interviews was delayed due to schools being shut down because of the pandemic. After protocols began to calm with COVID-19, I set up times and dates for interviews with my participants. Before meeting with the prospective counselor participants, I sent each an email introducing myself and to formally ask them if they were interested in participating in the study.

[See Letter of Interest, Appendix A]

Each email gave background information about myself and my experiences as a high school mathematics teacher, in addition to my time as a doctoral student. I also included the specifics about the study, the expectations of time commitments from them, and my personal contact information, so they were able to contact me with any other additional questions. I also included directions, for each counselor to follow if they chose to participate in the study. Once I received verification of their commitment, I scheduled times for us to meet and begin our interviewing session, according to their availability.

[See Consent Form for Counselors, Appendix B]

Data Collection

Data was collected in face-to-face, in-depth interviews (Patton, 2002), in addition to using archival data from the Civil Rights Database Collection about each school site and its district from which the counselors worked. Each participants' interview lasted approximately 40-60 minutes in length. The interview consisted of some basic introduction questions to put the participant at ease and to allow both the interviewer and interviewee to be more relaxed (Smith et al., 2009). The questions were an amalgam of "descriptive, narrative, structural, contrast, evaluative, circular, comparative, prompts, and probes" (Smith et al., 2009, p. 60).

[See Interview Protocol, Appendix C]

The interviews for each participant took place behind closed doors, to provide confidentiality of their identity, reiterating that the interview times were held according to the school counselors' availability. The interviews were recorded on my laptop with the knowledge of the participant and transcribed immediately after the interview. After transcription was completed, participants received a copy of their interview, via a password-protected email, to ensure credibility, from the researcher's point of view.

Member Checks

After each interview was transcribed, I emailed the participant their transcription to confirm whether their responses represented their viewpoint within the interview. “Member checks involve the researcher’s seeking verification with the respondent groups about the constructions that are developing as a result of data collected and analyzed” (Mertens, 2015, p. 269). Analysis of the transcripts occurred after verification from the participants.

Data Analysis

Data analysis for this qualitative case study research was completed using the process of six steps: conduct interviews, transcribe the interviews, initial noting, develop emergent themes, search for connections across emergent themes, and look for patterns across cases (Charlick et al., 2015, p. 210 adapted from Smith et al., 2009). The first step of conducting the interviews was completed in cycles; I would complete an interview and then transcribe it within two days. I used this process to see if there were any questions I needed to refine before conducting the second interview. After the first two interviews were completed and transcribed, I began the initial noting process to establish any similarities or differences between the first two participants. I completed my last interview and transcribed it before the initial noting, to examine the comparisons and/or contrasts between all three cases. After all three interviews were conducted and transcribed, I began to read and re-read the transcripts to discover any emergent themes that stood out between the three. Meticulous examination of each interview transcription was made, looking for possible connections between themes from the cases. While making notes within the transcription, thematic analysis along with themes (Ezzy, 2002) were used to analyze the data.

The in-depth interviews with the school counselor participants generated textual data used to explore the qualities that portray a school counselor, duties performed by the school

counselor, dynamics of student-counselor relationships, and the effect of school counselors' academic referral practices on the AP Calculus enrollment. Each counselor was interviewed once using the interview protocol (Appendix C) and they received a copy of their interview transcription to complete the member check of the data. Once the member checks were returned data analysis was completed by reading through each interview and marking similarities and differences between the three participants' responses to the interview questions. Major quotations within each interview were highlighted and categorized by its usefulness to answer the research questions of the study. The same process was completed for each additional interview transcription. Patterns were noted throughout each school counselor's interview of shared referral practices that had been implemented in their experiences.

Limitation

This study had a potential limitation in the transcription process of the data; I transcribed the interviews by hand without the assistance of data analysis computer software. This process created a limitation in the sense of accuracy in my data collection, in addition to the categorization of the theme codes. For future studies, I could train another researcher to go through the data and verify how they would have classified the domains and themes from the interview data.

Risks, Benefits, and Ethical Consideration

"Ethical research practice is a dynamic process which needs to be monitored throughout data collection and analysis" (Smith et al., 2009, p. 53). As risks were of concern, they are anticipated to be very minimal for the participants. Interviews were conducted at various locations, at the preference of the school counselors. Pseudonyms were used to keep the confidentiality of all participants throughout this research study. There are myriad benefits of this

research, which could not only impact the academic referral practices of school counselors, as it pertains to Black students, but also help to shape the future of Black students in AP Calculus for years to come. This research placed an emphasis on the number of Blacks enrolling in advanced mathematics courses and its effect on the number of Blacks in STEM-related careers.

CHAPTER FOUR: FINDINGS

This chapter reported the findings from the interviews conducted with three high school counselors which focused on their academic referral practices, as they pertain to Black students. The chapter first introduced each participant along with information on their background; next, thematic analysis of the interviews; last, answered the research questions based on the data from the participant interviews. This study explicitly explored the following domains: characteristics of a school counselor, expected duties of a school counselor, criteria to be considered to enroll in an AP Calculus course, student-counselor relationships, and school counselors' academic referral processes and the outcomes. The study investigated the following questions:

A. How do high school counselors perceive their relationship with Black students as an influence of the course-taking patterns of Black students?
B. How do high school counselors perceive their relationship with Black students' parents/guardians as an influence of the course-taking patterns of Black students?
C. Do high school counselors' referral processes with Black students influence their decision to enroll in advanced placement mathematics courses at their school?
D. How does school counselors' perceptions, regarding Black students, influence their referral processes when counseling Black students?

Participants

The participants in this study brought distinct understanding of the characteristics of a school counselor, expected duties of a school counselor, criteria of an AP Calculus student, student-counselor relationships, and academic referral processes and the outcomes. The years of experience and type of schools these participants have worked in encompassed the state of North

Carolina school counseling profession. As the participant interviews were arranged as conversations, the findings of this study are written through their voice.

The first participant, Olivia, was a young adult, Black lady in her 8th year as a high school counselor. Olivia mentioned the interesting relationship with her school counselor while in high school "… when I was in high school, I didn't really know who my counselor was." She had noticed that she and her friends were taking different courses that did not have her on the college track. Upon that epiphany she began to advocate for herself and request schedule changes to align her courses with the requirements for University A. In her quest to fulfill her dream, she secretly applied to University A, for fear of rejection.

Olivia received her bachelor's degree in child development & family studies and credits one of her former professors at University A as the inspiration that allowed her to explore who she was as a scholar. Olivia started out working in childcare facilities for a couple of years and knew that was not her calling. She went back to school and began to work on her master's degree, which started out in the school counseling track, at University A but, not wanting to be one-dimensional, decided to switch to the mental health/rehabilitation counseling path. While in the mental health field, Olivia obtained much insight into the mental health field, a skillset that is beneficial in her current position.

Olivia had worked at High School A for all eight years of her tenure as a high school counselor. High School A was an urban, predominately Black, high school within a majority urban representative county of North Carolina (North Carolina Department of Commerce, 2022). According to School District A's website, many of the students who attend High School A were inner city students that attended Title I elementary schools within the district. Olivia credited her calling as a high school counselor to her own personal experience in high school. "My personal

experience inspired me, because I know that there are a lot of kids just like me. I wanted to come and help expose the students to more things to help prepare them for this future." She continues to be an inspiration to the students and an asset to the Guidance Office staff.

The second participant, Miranda, was a middle-aged, Black woman that was in her 23rd year of service to the field of school counseling. Miranda had an array of experiences that had cultivated her career as a high school counselor. She received her bachelor's degree in mass communication with a minor in history from University B and began a public relations position for a non-profit organization. After leaving from the non-profit, she took a public relations job at University B and decided to enroll in the counseling master's program – community agency track, because, in her opinion, "who wants to do school counseling?" Avoiding the school counseling path at all costs, Miranda encountered two professors who were true advocates about the importance of school counselors and emphasized the need for Black school counselors, "students need to see a face that looks like you."

After completing the counseling degree in community agency counseling with the school counseling add-on, she began to work in Career Services at University B and then transferred to University C, performing the same job. Miranda was contacted by a former school counselor that had become an assistant principal about an available position in the county, which she turned down. While at University C, she felt that it wasn't a good fit for her, so she began to weigh her options. Miranda received another phone call from the same assistant principal and ended up applying for the position and has not looked back, "I love working with high school students. I love school counseling. And I wouldn't change it!"

Within her twenty-three years of experience, sixteen of those years, Miranda worked at High School B. High School B was a rural, predominately White, high school within a majority

rural representative county of North Carolina (North Carolina Department of Commerce, 2022). According to School District B's website, many of the students who attend High School B were inner city students that attended Title I elementary schools within the district. Miranda helped to open the early college within the same county and spent six years building their school counseling department. She spent one year working in the district's Central Office as coordinator of Student Services. Her passion continued to bring her back to the high school counseling setting.

The third participant, Robin, was a young adult, Black lady in her 4th year as a high school counselor, also at High School A. Robin began working in the educational field as a teacher assistant (TA) at an elementary school. After being laid off from the elementary school TA position, she transitioned to a TA position at an alternative school, working for five years with K-12 students from all around the school system. While at the alternative school, her position shifted to a behavior tech in addition to working the front office. Then she transferred to High School A in the position of the school's data manager and has been part of the Guidance Office staff for the past four years.

In her tenure at the alternative school, Robin interacted with students from troubled backgrounds, majority were Black, "I was just actually talking to 'em, having conversations with 'em, building a type of relationship." When the students would get into trouble, she was called to help resolve the issue. It was at this time her principal – whose background was in school counseling – approached her about the thought of being a school counselor, "she was like, you'd do so well." She credits her principal for the inspiration to go back to school to take up school counseling.

Table 3

Participant Profiles

Name	Race	School Type	Years of School Counselor Experience	Previous Work Experience
Olivia	Black	Urban, Predominately Black	8	Childcare facilities; mental health facility
Miranda	Black	Rural, Predominately White	23	College career adviser
Robin	Black	Urban, Predominately Black	4	Elementary school TA; Alternative school TA

Domains and Themes

The in-depth interviews yielded twenty-seven themes from the data that were organized within the following domains: a) characteristics of a school counselor, b) expected duties of a school counselor, c) criteria to become an AP Calculus student, d) student-counselor relationships, and e) school counselors' academic referral processes and its outcomes. The table below classified each theme extracted from each domain. Each domain yielded 4-7 major themes and will be explained with participants' direct quotes.

Table 4

Domains and Themes Extracted from Interview Data

Domains	Themes
Characteristics of a School Counselor	Empathetic Organized Flexible Creative Open-minded Knowledgeable
Expected Duties of a School Counselor	Holistic needs of students Classroom guidance activities Non-counselor duties Resource Advocacy

Table 4 (continued)

Domains and Themes Extracted from Interview Data

Domains	Themes
Expected Duties of a School Counselor	Enrollments Interventions
Criteria to Become an AP Calculus Student	Complete prerequisite courses Teacher recommendation Exceptions to the rule AP Agreement
Student-Counselor Relationships	Importance Trust Connections Race Alternatives
Academic Referral Processes and Outcomes	Methods Awareness Encouragement Benefits Partnership

Characteristics of a School Counselor

The first domain, characteristics of a school counselor, highlighted six major themes the three school counselor participants recognized as attributes of school counselors. Each counselor participant response aligned with personal views of what they considered as important traits a school counselor should exhibit. Table 5, below, shows the overall patterns of consistency and inconsistency across the responses of the three participants.

Table 5

Characteristics of a School Counselor Domain

	Empathetic	Open-Minded	Organized	Flexible	Creative	Knowledgeable
Olivia	★	★	★	★		
Miranda	★				★	★
Robin	★	★				

Empathetic

The dominant theme, empathetic, was the only consistent theme among all three participants. Each participant responded that school counselors should be empathetic, and all

three interviews illustrated that empathy for their students. Empathy was defined by Merriam-Webster (n.d.) as, “the action of understanding, being aware of, being sensitive to, and vicariously experiencing the feelings, thoughts, and experience of another of either the past or present without having the feelings, thoughts, and experience fully communicated in an objectively explicit manner.”

Olivia alluded to her “ability to connect with people” as a counselor characteristic that helps her display empathy towards her students. Her recollection of the events that she went through in high school: not knowing her school counselor, advocating for herself, applying to college in secrecy, she replied “I just imagined how many other kids felt the same way.” While Olivia encountered unfavorable experiences in high school, she allowed those circumstances to positively influence her own counseling capabilities. She is also aware of the encounters her students may have during their high school career.

Miranda said it best, “you got to love high school students and you got to love interacting with them.” Continuing, she stressed that within the high school age group you cannot be intimidated by them, “They come in and sit down and have that real conversation” with her. Those real conversations can extend to “mental health or their goals or lack of” and the need for empathy is imperative to the student. Although that is one component of her job that she enjoys, she never knows what to expect from their conversations.

Robin followed up to that statement, “genuine caring is what the students need.” She continued to explain, “When I’m having conversations, I never say, ‘oh I know how you feel’ because a lot of their situations, I don’t know how they feel. You know, it’s like my heart goes out. I can only imagine how you feel. And I just think letting them talk, a lot of ‘em just wanna be heard.” Also, Robin elaborated on the impact social media has on students and how it is a

daily struggle to get students to understand what social media and society says versus what is correct. The situations above not only required empathy, but also incorporated other characteristics including caring, compassion, and sympathy. She summed it up as, “You have to have it all <laugh>!”

Open-minded

The second most dominant theme, contained under the characteristics of a school counselor, open-minded, was mentioned by two of the participants, defined as “receptive to new arguments or ideas; unprejudiced,” (Merriam-Webster, n.d.). The participants expressed how they deal with a very diverse group of students who go through a lot of personal stuff outside the school building. During our interview, Olivia credited her professor for helping her find insight to herself and how she “really take time to analyze situations and come up with good solutions.” This ability would lend its help to her ability to be open-minded when dealing with students and helping them come up with the solutions to succeed in high school or manage emotions in different situations.

Robin stated, “they’re gonna tell you a lot of stuff you have to be open-minded about it and try to suppress your emotions.” She indicated that the student may face criticism and judgement from their peers and at home, so when they come to their school counselor, it is imperative to remain open-minded with what they share. Further conversation led to Robin elaborating on situations she has dealt with in the past and how those instances can cause the student to react in different ways. She continued with recalling situations where parents would call and say “Hey, can you call such and such to your office, we need to let 'em know that the house just got shot up…or I need you to tell 'em that their grandparent died. It's always something.” Sharing that type of information to anyone, especially a high school student, could

be very problematic for their mental health and overall stability. When these types of situations take place, school counselors must be non-judgmental and consider how those factors can and do affect the students' normal behavior.

Organized, Flexible, Creative, and Knowledgeable

The next four themes were cited, but each by only one school counselor: organized, flexible, creative, and knowledgeable. Olivia described the job of a school counselor as an "infinity sign" meaning it is never ending and then elaborated that, "sometimes you are unable to complete everything in one day." Organization was the key for her being able to methodically complete the tasks that may arrive in any given day. Accompanied by the ability to prioritize, school counselors may have to stop one task and pick up another, depending on the severity of the situations.

Likewise, flexibility, was a characteristic that school counselors should have due to the unexpectedness of school day circumstances. Olivia added, "if you are a person that is kind of really OCD and everything has to be a perfect way, you will have to understand that you can have a plan and come in and then our day can be completely disrupted." She also included, "counselors have to be ready to roll with the punches and be flexible."

Miranda stressed the necessity of school counselors being creative, "if you're gonna think in the box and stay in the box, then counseling is not for you." At the high school level, as previously revealed, school counselors never know what issues may arise, so they must be able to apply their creativity skills to problems to come up with solutions. Along the lines of open-mindedness, counselors must include potential solutions from the students, teachers, and administration. Miranda stated, "High school level counseling is what I consider always to be high stakes because everything we do ends up being, um, making sure the student graduates."

Furthermore, Miranda emphasized that school counselors need to be knowledgeable, "You've got to be able to know academic requirements and all the changes that come from department of public instruction (DPI) from one year to the next." Since school counselors are assigned with course enrollment, knowing the requirements for each subject is essential. This knowledge also extends to counselors being their students' advocate when it comes time for next year's course registration. In addition to the changes from DPI, school counselors need to know the requirements of colleges – community, two-year, four-year, private versus public universities – to advise students properly.

Expected Duties of a School Counselor

The next set of themes were categorized within the domain of expected duties of a school counselor. The theme of serving holistic needs of students, was mentioned unanimously between all three counselor participants. Commonly mentioned themes were classroom guidance activities, non-counselor duties, resource, enrollments, and interventions by two of the three counselors. One theme, mentioned by only one counselor, was the expected duty of a school counselor being an advocate.

Table 6

Expected Duties of a School Counselor Domain

	Holistic needs of students	Classroom guidance activities	Non-counselor duties	Resource	Enrollments	Interventions	Advocacy
Olivia	★	★	★		★	★	
Miranda	★		★	★			★
Robin	★	★		★	★	★	

Serving the Holistic Needs of Students

The only theme addressed by all three participants was serving the holistic needs of students, handling each component of the student: physical, mental, and academic. Olivia

indicated that she has had to arrange transportation for a student, sign them up for backpack meals to make sure the student has food at home, or impart wisdom to students about life inside and outside the classroom. She continued with, “We are expected to deal with the whole child. Also issues in the classroom with the teachers and with the kids, it’s everything from needing a snack to needing some anger management help, decision making, time management skills.” Olivia also commented on how she must have conversations with the students about their attendance, grades, specifically about learning to prioritize how to get makeup work completed and not fall behind even further.

To serve the student holistically, Miranda indicated meeting the academic needs, “looking at their four-year plan to make sure they’re taking the right courses to get them into college, military” and meeting the mental needs of the student. She continued explaining that they are expected to provide direct services to the students and that could be face-to-face, email, or zoom. Miranda also noted that they are expected to work with external agencies to make sure the students are getting the services they need.

Robin included one-on-one sessions with the students to help meet their needs. The sessions are not long term, but they can have long term therapy set up for the student, if needed. Before ensuring the academic needs of the students are met, school counselors must be certain the students’ physical and mental needs are supported. Robin also mentioned that since the pandemic, they have been overwhelmed with figuring out this new way of learning for the students. “That's what we've been doing here lately, doing training on how to deal with them cuz their mental health is at its high. And if we don't get their mental health under control, academically, they're not gonna be successful.” There is no way to deal with the holistic student, until they can provide ways for students to cope with mental health.

As is evident from the findings, all three school counselor participants prioritized serving the holistic needs of students over the academic needs. The study was conducted in the middle of a pandemic, which impacted the way students and school counselors navigated the new virtual school environment. The school counselor participants were more focused on the mental and physical health of their students, in addition to providing resources on how to support students to survive a pandemic.

Classroom Guidance Activities

School counselors are also expected to complete classroom guidance activities, which include presentations about various topics including, but not limited to, graduation requirements, explanation of test scores (ACT/SAT), college requirements, and plans after high school. This allows the counselors time inside the classrooms and in essence, strengthen the bond among their students. The time in the classroom is also used to remind students of their grades, attendance, and behavior; school counselors also mentioned the students' access to after school tutoring, which they oversee, to aid in the improvement of their grades.

Non-Counselor Duties

The expected duties of the school counselor have the tendency to come with unexpected assignments, such as covering classes, bus duty, lunch duty, etc. Olivia indicated that she has had to cover classes, especially around holidays. She had the following to say, "I don't mind it when we have to, because we can take time to get to know the kids and complete classroom guidance activities."

In the past, school counselors were responsible for coordinating the testing program (EOCs and other standardized tests) for the school population. Miranda stated, "as our (school counseling) standards changed and as people advocated for our profession, that expectation died

down," which she attributed to the change in testing coordinator obligations. She expounded on her view of non-counselor duties, "when you take and give us extra duties and we're pulled away from our counseling job, then we can't serve the students."

Resource

Miranda and Robin, both, introduced resources as part of the principal's expectations for school counselors. Robin expressed that school counselors are expected to be a resource for the parents and teachers because they are the connection between the two parties. She stated that school counselors are privy to the background information of their students, much of which, teachers are not; therefore, the school counselor must bridge the gap. They must be the voice of reasoning when problems arise between teachers and students because teachers "don't realize, they don't know what their students are facing outside of their classroom." Robin specified that school counselors are expected to be a resource for students by being "knowledgeable of interventions and, um, anything new within counseling, new interventions that could benefit our students." Robin also stated that school counselors are expected to be a resource for the parents, from giving out information about post-secondary plans to getting them involved at the school for their child's benefit.

Enrollments

The next theme, enrollments, was commonly implied by both Olivia and Robin and was related to transfer students entering a new high school. The enrollment process of students into the school included, but not limited to, verifying records have been sent from the previous school, having an initial conversation with the student about what courses they had taken and their post-secondary plans, registering the student into courses that aligned with what they were enrolled in at their former school, and giving the new student a tour of the building. School

counselors are expected to complete enrollment processes of scheduled and unexpected transfer students. Overall, school counselors may complete a new enrollment process each week.

Interventions

An increased student body can sometimes lead to unexpected issues, which causes school counselors to implement conflict resolution strategies. Their main intervention approach included restorative circles and restorative justice groups with students, as an alternative to the student receiving disciplinary action for certain situations before they become major infractions. The restorative justice groups also allowed students to talk through their emotions and handle their disagreements in an adultlike manner. Interventions were essential to keep disciplinary problems at a minimum.

Advocacy

The last theme, advocacy, cited only by Miranda, but connected to both students and parents. An advocate is defined as "one who supports or promotes the interests of a cause or group," (Merriam-Webster, n.d.). Principals expected school counselors to be advocates for the students with their parents and teachers by aiding them with communication skills to implement when talking with parents and teachers. This type of advocacy strengthens the relationship between teacher, student, and parent. Miranda summed it, "For a counseling center to work, there has to be a strong relationship between the counseling department and administration. When those two departments work together, hand in hand, and they're strong, then the needs of the students, teachers, and families will be met."

Criteria to Become an AP Calculus Student

Within this domain, there were two themes consistently mentioned by all three participants: completion of prerequisite courses and exceptions to the rule. Commonly mentioned

by two participants were teacher recommendation. The last theme, AP agreement, was only mentioned by one of the counselor participants.

Table 7

Criteria to Become an AP Calculus Student Domain

	Completion of Prerequisite Courses	Exceptions to the rule	Teacher recommendation	AP Agreement
Olivia	★	★	★	
Miranda	★	★		★
Robin	★	★	★	

Completion of Prerequisite Courses

The coursework criterion, as defined by the school counselors, for a student to become an AP Calculus student were straightforward. All three participants identified that students had to pass Math I, II, III, and Pre-Calculus with a grade of 85 or better. These four sequential courses were predetermined as the pathway to AP Calculus. The counselors also noted that students could take the regular Math I, II, or III classes and receive an A (90 or better) as an alternative to the Honors Math I, II, or III courses and receive a B (between an 85 and 89).

Exceptions to the Rule

During the interview each participant was asked if students did not meet the predefined coursework criteria, were exceptions made – and they were. Olivia recalled, “Yes, if they didn’t make the best grades, but passed the required levels of math, we allow them to take it (AP Calculus) if they are highly motivated to take it.” This exception allowed students the chance to challenge themselves and encounter a college level course, while in high school.

Miranda stated that if students did not meet the academic requirements listed above, they could submit a waiver to be reviewed for admission into the AP Calculus class. “We had AP waivers. So, if a parent, or student, really wanted their child to take an AP class, but they didn’t

meet the academic requirement, they could fill out an academic waiver." The waiver would be reviewed by a committee composed of the school counselor and principal.

Robin remembered a student that skipped Pre-Calculus and went straight into AP Calculus and successfully completed the course. "I've had a student that did Math I, II, and III, and that Math III teacher consulted with the Pre-Calc teacher and felt the student was ready to just skip Pre-Calc and go right straight to AP Calculus." The student has since graduated and attends a prestigious university. So, regardless of the rules, exceptions can and will be made to accommodate.

Teacher Recommendation

Two of the three participants responded that students must be recommended by their teacher for the course. The teacher completes the recommendation prior to the beginning of the registration season. When school counselors meet with each student, they provide the student with the teacher recommendation of the math courses they are to register for in the upcoming school year. Students can choose to adhere to the recommendation or choose an alternative math course selection.

AP Agreement

Miranda recalled the AP agreement policy that she implemented at her school. The AP agreement was implemented as a method to hold students accountable for signing up for an AP course. "We wanted to have students understand that this was a yearlong course. We wanted students to understand the expectations." The AP courses were designed to provide students with an advance level of knowledge and the AP agreement was an instrument to show students the significance of the course. The AP agreement was agreed upon and signed by the student, parent, and teacher to fulfill the requirements of the AP course.

Student Counselor Relationships

The fourth domain, student-counselor relationships, incorporated five themes: importance, trust, connections, alternatives, and race. While speaking with the participants, there was a unanimous response from all three participants to the importance of student-counselor relationships, trust, and connections in the field of school counseling. Commonly mentioned themes were race and alternatives, mentioned by two of the three participants. These established student-counselor relationships allow school counselors to help students be successful throughout their high school career and beyond.

Table 8

Student-Counselor Relationships Domain

	Importance	Trust	Connections	Alternatives	Race
Olivia	★	★	★		★
Miranda	★	★	★	★	★
Robin	★	★	★	★	

Importance

Olivia began the interview by saying, "Our relationship is extremely important because it allows us to help the students in every way possible." She elaborated on the importance adding, "teachers don't have time to do a lot of breaking down and stuff for the kids…we make it a point to meet with every kid…talk about their plans, where they want to go and what they want to do." Olivia shared that they began exposing students as early as possible to post graduation options, "Last week our freshmen took a college trip to a private college and this week they're going to a public UNC System school." The information given on the college tours is better perceived by the students, than if they hear it from their counselors.

Miranda pointed out, "In my job and no matter what high school I'm at, building positive relationships with students is the most important thing." She continued, "The most important

element for a student's growth is to have a positive relationship with their school counselor. That's the bottom line." Miranda also indicated that building the student-counselor relationship required her to "give my best effort every day…do what's in the best interest of students, which is not always, sometimes it's not popular." She concluded that there is nothing magic about creating student-counselor relationships, "Just making people feel important while they're in your presence."

Robin expressed the importance of student-counselor relationships as an outlet for students to unburden their thoughts and circumstances. "You'll learn a lot…this street life, these young kids, you will learn a lot from them, if we just take the time to listen." Also, amid building the important student-counselor relationships, Robin reiterated the importance of empathy in the relationship and being a good listener, "Just listen to what they have to say."

Trust

Although student-counselor relationships may be difficult to develop, the outcome yields many benefits for the student. Sometimes students may not have a support system at home and the school counselor can be that support for them, which includes trust between the two. Olivia related the importance of trust and willingness to listen, "Building relationships is extremely important because if they don't trust you, they will not listen to what you say." Trust works both ways and is imperative to a blossoming student-counselor relationship. She also conveyed, "We just try our best to meet them where they are." Establishing trust from the beginning can only enhance the student-counselor relationship.

Miranda conveyed the importance of building a level of trust, "Because you want students to be able to come and talk with you." She added the following, "When we talk with students, when I talk with students, its's our ethical and legal standard what you say to me is

confidential." Being reminded of their right to confidentiality would, in most cases, allow students to feel more at ease to talk.

Robin expressed that trust was a necessity to form the student-counselor relationship. She continued, "First you gotta build that relationship, so they trust you to gradually start having conversations with them." Relationships cannot be built overnight, nor can trust be earned overnight. Students expect a level of confidentiality with their school counselor, and Robin expressed how students may not have another outlet to convey their situations, "I just think letting them talk a lot of times is good, they just want to be heard." Knowing that what they say to their school counselor will not be shared, gives the student the opportunity to disclose information that may have negatively affected their school performance.

Connections

Student-counselor relationships also allowed counselors to connect with students. Miranda stated, "If you don't build that relationship with them, you'll never be able to connect with them." The connections may look different from one counselor to another, from having gadgets and candy to personalizing the interactions between students. Olivia recalled how she would praise students for doing good, "not just hearing from me when they do bad," and checking in with them on a regular basis. Robin personalized her interaction with the students by remembering their name, which may seem small, but when dealing with the extreme number of students on school counselors' caseload, knowing their name makes a difference. Miranda had a different approach with making connections, which included having items in her office that would put the student at ease, such as, fidget spinners, Pop It toys, candy, and "just making people feel important while they're in your presence," she explained.

Alternatives

While forming student-counselor relationships was important, built trust, and allowed connections to be made, the participants understood that all students were not as open to the interaction. Miranda recalled learning in her counseling practices, “If they’re not comfortable talking to you, don’t take offense to that. Let them know that there are other counselors within the department.” Robin also reminisced about students in the past she was unable to connect with, “I may not be the one for them, and I’m not offended by that. They may want to talk to one of the other counselors and that’s fine.” The participants stressed the fact that while their personalities are not conducive to everyone, students should be able to build a relationship with at least one school counselor in their school’s Guidance Office.

Race

The last theme in the domain of student-counselor relationships was race and how it factored into the dynamics of the relationship. Olivia, being at a predominately Black high school, considered her race as having a positive impact on her student-counselor relationships, because she believed, “they can identify with me.” She also noted that setting good boundaries and being consistent in her communication with students also helped with the improvement of her student-counselor relationships.

Miranda believed her race made forming student-counselor relationships difficult when it came to students who looked like her. She elaborated on the fact that in a small school, you know the families and their background, which could work in your favor, but other times not. When students learned that she had a connection to or knew family members, the level of trust, sometimes, was diminished; however, she would have to remind them that she was bound by legal standards to keep their conversations confidential.

Academic Referral Processes and the Outcomes

The last set of themes in the research examined how school counselors in this study suspected their academic referral processes determined the outcome of students pursuing AP Calculus. The academic referral processes and the outcomes of the participants classified five themes, three were dominant, as they were mentioned by all three participants: methods, encouragement, and benefits. One common theme between two of the three participants was awareness. The last theme, partnership, was only mentioned by one of the participants. Using each of these themes, school counselors outlined how their approach to advising students had an impact on the outcome of their decision to take AP Calculus.

Table 9

Academic Referral Processes and the Outcomes Domain

	Methods	Encouragement	Benefits	Awareness	Partnership
Olivia	★	★	★	★	
Miranda	★	★	★	★	★
Robin	★	★	★		

Methods

Academic referral processes involved the methods implemented by school counselors when advising students about which courses to choose for the upcoming school year. These courses are contingent upon, and must align with, the students' chosen pathway: career and technical, college transfer, or cooperative innovative high school (NCDPI, 2022). Methods applied by the school counselors in this study include, following the teacher recommendation, consideration of the students' current grades and test scores, meeting with academic departments, curriculum nights, and individual student registration meetings.

Each method had its own significance, for example, following the teacher recommendation because teachers had witnessed the students' performance in their classroom all

semester and had the best insight to their ability. The significance of consideration of current grades and test scores provided counselors with the students' ability in the class. Olivia specified, "We also allow room for choice if the student and parent want to take the class, but they are not recommended, we allow them to take it if they have completed the prerequisites." The significance of meeting with academic departments, Miranda elaborated, "I ask are there any changes coming from the state? What do the prerequisites look like for our AP math classes? Are they equitable? Are they fair? Are they excluding some students?" These questions, as difficult as they may seem, are vital to making sure all students have an adequate chance of enrolling in AP Calculus. The significance of the curriculum nights was to provide parents with a setting to learn about the courses their child has access to take, expectations of the course, and meeting the teacher of the course. The significance of the individual student registration meeting was to provide students with information and answer any questions they may have about the courses to take in the next school year.

Encouragement and Benefits

The next two themes, encouragement and benefits, were mentioned collectively by each school counselor within the study. When students are choosing the courses for their next school year, reassurance is necessary to build their esteem. Olivia expressed that she is realistic with students and tells them, "If you have ability to do, they gotta be willing to do it." There are students who could do AP Calculus, but they are not willing to do it because of the time commitment. The ability and willingness go together, because AP Calculus is a yearlong course where students must give up two blocks on their schedule, students must be dedicated to persevering to the end.

Students are so fixated on grades; Miranda pointed out, “the key for them to understand from their postsecondary goals, how important AP Calculus is and how it can benefit them and makes them more competitive getting to the college of their choice.” This method of encouragement related to getting students to “look past just the grade and more about the experience and what they are going to learn and use that long term.” She also added that the data says that minorities are not good in math, but “we can be, we have that potential.”

Robin similarly commented on her past approach to students and the benefit of taking AP Calculus, “I would encourage them. Just the benefit of them doing a college class, and even if you don’t pass the exam, you have the experience. And once you get to college, it’s going to be easier.” She also conveyed that she gave students alternative options to AP Calculus, “I encourage them to do their math at the community college.” She pointed out the multiple benefits of taking this option, “They don’t have to take the AP exam in May…just gotta make a 75 or better in that class to get college and high school credit.” This alternative also provided students with the college experience while classified as a high school student.

Awareness

The school counselors in this study named awareness as a common theme of their academic referral processes; ways to create knowledge about AP Calculus and change the perception of the course. The curriculum nights, set up by the school counselors, allowed teachers to distribute information and clarify the expectations of courses offered to the parents and students. The curriculum nights were used as a platform to bring awareness to the importance of AP Calculus and in the words of Miranda, use of “marketing tools and videos to help sell the AP program.” Information from the curriculum night and communication between

the school counselor, teacher, and parent, were used to try to reestablish the narrative behind AP Calculus.

Partnership

The last theme, partnership, highlighted by Miranda, emphasized that others must intervene to promote Black students enrolling in AP Calculus. While Miranda felt incredibly influential when advising students to enroll in AP Calculus, she realized that enlisting parents and collaborating with teachers could yield an additional enrollment outcome with some students. She also alluded to the recruitment of students who have gone through the course and have them to speak with students who are still contemplating the decision. Although she could give the student encouragement and point out the benefits, the representation from someone who has completed the course could be more beneficial to the student.

Research Questions and Thematic Alignment

The first research question from the study addressed the school counselors' perceptions of their relationship with Black students and how it influenced their course taking patterns. The second question concentrated on the school counselors' perceptions of their relationship with the parents/guardians of Black students and how it influenced their course taking patterns. Third question focused on the referral processes of school counselors and its influence on Black students to enroll in AP math courses. The last question examined the school counselors' perception of Black students and how the perceptions influenced their referral processes. The twenty-seven themes, extracted from the five domains of data, were developed from the data analysis aligned within the four research questions. The next section will answer each research question based on the themes from the data.

Research Question 1

The first research question explored the following: How do school counselors perceive their relationship with Black students as in influence of the course-taking patterns of Black students? The school counselors' ability to build relationships with their students emerged throughout the domains of characteristics of a school counselor, expected duties of a school counselor, and the student-counselor relationship. When participants were asked about the characteristics of a school counselor, the qualities provided were classified by what they observed as their own behaviors. The behaviors of empathy, open-mindedness, flexibility, and knowledgeability were represented in their choice to become a school counselor and why they continue to do their job despite issues that may arise. Also, the expected duties of a counselor pinpointed the themes of serving the holistic needs of students and being a resource and advocate for the students. Serving the holistic student embodied the participants' belief that student success cannot be achieved until the physical and mental needs are fulfilled.

The domain of student-counselor relationships, furthermore, clarified how school counselors perceive their relationship with Black students as an influence of course-taking. The importance of building student-counselor relationships is to form a bond of trust between the student and school counselor. Olivia had already established that trust is required for students to listen to what you have to say. The trust that is formed allows the students to know that their counselor will guide them in the right direction to be successful. Also, student-counselor relationships create a personal connection between the student and school counselor, which supports their academic success in AP Calculus.

Research Question 2

The second research question explored the following: How do high school counselors perceive their relationship with Black students' parents/guardians as an influence of the course taking patterns of Black students? The theme of advocacy uncovered there was inadequate communication with parents in response to how the school counselors responded to the question. Advocacy was only mentioned by one of the three counselor participants as an expected duty of a school counselor, referenced mainly with teaching students how to communicate with their parents to strengthen their relationship.

The expected duty of being a resource involved school counselors endeavoring to get parents involved in their children's education. School counselors provided resources to parents to help them understand the changes in the curriculum and school policy that parents may not have known. One of the biggest hurdles school counselors had with Black parents, in the past, was to advocate for the AP courses and get them to understand the benefits provided to their child when taking AP courses. Miranda recalled that parents would have the mindset, "I just want my kid to graduate…My kid really doesn't need an AP class, my kid's going to this college. Well, all colleges would accept AP credit. Um, so yes, it is definitely the counselor's role to help educate students, parents and teachers."

Research Question 3

The third research question explored the following: Do high school counselors' referral processes with Black students influence their decision to enroll in advanced placement mathematics courses at their school? The outcomes of school counselors' academic referral processes and the criteria to become an AP Calculus student were domains that developed during this study which created themes to aid in the response of this research question. There were

methods that school counselors implemented before they had their academic advising sessions with students that included having the honest, but challenging, conversations with teachers about equitable and fair policies surrounding AP Calculus. The school counselor participants were always putting the needs of their students as their top concern and sometimes that meant going against teachers to advocate for their students' place in AP Calculus. School counselors also provided the encouragement that empowered students to realize and believe that they could be successful in AP Calculus. The encouragement reminded students of their ability to succeed and to consider the benefits of the course – receiving college credit, experiencing a college level course, and breaking the stereotypical mold of what constitutes an AP Calculus student.

The criteria to become an AP Calculus student can oftentimes separate students racially. Some teachers embrace the traditional, old-school mentality that if a student does not fit their mold academically or socially then they can't be taught, especially AP Calculus. Miranda elaborated on the fact, "That's where we had to have some conversations about, um, the prerequisites and looking beyond the numbers, looking beyond the data and really pursuing those students that had the potential." The school counselor participants believed that exceptions to the rule must be made to secure a space for Black students in an AP Calculus class.

Research Question 4

The fourth research question explored the following: How does school counselor's perceptions, regarding Black students, influence their referral processes when counseling Black students? This study examined school counselors through the in-depth interviews of three, female, Black school counselors. Their perceptions, when counseling Black students, was distinctive between all three participants ranging from racial identity to personal identity to counselor identity.

Olivia shared, “I don't really think it differs because I look at all the students equally on an individual basis, so it doesn't matter if they're Black, White, Hispanic, Asian, I meet them where they are and see what their strong points are. I see them all as equals and I try to meet them where they are and help them the best way possible.” During our interview, she shared that she felt like it was easier to form student-counselor relationships with her Black students because “they can identify” with her. Based on her racial identity, Olivia found it alleviated some of the difficulties that could occur when establishing student-counselor relationships.

Miranda credited her background and passion in career counseling as aiding her ability to advise students in mathematics. She elaborated on changing the narrative that Blacks are inferior when it comes to math and making the case for how Blacks have the potential to love math and be able to use their experience in AP Calculus in the long term. Miranda also believed that her working in County B supported her personal sense of identity because she had personal connections with the students’ families. She had the ability to use her sense of racial and personal identities to code switch, when needed, from school counselor to “Black Mama mode” with Black students. This switch in personal identity had effective results on Black students because they knew the school counselor would not back down from helping them, just like their own mother.

Robin felt that encouraging students to explore alternatives to AP Calculus, such as taking courses at the community college would better serve the students rather than have them be unprepared when they leave high school and pursue their post-graduation plans. She commented that she had witnessed several students struggle in their college courses due to the lack of preparation and rigor in their high school courses. Her identity as a school counselor would not

allow her to continue setting her students up for failure; therefore, providing them with the alternative of community college classes was the best option.

In this study, overall, the counselors' sense of identity – racial, personal, and counselor – changed when counseling Black students. They seemed to be more acclimated to the culture of their Black students. During the interview, Olivia emphasized how important it is to have "the ability to connect with people." The connection between school counselor and students is a key component for establishing a thriving relationship. The study also exhibited how the sense of counselor identity in Miranda changed to parental when interacting with students; she indicated how she could go "Black mama mode" with students, when needed. Lastly, the sense of counselor identity in Robin changed when weighing the options for Black students to enroll in AP Calculus versus a community college course.

Chapter four presented the findings from this study by introducing the participants, extracting domains and themes from the data, and using the data to answer the research questions guiding the study. In the next chapter, I will give an overview of the study, discuss the findings and how they are associated with aforementioned educational research. Further suggestions for the study and proposed next steps for the research will also be included.

CHAPTER FIVE: DISCUSSION

Introduction

Chapter five is arranged in the following manner: a) evaluation of the literature, b) recommendations for school practitioners, and c) suggestions for potential research opportunities. This chapter opens with the comparison of the findings from Chapter Four to the literature review from Chapter Two and how the data aligns with the literature or creates a new path of research. The influence on the field of education examines how the findings from the study express the importance of student-school counselor relationships, significance of academic referral processes, and the value of school counselors' perceptions. This chapter also suggests recommendations for high school students and their parents, high school counselors, high school mathematics teachers and high school principals. This study closes with implications for further research to improve the number of Black students enrolling and successfully completing AP Calculus.

Chapter One of the study was guided by the theoretical framework of critical race theory to examine the following research questions: a) *How do high school counselors perceive their relationship with Black students as an influence of the course-taking patterns of Black students?* b) *How do high school counselors perceive their relationship with Black students' parents/guardians as an influence of the course-taking patterns of Black students?* c) *Do high school counselors' referral processes with Black students influence their decision to enroll in advanced placement mathematics courses at their school?* d) *How does school counselors' perceptions, regarding Black students, influence their referral processes when counseling Black students?*

Research Question 1. The study revealed that high school counselors do perceive their relationship with Black students as an influence of the course-taking patterns of Black students. The high school counselors in this study emphasized the impact of their student-counselor relationships as the basis for forming trust and connections with students. Their ability to be empathetic to students, open-minded to the information shared by the student, and flexible with their time were all characteristics they described as a school counselor. These characteristics of a school counselor were important in the establishment of the student-counselor relationship. Fostering the student-counselor relationship simultaneously encouraged the students. The importance of their student-counselor relationship created the foundation of trust, which developed the rapport between them and the student. Before school counselors could assist students with their course selections or influence their course-taking patterns, the foundation of the student-counselor relationship must be created.

Research Question 2. The study also revealed that high school counselors' relationship with Black students' parents/guardians was limited as an influence of the course taking patterns of Black students. One of the high school counselors mentioned how school counselors were instrumental as the bridge between parents and students; however, the major goal of the parents was to get their child graduated from high school. Since AP Calculus was not a graduation requirement, there was no dire need for the course. While school counselors provided parents with resources, this was not substantial to the influence of Black students' course-taking pattern.

Research Question 3. While the approach to academic referral processes taken by the school counselors in my study were admirable, they were not conducive to accomplishing the increased enrollment of Black students in AP Calculus. The study showed the school counselor participants were advocates for their students with the teachers; however, getting the students to

buy-in was not the outcome. The high school counselor participants implemented various methods to break the cycle of Black students' fear of AP Calculus; however, the alternative – mathematics courses at the community college – was more favorable among most Black students.

Research Question 4. Many Black students have gone through their secondary education with very little interaction with authority figures of a race like their own. This study exhibited that the school counselor participants represented authority figures in education whose sense of racial, personal, and counselor identities aided the connection to their students. Each counselor appeared to utilize their sense of racial, personal, and counselor identities when counseling their Black students, which allowed them to benefit their students as best as possible. Black students struggle to find people that look like them in education, making relationships even harder to build and the need for connection nonexistent. The students at High Schools A and B are supported by well-educated, Black school counselors who have their best interest at hand and will advocate for them with their teachers and parents.

Chapter two arranged literature based on the history of the Black student in U.S. high schools and counselors in a high school setting. Chapter three utilized a qualitative case study as the research methodology to reveal the shared experiences of three Black, female high school counselors. The findings of the participants, as described in Chapter four, are incorporated into twenty-seven themes that were contained within five domains.

Evaluation of the Literature

This study included many associations between the findings in Chapter Four and literature presented in Chapter Two. Connections were drawn between the themes that originated from the data to sections cited in the literature review. Associations occurred between domain

one, characteristics of a school counselor and the purpose of school counselors; domain two, the expected duties of a school counselor and Epstein's (1995) theory of involvement and counselor-principal dynamics; domain three, criteria to become an AP Calculus student and systemic racism, students' course taking patterns and early access to Algebra I; domain four, student-counselor relationships; and domain five, academic referral processes and the outcomes and systemic racism.

Black Students in U.S. High Schools

The beginning of Chapter Two introduced the phrase 'achievement gap' when reference was made to closing the academic achievement disparity between Black and White students on standardized tests by 2010. Gloria Ladson-Billings (2013a) reasoned that the word 'gap' insinuated the cause was targeted to the student, their family/community, and the teacher. This approach to define the disparities between Black and White students left out "structural inequalities" (Ladson-Billings, 2013b, p. 105) that Black students have faced since the United States was founded. Instead of calling it an achievement gap, she expressed it was an 'education debt' and root causes of the disparities were "historical, economic, political, and moral decisions" (Ladson-Billings, 2013a, p.13) generated by society over time.

The historical debt originated at the time of enslavement dated back to 1619 (History.com, 2009), at a time when education was prohibited for Black people (Ladson-Billings, 2006). The absurdity continued, as the outcome of enslaved Black people's toil benefitted educated people in the North. After almost 300 years, Black students could only be educated in segregated schools that depended on outdated textbooks from White schools. In addition, Black students in the South had a shortened school year, interrupted by the dire need to help provide for

the family. Even with the landmark case, Brown v. Board of Education (1954), White people instituted ways to prolong the segregation of Black and White students (Ladson-Billings, 2013a).

The economic debt also stemmed from the educational system mentioned in the historical debt. According to Ladson-Billings (2013a), school funding is impacted by property taxes; therefore, the higher value, suburban, neighborhoods would have the better funded schools. This left urban schools, attended by majority Black students, in impoverished neighborhoods, underfunded and further behind academically. Although these schools would receive additional funding from the government and outside contributors, but they were so considerably behind their suburban peers, the extra money could not fix the inequalities.

The political debt was associated with Black people's participation in the election process. In 1870, the 15th Amendment was ratified giving Black men the right to vote, however, they were still excluded from the act due to various excuses made by white supremacy. Black people were not included in the decision of who administrated the school boards, mayor and governor offices, and the presidency. When the Voting Rights Act of 1965 was passed, 95 yeas later, an effort was made to eliminate the political debt placed on Black people since the 1600s (Ladson-Billings, 2006). This injustice further placed Black people at a disadvantage with their White counterparts, especially when trying to guarantee their children the opportunity of education.

The moral debt, Ladson-Billings (2006) defined, "reflects the disparity between what we know is right and what we actually do" (p. 8). Ladson-Billings (2013a) continued that the moral debt is owed to an entire group of people – Black people – after being denied the opportunity afforded 'all people' in the Declaration of Independence and U.S. Constitution (Ladson-Billings, 2013b). This is the same moral debt that goaded President Kennedy to recommend and President

Johnson to establish affirmative action. President Johnson contended, “it was unfair to keep people shackled for centuries, unshackle them, and then expect them to compete against those who have never known such restrictions” (Ladson-Billings, 2013a, p. 17).

Ladson-Billings did not agree with the term ‘achievement gap’ and with the aforementioned evidence, the term has no place in education. The disparity that has been created between Black and White students was an education debt that has diminished opportunities for Black students. Ladson-Billings (2013a) suggested that the minimum society can do to ensure Black students a quality education is to “provide the kind of public support that is necessary to make the work possible” (p. 22).

Characteristics of a School Counselor

The first domain, characteristics of a school counselor, categorized the qualities the school counselor participants perceived as important for a school counselor to possess, such as: empathy, organization skills, flexibility, creativity, open-mindedness, and knowledgeable of academic requirements. Creativity, in alignment with Amatea & Clark (2005), who indicated that principals’ viewpoint of school counselors was to think outside the box leader. School counselors must be innovative and resourceful when guiding their students.

Expected Duties of a School Counselor

The next domain, expected duties of a school counselor, classified the responsibilities of a school counselor, from the participants’ perspective, as serving the holistic needs of the students, classroom guidance activities, non-counselor duties, resource, advocacy, enrollments, and interventions. Serving the holistic needs of the student included meeting their physical, social, and mental needs before being able to meet their academic needs. As noted in Chapter

two, part of the role of a school counselor was to incorporate an all-inclusive approach to the growth and achievement of Black students (Ohrt et al., 2009).

The expected duties theme also involved how the school counselor participants' time could be interrupted by non-counselor duties assigned from the school administrators. These duties would have the ability to skew the purpose a school counselor to the student. Counselors would lose time providing direct services for the students, which Evans et al. (2011) would define as the inappropriate use of their time and skillset. Distinguishing differences between the responsibilities of the school counselor and the school administrator promotes a successful and functioning school (Ponec & Brook, 2000). Also, research (Young et al., 2013; Rock et al., 2017) expressed the benefits of collaborative school counselor-principal relationships to include improvement in student achievement and the overall school environment.

Also, being a resource and an advocate for the parents were expected duties of the school counselor; both areas in addition to the holistic needs of the student were like Epstein's (1995) theory of involvement, mentioned in Chapter two. His theory comprised a partnership between the school, family, and community to ensure the academic success of the student. Both the theme and the theory were working toward the same goal and involving the same stakeholders in the process. The importance of advocacy was also emphasized in the role of school counselors by the ASCA (2018) to promote fairness and access to courses like AP Calculus.

Criteria to Become an AP Calculus Student

Domain three, criteria to become an AP Calculus student comprised of completion of prerequisite courses, teacher recommendation, exceptions to the rule, and AP agreement shared commonalities with course taking patterns and early access to Algebra I. The prerequisites listed in the third domain align with the course taking patterns from the literature review (Brown et al.,

2018; U.S. Department of Education Office for Civil Rights, 2018). While the pathway to AP Calculus is not unique, early access to Algebra I/Math I in the eighth grade (Berry, 2008; Doughtery et al., 2015; Smith, 1996) would increase the likelihood of Black students completing the prerequisites for the course.

The criterion of teacher recommendation to enroll in AP Calculus has created a boundary for the class that excludes certain students from the course (Martin, 2019), especially when those exclusions may not be solely based on academic ability. The exception to the rules that the school counselor participants mentioned, AP waivers, was an instrument school counselors used to break the barriers that systemic racism has cultivated in the AP Calculus classroom (ASCA, 2005). Davis et al., (2013) placed emphasis on school counselors' role to invalidate the "institutional barriers" (p. 33) that perpetuates the scarcity of Black students in AP Calculus.

Student-Counselor Relationships

The fourth domain, student-counselor relationships produced the following themes: importance, trust, connections, alternatives, and race. Each theme was related to the literature on student-counselor relationships in Chapter Two. Both, school counselor participants and educational researchers, identified trust as the basis for building strong student-counselor relationships (Bryk & Schneider, 2002; Schneider et al., 2014; Holland, 2015). The importance of student-counselor relationships, as emphasized by the study participants, was to establish connections with the students and improve their academic outcomes. Crosnoe et al., (2004) and O'Connor (2000) mentioned in Chapter Two, the benefits of student-school counselor relationships to include improvement in students' academic achievement and a reduction in disciplinary issues.

The lack of student-counselor relationships for Black students was also cited in Chapter Two throughout the Black School Counselors section. One context debated the need for more Black school counselors (Fletcher et al. 2022), given the fact that only 11% of the school counselors are Black (ASCA, 2020). Fletcher also offered six solutions to increase the number Black school counselors, all that could be implemented with minimal complication. Another circumstance discussed the essential role of Black school counselors to foster a trusting relationship between Black students and the school counselor (Jones, 2021). This article also stressed the importance of Black counselors as advocates for Black students, which strengthens the student-counselor relationship. Najarro (2022) contended how the bias of some school counselors can hinder the academic achievement of Black students and prohibit the student-counselor relationship from forming. Ultimately, an increased number of Black school counselors could improve the student-counselor relationship with Black students, which will improve their high school career and influence post-secondary decisions.

Academic Referral Processes and the Outcomes

The final domain, academic referral processes and the outcomes, constructed the following themes: methods, awareness, encouragement, benefits, and partnership. Miranda's method of asking the difficult questions about prerequisites for AP Calculus attempted to break through the barriers of systemic racism. Ndura et al., (2003) and Ohrt et al. (2009) both expressed the how school counselors are positioned to confront hindrances that close off AP Calculus to Black students. Bringing awareness to the students about AP Calculus cultivated a technique of changing the narrative of the Black student ability to do math (Harris, 2006; Walker, 2007).

The themes of encouragement and benefits did not arise in the literature review; however, these two provided a new viewpoint on reasons for Blacks to enroll in AP Calculus. In many AP courses, it is about the grade, but the school counselor participants expressed the importance of the benefits – competitive edge on college applications and experience of a college course while in high school – of taking AP Calculus. Changing the narrative of who is supposed to take AP Calculus to who can benefit from taking AP Calculus could change the composition of most AP Calculus classrooms.

The methods used by the counselors in this study: following the teacher recommendation, consideration of the students' current grades and test scores, meeting with academic departments, curriculum nights, and individual student registration meetings were all ways the school counselors assisted students in the academic referral process, which did not yield increasing AP Calculus enrollment. Shi & Brown's (2020) study presented data that concluded the way school counselors spent their time and how it affected the likelihood of students enrolling in AP courses. The methods of the participants in my study included the school counselors spending time scheduling (registration meetings and curriculum nights), personal/social/academic/career development (consideration of the students' current grades and test scores), and noncounseling activities (meeting with academic departments and following teacher recommendations). Those methods corresponded to the all three models from the study (Shi & Brown, 2020), which resulted in higher ninth grade retention, lower number of students enrolled in AP courses, and lower percentage of seniors attending 4-year universities. The study (2020) inferred that if school counselors increased the time they spend on college counseling and school/personal problems the outcome of students enrolling in AP courses would increase.

Recommendations

Based on the findings of this qualitative case study, various recommendations were proposed to improve the number of Black students enrolling in AP Calculus. Recommendations for Black high school students, high school counselors, high school principals, and future research were extracted from the findings and are described below.

The first recommendation based on the findings is to educate students, teachers, parents, and school administration of the title change and what the changes indicate for the services provided by school counselors. The title of school counselors has evolved over the past 32 years (Gysbers, 2012; Lambie & Williamson, 2004; Zyromski et al., 2019) from guidance to school counselor; however, many still do not understand the difference between the titles and their purposes. As school counselors, they are not only concerned about getting students into the correct classes, but also the mental health of students, data analysis that yields information on equity within the school (ASCA, 2018), providing services to parents and the community, in addition to other obligations. When students, parents, teachers, and administration lack understanding of the purpose school counselors serve, a disservice is committed. Educating each participant in the roles and purpose of school counselors would provide a strong, working relationship between all parties for the ultimate success of the student.

The second recommendation based on the findings from the study is to extend more professional development for school counselors. The professional development for teachers is rampant at district, state, and national levels, but very inadequate for school counselors (Savitz-Romer, 2019). My recommendation would include monthly workshops for school counselors to participate in, administered by certified counseling college professors, to include, but not limited to, topics that would keep them current with the latest modifications to the counseling standards.

The third recommendation based on the findings from the study is to establish an integrated curriculum that includes school counselor and school principal coursework in preparation programs; a course that both school counselors and administrators must complete in their training before going inside the school. To date, there is no commonality in the coursework in higher education for school counselors and administrators (Boyland et al., 2019, Geesa et al., 2019). It is essential for school counselors and administration to work collaboratively to promote student success and equity within the school, but they can improve their success by being equipped with knowledge of each other's role. Providing an interdisciplinary course within the university-based school counseling and school administration programs would acknowledge the differences between the roles of administrators and school counselors and prevent the misconstruing of expected duties of school counselors from the principal's perspective.

Future Research

This study permitted me to conduct interviews with three Black, female counselors. While I had asked other counselors of different ethnic backgrounds, none were compelled to participate in the study. For future research, I would enlist other counselors of different ethnic and gender backgrounds. I believe the sense of racial and gender identity would have a significant and crucial impact on the academic referral processes of Black students, whether conscious or unconscious.

Due to the pandemic and the unexpected impact that it had on my study, I was unable to go into the schools and observe student-counselor academic advising sessions, as suggested by my committee. The unknown nature of the virus and my high level of risk, if contracted, limited my access. Further research would warrant the observations as another data collection process to strengthen the study.

I would also extend my data collection to include interviews with the school administration about their perspective of school counselors and expected duties. School administration tend to interact with students mostly when it involves disciplinary action, so I would like to observe their interaction with students as it involves their understanding of school counselor services. The feedback from the interviews and observations has the potential to develop an enhanced counselor-administration relationship that would improve the school's role in student success.

Another perspective I would like to include would be Black students and their parents/guardians. I would explore their understanding of the AP Calculus course and their anticipated responsibilities of the school counselor. This perspective would prospectively lead to open dialogue between all stakeholders – student, parent, AP Calculus teacher, school counselor, and school administration – and potentially improve AP Calculus enrollment.

Also, further research would involve a longitudinal research study with a group of Black middle school students and tracking them from sixth grade through their high school career. I would like to observe the advantages of the students taking sixth and seventh grade math, and Math I in the eighth grade. Initiatives would be set in place for these students to have access to math tutoring during the school day, including working to reduce any deficits in their mathematical skills. I would like to monitor their progress to high school and prep them to enroll in Honors Math II, Honors Math III, Honors Pre-Calculus, and AP Calculus, while continuing the math tutoring, if needed. Highlighting their outcomes on classroom and standardized tests, using the feedback as a deciding factor of the impact of universal access to Math I in the eighth grade.

Additional research would be case studies of AP Calculus teachers and their personal views of how to work with school counselors to recruit more Black students to enroll in AP Calculus. I would explore the perspective of AP Calculus teachers and what constitutes an AP Calculus student. The study would involve discovering solutions to alleviate the disbelief of student readiness and methods to improve the disparities in students' mathematical skills.

Conclusion

This study examined four objectives: high school counselor perceptions of their relationship with Black students, high school counselors' perceptions of their relationship with parents/guardians of Black students, high school counselors' approach to academic referral processes, and high school counselors' perceptions when counseling Black students. These four objectives generated five domains (a) characteristics of a school counselor, (b) expected duties of a school counselor, (c) criteria to become an AP Calculus student, (d) student-counselor relationships, and (e) academic referral processes and outcomes. From each domain, various themes were presented: 1) empathetic, 2) organized, 3) flexible, 4) creative, 5) open-minded, 6) knowledgeable, 7) serving the holistic needs of students, 8) classroom guidance activities, 9) non-counselor duties, 10) resource, 11) advocacy, 12) enrollments, 13) interventions, 14) complete prerequisite coursework, 15) teacher recommendation, 16) exceptions to the rule, 17) AP agreement, 18) importance, 19) trust, 20) connections, 21) race, 22) alternatives, 23) methods, 24) awareness, 25) encouragement, 26) benefits, and 27) partnership.

Through the findings of this study, recommendations for school counselors, students, and administration were provided. The recommendations could be used to improve the overall student-counselor relationships while strengthening the counselor-administration relationship to cultivate the academic success of Black students. Changing the narrative of Black students in AP

Calculus can be done, especially when school counselors, teachers, principals, and students work together.

Advocacy has always been a component of school counselor standards, this study helped to illuminate the areas in which school counselors can extend their support. Working together opens the door for all participants, students, teachers, school counselors, and administrators to work toward an equitable outcome that promotes increased enrollment and success in AP Calculus. When Black students are seeking their place in AP Calculus, they should seek guidance from their school counselors.

What does this study mean for school counselors? The negative label of **G**atekeeper for AP math courses can be removed. They can eliminate **U**nbiased perceptions of Black students. They can positively **I**nfluence the connotation of AP Calculus. They can provide **D**irection to Black students with necessary college counseling. They can **A**dvocate for fair treatment and equal enrollment of Black students in AP Calculus. They can help Black students **N**avigate the path toward AP Calculus. They can be **C**ulturally responsive by discovering and employing the different social qualities of their students to increase their success. They can utilize **E**quity by understanding the problems faced by Black students and offering resources to help overcome the obstacles.

What does this study mean for Black students and their parents/guardians? Black students should foster a relationship with their high school counselor on day one, which could benefit their high school career and post-graduation plans. Black students can be successful in math, including AP Calculus with the correct support systems in place. Parents of Black students should understand the importance of the AP Calculus course. This course would allow their child to receive access and experience with a college course while still in high school. Also, AP

Calculus is beneficial to their child – allows their child to develop critical thinking skills that can be implemented well beyond the actual AP Calculus classroom.

After my nine-year tenure as a high school math teacher, it perplexes me that Black students are still struggling to find their place in AP Calculus. I know that advocacy starts in the classroom, but this study stressed the intricate role school counselors have when influencing students and their parents on the importance of AP Calculus. This study also enlightened my belief that teachers and school counselors have an obligation to collaborate for the greater good of the student. Emphasizing the G.U.I.D.A.N.C.E. Black students can receive from their school counselor reminded me that I have a lot of work to complete with school counselors, other math teachers, Black students, parents, and school administration that can result in the progressive growth of Black students' AP Calculus enrollment.

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APPENDIX A: INTRODUCTION LETTER TO SCHOOL COUNSELORS

My name is Jennifer Johnson and I am a PhD Candidate at UNC Charlotte in the doctoral program of Curriculum & Instruction with a focus on Urban Education. I am in the last year of my doctorate program, with my dissertation being the last requirement to fulfill.

My research stems from an environment, which I have experienced too often—being the only African American student in my Honors and AP math classes. Therefore, I would like to interview school counselors with the following eligibility criteria: at least three years of experience; consistent contact with freshmen and sophomore students; collaboration with middle school counselors; serve in an urban emergent school district. The interviews will be audio recorded and questions will ask about their personal experiences with the academic advising of African American students with their mathematics course selections.

Recordings will be temporarily stored on my laptop as I conduct the interview, then interviews will be moved to my UNC Charlotte Google Drive that is not synced to my desktop, laptop, or mobile device. Transcription will be performed immediately after the interview. Pseudonyms will be used to label folders in my password protected, UNC Charlotte Google Drive, which is where all transcriptions and audio recorded interviews will be housed. Audio recordings will be destroyed after participants have completed member checks. The pseudonyms referenced above will also be used in my dissertation. After the successful defense of my dissertation, all transcribed interview data will be destroyed.

Interviews are expected to be 45-60 minutes maximum. The interviews will take place during a time at the preference of the school counselor; therefore, I will not interfere with your work duties.

Thank you for your time,
Jennifer Johnson, Primary Investigator
Doctoral Candidate, PhD Curriculum & Instruction: Urban Education
University of North Carolina at Charlotte
jnjohnso@uncc.edu
704-682-0455

Dr. Chance Lewis, Faculty Advisor
Professor
University of North Carolina at Charlotte
Chance.Lewis@uncc.edu
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APPENDIX B: CONSENT FORM FOR SCHOOL COUNSELORS

Department of Middle, Secondary, and K-12 Education
9201 University City Boulevard, Charlotte, NC 28223-0001

Consent to Participate in a Research Study

Title of the Project: Need Help Finding Your Place in AP Calculus? Seek G.U.I.D.A.N.C.E.
Principal Investigator: Jennifer Johnson, Doctoral Candidate, UNC Charlotte
Faculty Advisor: Dr. Chance Lewis, Professor, UNC Charlotte

You are invited to participate in a research study. Participation in this research study is voluntary. The information provided is to help you decide whether or not to participate. If you have any questions, please ask.

Important Information You Need to Know

- The purpose of this study is to: analyze school counselors' relationship with African American students; analyze academic advising practices used by high school counselors when interacting with African American students; and analyze school counselors' sense of identity in regard to African American students. Through the interview responses, I will document common themes in order to provide all school counselors with academic advising practices to implement that will help to increase the enrollment of African American students in AP Calculus and their successful completion of the course.

- I am asking licensed school counselors with at least three years of experience that have consistent interaction and/or contact with freshmen and sophomore students, collaborate with the middle school in regard to high school course selections, and serves in a public school within NC. I am asking the school counselor to complete an hour-long face-to-face interview about their advising practices with students.

- Some of the questions I'll ask you may be considered personal or sensitive. You may choose to skip a question you do not want to answer. You will not personally benefit from taking part in this research, but our study results may help us better understand how school counselors can better serve African American students.

- Please read this form and ask any questions you may have before you decide whether to participate in this research study.

Why are we doing this study?
Solutions will be offered for school counselors, including methods to improve the relationship between school counselors and African American students and their parents/guardians in addition to enhancements intended to enrich counseling practices used with African American students.

Why are you being asked to be in this research study?
You are being asked to participate in this study because you are a licensed school counselor with at least three years of experience; you have consistent interaction and/or contact with freshmen and sophomore students; you collaborate with the middle school in regard to high school course selections; and you serve in a public high school within North Carolina with an urban emergent and/or urban characteristic school—meaning the school has characteristics and challenges, such as lack of resources, limited access to highly qualified teachers, and low academic development of students.

What will happen if I take part in this study?
If you choose to participate you will complete a one-hour face-to-face interview with in-depth questions pertaining to your academic advising practices. I will send you a transcript of the interview for you to verify the recorded responses are correct.

What benefits might I experience?
You will benefit indirectly from being in this study, because your current and upcoming African American students will have access to more culturally relevant school counselors. You are now more aware of the advising practices and how African American student enrollment in AP Calculus was hindered and be able to change it.

What risks might I experience?
The questions I'll ask may be personal or sensitive. For example, I'll ask you about the types of experiences you've had when advising African American students for mathematics course selections. You might experience some discomfort when answering these questions. I do not expect this risk to be common and you may choose to skip questions you do not want to answer.

How will my information be protected?
You will be asked to provide your email address for the study, which will be used to link the transcript to your interview for transcript verification purposes. Interviews will be stored on a password-protected laptop. The email will be sent in confidential mode to each participant for their input of whether their responses to the interview questions was precise. To protect your privacy (identity), I'll assign a study ID code to your interview question responses. Your name and school name will be replaced with a pseudonym and the geographical location of your school will not be released. Once all data collection is completed and analyzed, I will delete your email address. While the study is active, all data will be stored in a password-protected laptop that can only be can be accessed by the primary researcher. Only the research team (principal investigator and faculty advisor) will have routine access to the study data.

How will my information be used after the study is over?
After this study is complete, study data will be destroyed.

Will I receive an incentive for taking part in this study?
There will be no incentive for taking part in this study.

What are my rights if I take part in this study?
It is up to you to decide to be in this research study. Participating in this study is voluntary. Even if you decide to be part of the study now, you may change your mind and stop at any time. You do not have to answer any questions you do not want to answer.

Who can answer my questions about this study and my rights as a participant?
For questions about this research, you may contact Jennifer N. Johnson, jnjohnso@uncc.edu, 704-682-0455 [Primary Investigator] or Dr. Chance W. Lewis, Chance.Lewis@uncc.edu, 704-659-6842 [Faculty Advisor].

If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the Office of Research Compliance at 704-687-1871 or uncc-irb@uncc.edu.

Consent to Participate

By signing this document, you are agreeing to be in this study. Make sure you understand what the study is about before you sign. You will receive a copy of this document for your records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

I understand what the study is about, and my questions so far have been answered. I agree to take part in this study.

_____
Name (PRINT)

_____ _____
Signature Date

_____ _____
Name & Signature of person obtaining consent Date

APPENDIX C: INTERVIEW PROTOCOL

Opening Questions

a. Good (morning, afternoon, evening), how are you? Please allow me to tell you a little about myself.

b. Would you tell me a little more about yourself - including, but not limited to, your number of years as a school counselor, the types of schools you have worked at, etc.?

Background Questions

The next set of questions is to get to know more about you as a school counselor. I was a classroom teacher for nine years—people always ask me why I went into teaching—so this section of questions is along the same lines, so I would like to see what inspired you to go into the field of school counseling.

a. How did you decide to become a school counselor, as opposed to another pathway of counseling?

b. Did you have a school counselor or counseling professor who inspired you to choose your career? Would you mind elaborating on that person and the story behind your career choices?

c. What do you think are the characteristics of a school counselor?

d. What does a typical day in the school counseling department at your school look like? How does it differ from other schools in the district/county/state/nation?

e. What are the expected duties of a school counselor? Are higher expectations set for some duties than others?

f. How often is professional development and/or training offered for school counselors? What areas are covered during these sessions?

g. Would you elaborate on any areas of your career that you wish, allowed more professional development or training?

Questions about AP Calculus

So, let's talk about AP Calculus at your school and what you may have noticed at other schools within the district.

a. Could you describe the representative demographics of the AP Calculus class at your school? How are they similar or different from other schools in your district/county/state/nation?

b. Would you describe the criteria students must meet in order to enroll in AP Calculus? Are these criteria enforced at the state-, district-, or school-level?

c. How are students who meet the above criteria actually placed into AP Calculus? Are students notified that they are eligible to take AP Calculus?

d. If students do not meet the predefined criteria, are exceptions ever made to accommodate? If so, how would that process look?

Questions about Relationships

So, now let's talk about student-counselor relationships and the purpose they serve in your line of work.

a. Please explain how important you think the student-counselor relationship is in your job?

b. How do relationships factor into the success of your counseling sessions with students?

c. Are some relationships harder to establish with some students?

d. Do you have methods that you implement to create relationships with your students? Could you please elaborate on those methods?
e. How well do those methods work?
f. Are there times when students are not willing to let you in?
g. What happens in those instances?

Questions about Academic Advising

So, going more into my research agenda, these questions will ask about policies and/or guidelines as they pertain to the school counseling department and the counseling field in general.

a. What specific counseling methods are implemented in the daily practices of school counselors when it comes to academic advising for students about math course recommendations? Is there a generalized script or set of processes?
b. Do you think these methods could potentially prevent a student from pursuing AP Calculus? Why or why not?
c. How influential would you say you are when it comes to advising students to enroll in AP Calculus?
d. How would you rate your ability to counsel/advise high school students? Does it differ when dealing with students from different ethnic backgrounds?
e. How do you describe, if any, common advising practices school counselors implement when counseling African American students with enrolling in AP Calculus?
f. Do you think those practices may prevent African American students from pursuing AP Calculus?
g. How would you, the school counselor, intervene with African American students to yield an outcome of enrolling in AP Calculus?