REDUCING THE UNDERREPRESENTATION OF BLACK MALE MIDDLE SCHOOL STUDENTS IN HIGHER LEVEL MATHEMATICS COURSES: PRINCIPALS' PERSPECTIVES

by

Jacqueline Hayes Barone

A dissertation submitted to the faculty of
The University of North Carolina at Charlotte
in partial fulfillment of the requirements
for the Degree of Doctor of Philosophy in
Curriculum and Instruction

Charlotte

2023

Approved by:

_____
Dr. Chance Lewis

_____
Dr. Bettie Butler

_____
Dr. Tehia Glass

_____
Dr. Jae Hoon Lim

ABSTRACT

JACQUELINE HAYES BARONE. Reducing the Underrepresentation of Black Male Middle School Students in Higher Level Mathematics Courses: Principals' Perspectives (Under the direction of DR. CHANCE W. LEWIS)

Students in urban schools face a number of challenges including lower enrollment numbers in higher level mathematics courses. This particular challenge has the drastic consequence of increasing the achievement gap and reducing the opportunities available for Black students. Traditionally schools have utilized standardized tests and teacher input to determine placement into these higher level mathematics courses. This research study was a qualitative study designed to focus on the perceptions of middle school principals who have had success in reducing the underrepresentation of Black male students in higher level mathematics courses. Data was collected through semi-structured interviews with successful middle school principals in North Carolina. This research serves to provide insight into what practices middle school principals identify for schools to implement in order to lessen the underrepresentation of Black male students in higher level mathematics courses.

Keywords: underrepresentation, student achievement, assessment

ACKNOWLEDGMENTS

This research study would not have happened without the support and encouragement of my committee. Dr. Lewis, thank you for inspiring me from day one in this doctoral program and encouraging me to “look out the window” and see who needs my help. Thank you also for being proud of me in advance and never giving up as I struggled to be both a principal and doctoral student. Dr. Butler, thank you for pushing me to think differently and challenge all that I was doing as a principal to make sure it is right for my kids. Dr. Glass, your support and belief in me is so deeply appreciated. And, to Dr. Lim, without you and you pushing my thinking, this study would not have happened—you helped me find my “a-ha” moment and see what I was truly passionate about exploring. There aren’t enough words to truly express how much I enjoyed working with each and every one of you throughout my journey. Just know that this is just the beginning, and I will continue to look to each of you for guidance and support as I continue in my role as a middle school principal.

I want to also acknowledge the love, support, and tremendous amount of patience my family, friends, and colleagues (many of whom have become like family) shared throughout both my time in classes and while working on this dissertation. I am beyond blessed to have you all in my life.

DEDICATION

This dissertation is dedicated to the students and staff of Piedmont Open Middle School, an IB World School—past, present and future. My goal as a principal is to be the best I can be for each and every one of you.

TABLE OF CONTENTS

LIST OF TABLES ix
LIST OF FIGURES x
CHAPTER I: INTRODUCTION 1
Overview 1
Statement of the Problem 1
Areas of Success 7
Shifts in Curriculum and Mindset 10
Purpose of the Study 14
Research Questions 15
Definition of Terms 15
Significance of the Study 16
Positionality Statement 17
Summary and Overview of Dissertation 19
CHAPTER II: LITERATURE REVIEW 21
Overview of Review of Literature 21
Background of the Issue of Underrepresentation 21
Connection to Underrepresentation in Gifted Education 22
Mathematics Courses and Tracking 24
Further Causes of Concern Resulting from Underrepresentation 25
Purpose of the Study 26
Theoretical and Conceptual Frameworks 27
BlackCrit Theory 28
Anti-Racism 29
Anti-Deficit 31
Student Perceptions and the Role of Identity 33
Teacher Perceptions 40
School-Based Practices 42
School-Based Practices: Connection to Gifted Education 45
School-Based Practices: Lessons Learned from Across the Globe 47

School-Based Practices Within the United States 50
The Role of the School Principal 52
Gaps in the Literature and Need for this Study 54
Conclusion 55
CHAPTER III: METHODOLOGY 57
Methodology Overview 57
Purpose of the Study 57
Research Design 59
Site of Research 59
Instrumentation 60
Participants 60
Data Collection Methods 61
Data Analysis Methods 61
Risks, Benefits, and Ethical Considerations 63
Limitations 64
Delimitations 65
Trustworthiness 66
Practical Significance and Future Implications 67
Conclusion 67
CHAPTER IV: FINDINGS 69
Participant Profiles 71
Principal 1 72
Principal 2 73
Principal 3 73
Principal 4 74
Themes 74
Theme 1: Relationship Building Within the School Community 75
Theme 2: Creating and Fostering a Diverse School Staff 81
Theme 3: Utilizing a Variety of Data Points in Decision-Making 85
Connection to Research Questions 89

Conclusion 91
CHAPTER V: DISCUSSION 93
Connection of Themes to Current Literature and Research 95
Relationship Building Within the School Community 95
Creating and Fostering a Diverse Teaching Staff 97
Utilizing a Variety of Data Points in Decision-Making 100
Recommendations for Key Stakeholders 102
Principals and School Building Leaders: Make Relationship Building a Priority 103
Parents and Families: Advocate for Higher Placement Levels for their Students 104
District Leaders and Policymakers: Encourage Communication and Collaboration 105
Recommendations for Future Research 106
Explore Professional Development Offered to Principals 107
Research Work Done in Elementary Schools 108
Study the Connection Between Success and Placement Method 109
Conclusion 110
References 112
APPENDIX A: SEMI-STRUCTURED INTERVIEW PROTOCOL 123

LIST OF TABLES

TABLE 1: Piedmont Math Demographics, 2018 4

TABLE 2: Themes and Subthemes Uncovered 75

TABLE 3: Themes and Connections to Research Questions 89

LIST OF FIGURES

FIGURE 1: Charlotte-Mecklenburg Schools' Demographics of Students in Higher Level Courses 3

FIGURE 2: Charlotte-Mecklenburg Schools' Demographics of Students in Gifted Programs 24

CHAPTER I: INTRODUCTION

Overview

Students in urban schools face a number of challenges, including lower enrollment numbers in higher level mathematics courses. This particular challenge has the drastic consequence of increasing the achievement gap and reducing the opportunities available for Black students, creating an opportunity gap. Traditionally, schools have utilized standardized tests and teacher input to determine placement into these higher level mathematics courses. This qualitative research study focuses on the perceptions of middle school principals who have had success in reducing the underrepresentation of Black male students in higher level mathematics courses. Data was collected through semi-structured interviews with successful middle school principals in North Carolina. This research provides insight into what practices middle school principals identify for schools to implement in order to lessen the underrepresentation of Black male students in higher level mathematics courses. As such, the title of this research is named *Reducing the Underrepresentation of Black Male Middle School Students in Higher Level Mathematics Courses: Principals' Perspectives.*

Statement of the Problem

Mathematics classes in K-12 schools in the United States are one of the most segregated places (Johnson, 1984; Stiff & Harvey, 1988), with Black students less likely than their White peers to be placed in higher level mathematics courses in high school. Many programs, policies, and legislations, including curriculum reforms, "algebra for all" movements, No Child Left Behind (NCLB), and the more recent Every Student Succeeds Act (ESSA), have been implemented with little success in decreasing this segregation and

the subsequent opportunity gap (Walker, 2007). Placement into higher level math courses in high school often depends upon prior coursework in mathematics, often as early as elementary school, where student tracking begins, and particularly whether or not students take Algebra 1 in middle school. In researching tracking and its impact on students, Oakes (1992) noted that tracking is neither equitable nor effective, with negative consequences for students including lack of future opportunities and negative effects on peer groups.

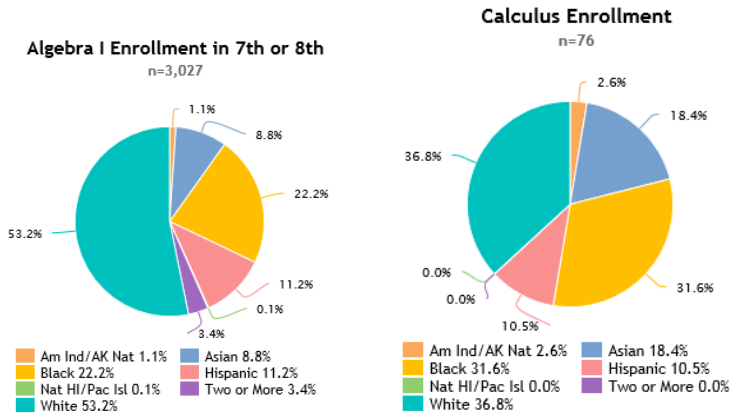
Placement in mathematics courses also often depends upon the decisions of key individuals at the school level. O'Neil (1992) in conversing with Oakes regarding her work on tracking, quoted her as saying "[s]ome grown-ups in the school are making a judgment about how smart the students are" (p. 3). A key decision-maker in these placements is often the building principal. This study examined what successful principals do to influence the enrollment and participation of Black male students in higher level middle school mathematics classes.

Data from the Office of Civil Rights (OCR) (2016) on the enrollment of seventh and eighth grade students in Algebra 1 in the Charlotte-Mecklenburg School (CMS) district has demonstrated that Black students are underrepresented (22.2%) in comparison to their proportion in the district population (42%), while White students are overrepresented (53.2% of enrollment; 31.8% of population). This same underrepresentation continues in the higher level math courses offered in high school, including Advanced Placement (AP) Calculus. In CMS, 31.6% of the AP Calculus enrollment is comprised of Black students. Figure 1 below displays the OCR's 2016 data which demonstrates the underrepresentation of Black students in higher level courses,

including Algebra 1 in 7th or 8th grade and AP Calculus in Charlotte-Mecklenburg Schools.

Figure 1

Charlotte-Mecklenburg Schools' Demographics of Students in Higher Level Courses



Note. From the Office of Civil Rights (2016)

More specifically, at Piedmont Open Middle School, or Piedmont for short, a school in CMS, a concern exists around the lack of opportunities provided to Black males. In 2018, Piedmont had a student population of 1,055 students, 636 of whom were Black (personal communication, 2021). The mathematics course offerings for 8th graders consisted of Math 8, a standard level course, Math 1, an honors level course offering high school credit, and Math 2, an additional honors level course also offering high school credit. In examining the demographics of the 8th-grade math courses, the following data points were found: 157 males were in the 8th grade, and 97 of them (61.8%) were Black/African-American males. In examining a sample of 8th-grade math courses, the following demographics were reported:

Table 1

Piedmont Math Demographics, 2018

Course	Total # of Males in Class	# of Black/African-American Males in Class	Percentage
Math 8	11	9	81.8%
Math 1	13	5	38.5%
Math 2	14	1	7%

These data points, from a school that was celebrated for its success in closing achievement gaps with a North Carolina report card score of A+, are further evidence that underrepresentation is a concern in urban schools. In reviewing Piedmont's data, it is highly evident that Black male students are experiencing an opportunity gap in the area of mathematics.

Darling-Hammond (2010) defined these issues of underrepresentation of minority subgroups as the opportunity gap, which she defines as "the accumulated differences in access to key educational resources—expert teachers, personalized attention, high-quality curriculum opportunities, good educational materials, and plentiful information resources—that support learning at home and at school" (p. 28). In creating a framework around opportunity gaps, Milner (2012), described conditions creating the opportunity gap as "a. color blindness, b. cultural conflicts, c. myth of meritocracy, d. low expectations and deficit mindsets, and e. context-neutral mindsets and practices" (p. 698). These conditions play out in schools across the nation, with educators demonstrating Milner's described behaviors, leading to the issue of underrepresentation.

Schools across the nation have inconsistent demographic distributions, inequitably distributed teacher expertise, and wide ranges in available curriculum, including the use of tracking, which has contributed to a lack of access to higher-level math courses (Darling-Hammond, 2010). Oakes (1992) also uncovered in her work regarding tracking that students in lower tracks often face inexperienced teachers and a lack of access to hands-on experiences in curriculum that lead to deeper understanding of content. In addition to the inequality in the distribution of resources and opportunities, the United States also faces an extreme reliance upon standardized testing. This is in part due to the standards-based reform of the 1990s and also the legislation surrounding NCLB and its more recent iteration, the ESSA. Unlike assessment systems of the past, the new assessment systems have become less performance-based and ultimately used to grade, place, and/or retain students, a practice unlike that of other nations, as Yong Zhao (2007) referenced in his work.

These assessment systems are used to determine mathematics placement and pathways through K-12 schooling. The pathway students frequently follow in math courses in United States schools is a version of tracking. The National Association of Secondary School Principals (NASSP) defined tracking as a "method used by many secondary schools to group students according to their perceived ability, IQ, or achievement levels" (NASSP, 2020). Students are placed in various levels of courses for teachers to best meet their curriculum and instructional needs, often as early as elementary school. Oakes (1992) noted that students are primarily placed into tracks based upon standardized test results and input from previous teachers, often focusing on behavior issues in decision-making.

Once students are entered into higher level math courses such as Math 1 or Algebra 1 in 7th or 8th grades, further opportunities for challenging, higher level courses are provided throughout their career. As Darling-Hammond (2010) noted, tracking exacerbates the achievement gap and creates an opportunity learning gap with a lack of access to high-quality curriculum with opportunities to participate in higher-order thinking activities and lessons. Tracking is an example of what Tuck (2012) would identify as one of the factors creating school pushout. Students who are tracked into lower-level math courses are also at higher risk of dropping out of school and/or not attending college. Consequently, students who dropout of high school are resigned to taking the General Educational Development test (GED) in lieu of earning a high school diploma which is a pathway not typically leading to high-paying career opportunities. Dropping out and pursuing a GED has long-term consequences, including lower employment levels, lower income, lower participation rates in higher education, higher participation in the military, and higher rates of incarceration (Tuck, 2012). Unfortunately, tracking is a common occurrence for urban students in the United States and ultimately leads to an opportunity gap once leaving educational institutions.

The issue of the underrepresentation of Black males in higher level math courses is cause for concern as it exists as one way in which urban schools are pushing students out. Tuck (2012) presented an overview of the current concern in American education—that of school dropouts. She framed her text around the concept of pushouts in place of dropouts as she pointed out that schools and the policies governing schools are forcing students out rather than students electing to leave due to their own lack of effort. Students are being denied placement into higher level math courses and not being placed

on college-bound tracks due to school procedures and policies used to determine placement (Tuck, 2012). The very systems and opportunities that should exist to support Black students are being taken away, and thus they are pushed out of schools. Black students are becoming a subgroup of students which are often not wanted to be counted or considered in accountability measures and, therefore often excluded from opportunities to participate in higher level math courses due to schools valuing high test scores over opportunities for students to try and possibly struggle (Tuck, 2012).

Once students miss out on the opportunity to be in higher level mathematics courses in the K-12 setting, they will frequently miss out on further opportunities in their college education and careers. Specifically, in North Carolina public schools, many students have the opportunity to take Math 1, which is comparable to Algebra 1, in 8th grade of their middle school years. Taking this course in 8th grade allows the student to take Math 2 as a 9th grader, Math 3 as a 10th grader, Precalculus as an 11th grader, and finally, Advanced Placement Calculus as a 12th grader. Without taking Math 1 in 8th grade, students would take Math 1 in 9th grade, Math 2 in 10th grade, Math 3 in 11th grade, and Precalculus in 12th grade, thus not being able to take an advanced level math class in their high school career. This pathway causes students to be excluded from opportunities such as earning college credits while still in high school and taking courses that hold higher grade point average (GPA) weights and help with college entrance.

Areas of Success

Historically Black institutions have found success in preparing students for careers in Science, Technology, Engineering, and Mathematics (STEM) fields, thus proving it is not a lack of ability but rather a lack of opportunity that is furthering

achievement and opportunity gaps. Walker (2007) shared a 2005 study by the Southern Education Foundation, which found the following key elements when investigating successful STEM preparation programs in historically Black institutions:

- Intense, personal introductory programs for new students
- High levels of counseling, mentoring, and guidance
- Rigorous interactive instruction
- Meaningful research experiences and internships
- Hospitable, caring campus climates

This study sought to find from successful middle school principals if any of these elements had been implemented at the middle school level and not just at universities. In the K-12 setting, the principal is responsible for such practices as creating structures that allow these elements to happen within the school setting, setting practices that become routine for all stakeholders to implement, and influencing policies that require these elements to occur (Sergiovanni, 2001). The leadership in place in schools can make these changes happen.

Darling-Hammond (2010) also highlighted the success that other countries have found, including Finland, South Korea, and Singapore, who have focused their work on creating productive teaching and learning systems, expanding access, and building the capacity of teachers. Unlike many schools in the United States, Finland has eliminated tracking and created leaner curriculum standards that promote creative thinking and students managing their own learning. South Korea has expanded access to all by removing entrance exams and raising standards for teacher certification. They also promote a curriculum that is whole child and inquiry-based. Singapore has had success

with the belief "teach less so they learn more" (Darling-Hammond, 2010, p. 185). Some may argue that these countries do not have nearly the heterogeneity of students in the United States, thus leading to these successes; however, little research exists to prove that these strategies, including providing access to all, do not work with heterogeneous classes.

All of these countries, and others that Darling-Hammond has researched and found to be successful share the common practices of adequate and equitable funding, eliminating entrance exam systems for tracking, revising their national standards and curriculum, developing policies to build strong teacher education programs, supporting ongoing teacher learning, and pursuing consistent, long-term reforms. As Darling-Hammond pointed out, successful countries have a strong focus on teacher preparation and development which is inconsistent in the United States. Some schools and districts have achieved success, yet it is not systematic in the United States, with poorer school districts tending to have fewer resources and work dedicated to developing teachers.

Darling-Hammond's research of successful schools across the globe has found commonalities that, if included in a redesign of schools, will lead to equal access and success for all. These strategies include smaller class units, keeping students together in common groups, teams of teachers, common planning for teachers, involving staff and parents in decision-making, and cooperative learning for all (Darling-Hammond, 2010, p. 239). With an intellectual, problem-based learning curriculum and personalized instruction, the unique needs of all learners can be met. While Darling-Hammond's work focuses on countries often lacking the diversity of the United States, much can be learned and then implemented in more diverse, heterogeneous environments.

Within the United States, middle schools that have seen success in closing achievement and opportunity gaps and creating a more diverse population of high-level mathematics students are often recognized as *Schools to Watch* by the National Forum to Accelerate Middle-Grades Reform. Ellis (2011) wrote of characteristics that these schools exemplify, including academic excellence, developmental responsiveness, social equity, and organizational structures and processes. The social equity standards, in particular, highlight the schools' work to encourage positive options and provide them for all students. With identification plans that meet the needs of individual students and provide fair, democratic processes, schools are certain to decrease the underrepresentation of Black male students in higher level math courses.

One of the greatest benefits of using the practices identified in *Schools to Watch* is that they raise student achievement. These practices meet the developmental responsiveness, social equity, and organizational structures and processes indicators of schools identified as *Schools to Watch* and have proven results of closing testing achievement gaps. Ellis (2011) cited data from CMS identified as *Schools to Watch.* Schools including Carmel Middle School, Crestdale Middle School, Jay M. Robinson Middle School, and Mint Hill Middle School all had a higher percentage of Black students passing both the Math and Reading End of Grade (EOG) Exams than both the school district and state in 2008-2009.

Shifts in Curriculum and Mindset

Asante (2017) wrote of revolutionary pedagogy in which educators implement a curriculum that "seeks to overturn ordinary thinking, methods, and practice of creating and delivering knowledge to children" and utilize an Afrocentric curriculum as opposed

to the standard Eurocentric curriculum that is found in schools across the United States (p. 17). While much of his work is centered around humanities courses and can easily be embedded through reading and writing opportunities, the key points he described in terms of revolutionary pedagogy could also be instrumental in enacting change in mathematics and other STEM-related courses. Asante (2017) advocated for teachers and curriculum writers to start with origins and definitions so students can learn the material in context. It is essential that students understand mathematics from an Afrocentric standpoint and know the true history of the ancient Egyptians' contributions to mathematics and sciences if they are going to truly see themselves in the work they are doing and that students know their own true history.

Diop (1974) wrote of the miseducation or modern falsification of history and noted that advancements in mathematics and sciences were attributed to the Greeks and not the Egyptians. For students of color to believe in themselves and be confident to pursue higher level mathematics, they must be exposed to a curriculum and pedagogy that centers around their culture and represents their truths. An important role for schools is that they begin to examine the systemic issues that are keeping Black males out of higher level math courses and remove any mindsets and/or beliefs that the underrepresentation is due to students' own lack of effort. Additionally, educators need to revisit the purpose of schooling and move from a transferring of knowledge to a preparation of students for living in an interconnected global world (Asante, 2017).

As Audre Lorde (1984) wrote, "the master's tools will never dismantle the master's house" (p. 112). Therefore, it is necessary that schools explore solutions outside of the typical standardized assessments and identification plans that have traditionally

existed for school officials, those considered in power, to determine student placement in courses. With only the traditional tools in place in schools, those of the oppressor, change is not possible. Schools need to look beyond the traditional "tools" that have been utilized in the past. Asante (2017) advocated for revolutionary pedagogy, moving schools away from the use of standardized tests and embracing resources, including portfolios, optional tests, and classroom grade point averages. With identification plans to determine mathematics placement that meets the needs of individual students and provides fair, equitable processes, schools are certain to decrease the underrepresentation of Black male students in higher level math courses.

Many educators are of the mindset that placement is due to effort on the part of the student and not a fault of the system. This concept mirrors that of Royce (2019), who talked of different viewpoints on poverty as either being based on the individual and their decision-making or based on systemic issues that force individuals into poverty. It is essential that schools begin to examine the systemic issues, such as tracking and the use of standardized assessments for placement, which are keeping Black males out of higher level math courses, and remove any mindsets and/or beliefs that the underrepresentation is due to students' own lack of effort. In her work on tracking, Oakes (1992) highlighted the need for schools to review technical, normative, and political aspects of the school structure in order to enact change.

A shift in mindset and willingness to review placement policies needs to be adopted by schools. Oakes (1992) describes this further as a need to embrace new norms in school, both conscious and subconscious. so that schools can collectively advocate to become environments that are truly democratic and equitable for all. Once this is

embedded and understood fully by all educators and policymakers, a concerted effort to revise the offering of higher level math courses to all students can begin. United States schools can begin to offer higher level math courses to all students and then differentiate further as needed, as is done in Hong Kong with their gifted courses. With all schools offering expanded opportunities for taking higher level math courses, significantly more Black students will have the opportunity to participate in enriching extension opportunities. Peters et al. (2014) advocated for an approach in which tracking is eliminated, and students are placed into heterogeneously mixed classrooms. With this approach, all math teachers would then be required to differentiate to meet the needs of their learners, and all students could have equal access to the programming offered. This end to tracking would create access to a more rigorous curriculum with opportunities to participate in higher-order thinking activities and lessons for all students. Students who are identified early on, often with standardized tests, would then not be the only students placed in courses offering these opportunities for learning.

Additionally, the United States could benefit from investigating the work Hong Kong is doing with curriculum reform. By providing all students opportunities to participate in collaborative, higher-order thinking, real-world based problem solving activities, and lessons as Hong Kong does, more students will receive a better overall education and will also have greater opportunities to enter higher level mathematics courses. Instead of a traditional approach in which students are first provided with an education measured by standardized assessments and then provided with collaborative, rigorous lessons and activities in higher level courses, the approach should be reversed. This would be aligned with the tenets of Asante's (2017) revolutionary pedagogy, which

implored educators to empower students to think critically and make connections and place the student at the center of all that is done. Approaching the concern with a different approach and exploring student-centered approaches will benefit students and help alleviate an important concern in education.

This study explores an important voice and perspective in helping to find solutions to this problem—that of the building principal. Darling-Hammond (2010) implored educators and policy-makers in her work to ensure that NCLB is not simply "empty rhetoric" (p. 328). While NCLB has since been replaced by the more flexible and less one-size-fits-all approach ESSA, the spirit of NCLB remains with the goals of high standards, accountability, and closing the achievement gap (Penuel et al., 2016). With policies for improved assessments that encourage critical thinking and not simply rote-memorization, access to high-quality teachers, and equal access to resources, all students in the United States will have more opportunities to receive a high-quality education, and Black students would not be underrepresented in higher level mathematics courses thus opening many more opportunities for all.

Purpose of the Study

As the instructional leader of the school, the building principal is the primary person responsible for creating systems and structures in their schools (Sergiovanni, 2001). The very systems and structures are those that should be corrected to enable success for all students. The purpose of this study is to determine the factors that successful middle school principals identify as integral in helping to increase Black male students' enrollment in higher level mathematics courses.

Research Questions

The research questions that this study answered were as follows:

- What factors do middle school principals identify as having had a positive impact on increasing the participation and success of Black males in higher level mathematics coursework?
- What do middle school principals perceive as their own impact on the recruitment and participation of Black males in higher level mathematics courses?

Definition of Terms

In order to best understand the study and the concepts explained and utilized within the study, the following definitions of key terms and concepts will be frequently used:

Anti-deficit: A framework for studying students of color in STEM courses that focuses on school, family, industry, and other factors which contribute to success rather than detract from success (Harper, 2010).

Anti-racist: A belief and commitment to work towards identifying and eliminating racist policies and procedures (Kendi, 2019).

BlackCrit: A framework that builds upon critical race theory with a more specific and direct focus on how antiblackness impacts racist ideologies and institutional practices (Dumas & ross, 2016).

Critical Race Theory: A framework that builds upon critical theory as it relates to race and power and situates race conflicts at the center of societal issues (Bell, 1995).

Middle School: A school usually including grades five to eight or six to eight (Merriam-Webster, n.d.).

Principal: The instructional leader of the school and, as such, the primary person responsible for creating systems and structures within their schools (Sergiovanni, 2001).

Success: For the purposes of this study, "success" was defined as having both a School Performance Grade of an A and also a Grade Level Proficiency (GLP) score for the Black student subgroup of an A. This is the same as or higher than my own school during the 2018-2019 school year. During that school year, 84% of our Black students were grade-level proficient (North Carolina School Report Cards, 2020), which is the bottom of the A level scale.

Significance of the Study

The findings of this study could potentially serve as guidelines, procedures, and other structural implications for schools to consider in preparing Black male students for future mathematics success. The systems and structures found in schools that currently have success can be shared with others to help influence policy and decision-making to hopefully have a broader impact on schools across the state. Principals serve as the instructional leaders of their schools and have the power to implement new systems and structures, which could lead to more access to opportunities in mathematics courses for Black males. By researching the perspective of successful middle school principals, other schools can benefit from what has worked in those schools and with those school leaders. The principal perspective is key to understanding what school-related factors should be replicated in order to increase the number of opportunities and supports available for students.

Positionality Statement

I have spent the last 25 years serving as an educator in CMS. I began teaching mathematics right after graduating from college and spent the following nine years working with students from a wide range of backgrounds and with a wide range of abilities. As a White female educator in an urban high school, I never gave much thought to the impact my race or background had on what or how I was teaching my students. I simply taught the standards and worked hard to build relationships with all of my students. I believed with hard work and dedication, I was making a difference in the lives of my students. I also believed that my own background, coming from a lower-middle class family whose parents never went to college, gave me an inside edge to relating to my students to help make a difference.

After several years of recognizing the lack of support for mathematics teachers, I made the decision to go back to school and become a school administrator. While initially open to any job as an assistant principal, I somehow found my way to Piedmont Open IB Middle School, a middle school with a rich history dating back to 1925 and a tradition for academic excellence. As an assistant principal, I had the opportunity to work with an amazing instructional leader who forced me to question everything and ask myself, "What is best for kids?"

Over the course of 12 years, I have worked as assistant principal and now principal to a group of highly diverse students keeping the best interest of kids at the root of everything I decided. Piedmont is an amazing environment with diversity of all kinds—racial and ethnic diversity, socioeconomic diversity, and even diversity of elementary school backgrounds (last year, we served students coming from over 55

different elementary schools). I worked hard to ensure all students had access to excellent classroom teachers and opportunities, or so I thought.

One of my key responsibilities as a school administrator has always been scheduling students. My school counselor and I have worked hard each and every summer to balance classes to make sure the demographics of each class are as balanced as we can make it. While doing this, we have also considered academic data points to place students into honors courses. We have followed the "rules" and used rubrics provided by the district to help make our placement decisions.

Recently, however, I had an eye-opening, gut-checking moment. While walking a superintendent through my building, we walked through the 8th-grade hallway past our three math classes. She turned to me, pointed, and stated, "That's an honors class, that's not honors for sure, and that is Math 1." Stunned, I asked her how she knew the designation of the classes without setting foot into any of the classes to listen to instruction or note the posted objectives. She simply stated, "All the White students are in those rooms" (indicating the two higher level math classes). That simple, but powerful, statement sparked something in me and began my journey into educational research.

I realized at that moment I had to do something about this lack of equity and systemic racism that exists around me. I realized I had to keep "what's best for kids" at the center of everything I do, but also that I needed to recognize the impact that race has on our students, particularly in the placement of my Black male students into higher level mathematics courses. Piedmont Open IB Middle School, which is experiencing an underrepresentation of Black male students in higher level mathematics is *my* school where I, as the principal, am responsible for much of the decision-making around the

placement of students. This has influenced my desire to research what others have done to be successful in increasing the recruitment and participation of Black male students into higher level math courses.

I realize I am still bound by much of what is already prescribed in my school district, but I now know I must continue to consider race in everything I do, including not only my professional work but also my work as a student and a mother. My upbringing and early career as an educator were impacted by the belief that colorblindness was key. I now know that is the exact opposite of what is needed to disrupt the systems we currently have in place in schools and something I need to combat within myself and within my school on a daily basis. This desire impacts all that I do—as a principal, as a research student, and as a mother—and impacts my subjectivity in decision-making and researching during this study.

Summary and Overview of Dissertation

In summary, this study is of great need due to a concerning trend in urban education and a dire need for solutions to the underrepresentation of Black males in higher level math courses. Chapter II highlights research that has been done surrounding this issue including work done around the perspectives of both the students and the teachers impacted, in addition to school based practices that have been implemented with success. Much of the research on Black male students have been deficit-based and focused on what has caused this underrepresentation. This chapter includes work done around students who have been successful in higher level mathematics courses and teachers who have had success in supporting Black male students. Chapter III describes the methodology of his research study in which I interviewed successful middle school

principals to determine what factors they identify and what they perceive their own impact to have been on increasing the representation of Black males in higher level math courses. The research study approached the concern from an anti-deficit standpoint, focusing on what has helped students excel versus reasons why they have failed (Harper, 2010). In Chapter IV, I discuss the findings from this research study, and in Chapter V, I discuss the implications and future work that schools can consider to offer potential solutions for schools from the perspective of the school leaders who have been successful in reducing this underrepresentation, specifically in urban middle schools. School leaders will learn specific strategies, programs, protocols, and/or best practices to be sure and implement in school buildings.

CHAPTER II: LITERATURE REVIEW

Overview of Review of Literature

An issue of significant concern in urban education is the underrepresentation of Black students in higher level mathematics courses. I begin this literature review by examining the background of the concern and then outlining the theoretical and conceptual frameworks that influence my study—BlackCrit which encompasses both anti-racism and an anti-deficit framework. Then I share previous studies and their findings, including the perceptions of students and teachers, and also studies that have focused on structural supports within schools. Last, I will end with highlighting the need to focus on the missing voice from this conversation, that of the building principal—the principal being the "leader of leaders" in a school (Sergiovanni, 2001, p. 163).

Background of the Issue of Underrepresentation

Moore and Lewis (2012) described more specific challenges urban schools face when examining the populations of their mathematics programs and courses. These challenges include the lack of recruitment of students into higher level mathematics courses, retaining students in these courses, lack of teacher support, a lack of culturally responsive teaching materials and strategies, and social concerns of isolation for those who are in these courses (Moore & Lewis, 2012). The underrepresentation of Black males in higher level math courses is a concerning trend in urban education, which in many circumstances is leading to a lack of student opportunities and ultimately pushout from schools. Furthermore, increasing the participation of Black males in higher level math courses is needed at the secondary level as it will lead to higher inclusion in STEM-

related college courses and careers which are essential for the United States to remain globally competitive (Palmer et al., 2010).

Much work has been done around why underrepresentation has occurred, with causes including tracking policies, lack of access to higher level coursework, teacher beliefs about students' abilities, assessments utilized, instructional practices, lack of resources, and student attitudes and beliefs (Berry, 2003). Furthermore, the mathematics instruction that Black males are receiving is often not in alignment with curriculum reforms shared by such groups at the National Council for Teachers of Mathematics as it does not address the cultural styles and learning preferences of the students (Berry, 2003). Henig et al. (2001) pointed out that reform is more complex due to the influence of race and that school reformers can and should learn from other reform examples but should also go beyond the color-blind philosophy of education and highlight the need for race to be considered in reform efforts.

Connection to Underrepresentation in Gifted Education

An issue similar to the underrepresentation of Black males in higher level mathematics courses is that of underrepresentation in gifted programs with placement in gifted programs in early elementary years leading to participation in higher level coursework in secondary schools. Bonner (2000) investigated the issue of underrepresentation in regards to Black male students in gifted programs citing the reasons for underrepresentation as problems with the definition of giftedness, concerns with standardized testing often used to determine placement, teacher perceptions and understanding of giftedness, lack of appropriate learning styles use within classrooms, and conflicting peer and family supports. Ford et al. (2001) and Ford et al. (2011) in also

researching underrepresentation in gifted education, noted that educators often focus on student deficits and cite those deficits as the reason for student concerns and lack of academic performance rather than focusing on school structures or inequitable practices. It is essential to study this issue and develop solutions from the lens of all stakeholders, including students, teachers, and administrators. Solutions can then be implemented within schools to increase the inclusion and ultimately retention of Black males in higher level math courses.

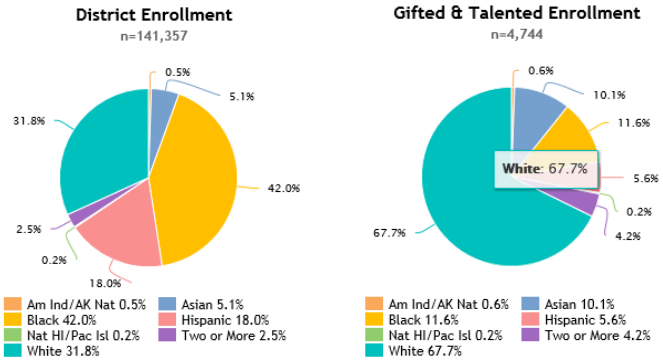
Peters et al. (2014) pointed out the federal definition of gifted and talented which dates back to 1993. In the definition, "gifted and talented" students are "children and youth [with] high performance and capability in intellectual, creative, and/or artistic areas [who] possess an unusual leadership capacity or excel in specific academic fields" (Peters et al., 2014, p. 4). What is also included in this definition is that services required by these students are not ordinarily provided by the schools. The National Association for Gifted Children (NAGC) has its own definition of gifted learners, which includes specifying that gifted individuals are those whose performance or achievement is in the top 10% or higher. Peters et al. (2014) also noted that 41 states have their own official state definition of giftedness, with individual schools and districts often having the authority to create their own definition of giftedness.

With such a wide variety of often strict definitions and procedures to support gifted students, it is not surprising to see a lack of consistency and diversity in urban gifted programs. Across the United States, Black students are less likely to be identified and/or served by public school gifted programs. As an example, the Office of Civil Rights (OCR) (2016) reported the following statistics for CMS: 11.6% of the gifted

students in CMS were Black, while 67.7% of the gifted students were White. This certainly does not match the OCR's reported demographic breakdowns of the district's overall student population (42% Black and 31.8% White). Figure 2 below displays this data.

Figure 2

Charlotte-Mecklenburg Schools' Demographics of Students in Gifted Programs



Note. From the Office of Civil Rights (2016)

Mathematics Courses and Tracking

The foundation for upper level mathematics courses is based upon many skills learned in Algebra 1 or Math 1, as it is called in North Carolina. GreatSchools Staff (2013) described Algebra 1 as a gatekeeper to higher level courses, as the skills learned in Algebra 1 are prerequisites to higher level courses including geometry, trigonometry, and calculus. Taking Algebra 1 or Math 1 in middle school is also important for future coursework and college entrance. As they pointed out,

> Students typically take algebra in eighth or ninth grade. An important benefit of studying algebra in eighth grade is that if your child takes the PSAT as a high school sophomore, she will have taken geometry as a ninth grader. By the time she's ready to take the SAT or ACT as a junior, she will have completed Algebra

II, which is covered in both of these college admissions tests. (GreatSchools Staff, 2013)

Taking Algebra 1 in middle school puts students on track for higher level coursework right from the beginning of high school and also provides an advantage when taking college entrance exams.

Students are typically placed into various math tracks as opposed to being exposed to opportunities and being provided differentiated instruction. Peters et al. (2014) found when tracking is eliminated and students are placed into heterogeneously mixed classrooms, students have more opportunities and success with gifted instruction. This method of placement is the opposite of what occurs in many schools in mathematics courses leading to the underrepresentation of Black males in the higher level courses.

Across the United States, Black males are not participating in Algebra 1 in middle school at an equal rate to their non-Black peers. Specifically, in investigating the data from CMS in North Carolina, one can see from the OCR that seventh and eighth grade Black students were underrepresented (22.2%) in comparison to their proportion in the district's population (42%). Black students in 2016 represented 22.2% of the students in 7th and 8th grade while they represented 42% of the district's student population while White students represented 53.2% of enrollment and 31.8% of the student population.

Further Causes of Concern Resulting from Underrepresentation

The issue of underrepresentation of Black males in higher level math courses is cause for concern as it exists as one way in which urban schools are pushing students out. Tuck (2012) presented an overview of current concern in American education—that of school dropouts. She framed her text around the concept of pushouts in place of

dropouts, as her point was made that schools and the policies governing schools are forcing students out rather than students electing to leave due to their own lack of effort. Students are being denied placement into higher level math courses and not being placed on college-bound tracks due to school procedures and policies used to determine placement. The very schools and opportunities that should exist to support urban students are being taken away from students as they are pushed out of schools. Urban students are becoming a subgroup of students that is often not wanted to be counted or considered in accountability measures and, therefore, often excluded from opportunities to participate in higher level math courses due to schools valuing high test scores over opportunities for students to try and possibly struggle.

Many educators are of the mindset that placement is due to effort on the part of the student and not a fault of the system. This concept mirrors that of Royce (2019), who talked of different viewpoints on poverty as either being based on the individual and their decision making or based on systemic issues that force individuals into poverty. It is essential that schools begin to examine the systemic issues that are keeping Black males out of higher level math courses and remove any mindsets and/or beliefs that the underrepresentation is due to students' own lack of effort.

Purpose of the Study

The stakeholders involved in the issue of the underrepresentation of Black students in higher level math courses include teachers, administrators, students, parents, and families. Each of these stakeholders plays a role in identifying and assessing students for placement in math courses. These stakeholders need to be informed and retrained to consider alternative options. In addition, counselors or other trained staff

members would play a key role in the implementation of the solution and thus be invested in attaining positive results.

As Audre Lorde (1984) wrote, “the master’s tools will never dismantle the master’s house” (p. 112). An important role of schools is to explore solutions outside of the typical assessments and identification plans that have traditionally existed for school officials and those in power to utilize in order to enact genuine change. Schools need to look beyond the traditional “tools” that have been utilized in the past. As Asante (2017) advocated for in describing revolutionary pedagogy, schools should move away from the use of standardized tests and embrace resources, including portfolios, optional tests, and classroom grade point averages. With identification plans that meet the needs of individual students and provide fair, democratic processes, schools are certain to decrease the underrepresentation of Black male students in higher level math courses.

The purpose of this study was to investigate the perceptions of middle school principals in regard to their role in decreasing the underrepresentation of Black males in higher level mathematics courses. In this study, I examined middle school principals' perceptions on their role in what has been done to increase the number of Black male students recruited into higher level mathematics courses.

Theoretical and Conceptual Frameworks

The theoretical and conceptual frameworks that influence my study are BlackCrit theory which encompasses both anti-racism and an anti-deficit framework. BlackCrit theory, a subfamily of critical race theory, is essential to consider when reflecting upon the impact of race on the issue at hand. Anti-racism influences the study in that it looks for educators to self-reflect and focus on the action to be taken to combat the racist

policies and structures creating the issue of underrepresentation. Additionally, anti-racism involves those in power to self-reflect, think critically, and maintain an awareness of their own social position in order to enact change (Kishimoto, 2018). Lastly, approaching the issue of underrepresentation from an anti-deficit lens allows the study to seek solutions that have had success on decreasing underrepresentation rather than investigate the issue from the standpoint of what students have been lacking leading to their own exclusion from higher level math courses.

BlackCrit Theory

Black male students are underrepresented in higher level mathematics courses across the United States. This study is grounded in BlackCrit which builds upon critical race theory as it relates to race and power. Students' race and the power of those in decision-making roles in terms of student placement have created and sustained this underrepresentation. Building upon critical theory and others before him, Bell's (1995) work on critical race theory situates race conflicts at the center of societal issues, unlike other theorists before him.

Harper et al. (2009), in discussing critical race theory, made the connection between racial subordination and the racial disparities and opportunity gaps that exist for high-achieving Black males in urban school environments. It is impossible to investigate and discuss the placement and participation of Black male students in higher level math courses without focusing on the race of those students and the power of those who make the policies and implement the decisions which impact the students' placement. As Payne (2008) noted, systemic issues, including racism, need to be understood and embedded in school reform efforts to truly help all students and schools succeed. Simply adopting a

new curriculum and forcing it upon all schools without considering race and power implications may find some minimal successes but will not likely lead to long-term success for all.

Dumas and ross (2016) built upon the work of critical race theorists and focused specifically on the experiences of Black students in schools. This theoretical framework highlights the need to focus on the racial oppression Black students experience. With this study focusing solely on the underrepresentation of Black males, as it remains a major concern at Piedmont Open IB Middle School, BlackCrit was an essential lens through which to examine what has been happening in schools.

Anti-Racism

Within the lens of BlackCrit theory, it is also critical to investigate the work being done by school leaders as anti-racists. Kendi (2019) defined anti-racists as those "who [are] supporting an antiracist policy through their actions or expressing an anti-racist idea" (p. 13). Key in this work is the move to identify and eliminate racist policies and procedures. Kendi (2019), with anti-racism, encouraged leaders to understand and work towards eliminating the structures and practices in place in schools. Kishimoto (2018) described anti-racism as informed by CRT with a more in-depth focus on "the analysis of structural racism, power relations, and social justice" (p. 541). These two works come together as educators actively reflect upon their own role and then take action towards removing racist policies, procedures and practices.

Bergerson (2003) wrote of this in his work describing the racist structures and institutions which systematically exclude non-Whites from opportunities to succeed. Additionally, Leonard and Martin (2013) wrote of this very action-oriented approach to

overcoming the racist policies and practices that have created the underrepresentation when they write of solutions including offering counternarratives about Black males who have been successful in math classes, advocating for a curriculum grounded in Afrocentricity, and promoting high expectations for Black students. Similarly, Love (2019), in explaining the role of what she terms abolitionist teachers, articulated the need for teachers to call out and teach how structures in society create phobias and that true co-conspirators must call out racist behaviors and actions.

Kishimoto (2018), in describing anti-racism, highlighted the importance of altering not just what one teaches but rather how one teaches which allows this work to connect to all subject areas, including mathematics. Beyond including racial content into the mathematics classroom (through course materials, activities, and curriculum), educators are encouraged to support students in developing critical analytical skills, taking responsibility for their own learning, and creating a sense of community within the classroom (Kishimoto, 2018).

Asante (2017) advocated for teachers and curriculum writers to start with origins and definitions so students can learn the material in context. It is essential that students understand mathematics from an Afrocentric standpoint and know the true history of the ancient Egyptians and their contributions to mathematics and sciences. If they are going to truly see themselves in the work they are doing, they must know their own true history. The miseducation or modern falsification of history that Diop (1974) wrote of notes that advancements in mathematics and sciences were attributed to the Greeks and not the Egyptians. For students to believe in themselves and be confident to pursue higher level mathematics, they must know the truth. This connects to Kishimoto's (2018) description

of anti-racism in that it encourages educators to “question what counts as legitimate knowledge, whose knowledge counts, and who has access to the knowledge” (p. 546).

It is important that schools begin to examine the systemic issues that are keeping Black males out of higher-level math courses and remove any mindsets and/or beliefs that the underrepresentation is due to students’ own lack of effort. Additionally, educators need to revisit the purpose of schooling and move from a transfer of knowledge to a preparation of students for living in an interconnected global world (Asante, 2017).

One key procedure which Kendi highlighted as a racist policy, which would certainly impact the inclusion of Black males in higher level math courses, is that of the use of standardized tests to measure aptitude and/or intelligence (Kendi, 2019). Districts, schools, and building leaders using standardized tests as a data point to determine entrance into higher level courses would be well-served to review these policies and practices and move towards an anti-racist approach to student placement. As Kendi (2019) noted, racism and capitalism are two intertwined issues causing persistent racial inequities which can be seen in schools across the United States.

Anti-Deficit Approach

Much work has been done regarding the issue of the underrepresentation of Black males in higher level math courses; however, as McGee (2013) noted, much of the past research has been deficit-based. Many researchers have framed their studies around Black students as underachieving, being overrepresented in special education and lower academic tracks, and lacking opportunities. While much work has been done around the issues surrounding Black male students and why they are underrepresented, Harper (2010) introduced an anti-deficit framework for studying students of color in STEM

courses which focuses on school, family, industry, and other factors which contribute to success rather than detract from success. He based his framework on his work with the National Black Male College Achievement Study in which he sought "how to explore and better understand the enablers of minority student achievement in STEM" (Harper, 2010, p. 64). Numerous authors and researchers have begun investigating, even prior to Harper's defining of the framework, why this phenomenon has occurred and how to best approach improvements from an anti-deficit standpoint (Anderson, 2016; Bonner, 2000, 2001, 2003, 2010; Davis, 2014; Grant et al., 2015; McGee, 2013; McGee & Pearman, 2014).

Also from an anti-deficit standpoint, additional researchers have demonstrated how their own work as practitioners has supported Black male students in higher level mathematics courses (Berry, 2008; Davis et al., 2019; Jett et al., 2015). Sergiovanni (2001), in describing characteristics of successful principals, referenced characteristics that are anti-deficit in nature when he wrote of successful principals focusing not on the problems that children have which cause a failure to learn but instead on problems that the school should be correcting for the students. Additionally, the solutions that successful principals adopt tend to go beyond the constraints of the bureaucracy that the district imposes and find solutions from whatever sources and best practices are most useful for their students (Sergiovanni, 2001).

Bonner (2001), in researching high-achieving Black male college students, shared a similar framework to that of Harper's anti-deficit framework. Their work highlighted the need for colleges to operate from an asset model approach rather than an emphasis on underachievement and underrepresentation. Bonner (2003) specifically studied Black

male gifted college students to determine their perception of what caused their success. His work found key factors of success to be influenced by relationships with faculty, peer relationships, and family influence and support. This same work in pre-K through 12 educational settings highlights the successes of students rather than placing blame on students for their lack of opportunities.

This study, while grounded in BlackCrit theory, seeks to find solutions to the issue of the underrepresentation of Black male students in higher level math courses using both an anti-deficit lens and anti-racist actions that help define BlackCrit. This study focuses not on what students are doing wrong or what they themselves can do more of or be better at but rather on the beliefs and actions that successful secondary school principals have put into place to best support their students. As Berry (2005) wrote, in order to encourage and promote the academic achievement of Black males, it is necessary to "identify the strengths, skills, and other significant factors it takes to foster success" (p. 47).

Student Perceptions and the Role of Identity

A key stakeholder in understanding the impact of underrepresentation of Black males in higher level mathematics courses is the students themselves. As Rury (2013) wrote in his text regarding the impact of youth culture on societies and schools and Tuck (2012) wrote of youth repatriating their education, it is essential to explore the student perspective when seeking solutions to the concern of underrepresentation of Black males in higher level math courses. Tuck (2012) and Rury (2013), in exploring youth culture, maintained that the very youth who are impacted by school pushout are the exact youth who can highlight the flaws in the system to hopefully enact change. Schools would

benefit from utilizing both culturally responsive teaching and culturally sustaining pedagogies as well when designing curricula. As Paris and Alim (2017) wrote, a student-centered approach to teaching in which students' cultures are identified and nurtured will help students develop and maintain a sense of well-being and belonging in the world. This sense of well-being and belonging is much needed in schools to help students maintain a strong identity and perform better in mathematics courses. Furthermore, culturally sustaining practices allow students to return to their communities and help create change in oppressive conditions (Paris & Alim, 2017). These personal connections and empowerment are key in determining a solution to the underrepresentation of Black males in higher level math courses.

With culturally sustaining pedagogies, the very students who are in higher level math courses are key to understanding what is working in schools to support them in those courses. Student voice is key to understanding what school-related factors should be replicated in order to increase the number of opportunities available for students and what policies and procedures are in need of change. Several studies have investigated what students report from their experiences in their math courses particularly around their perceptions of identity and how that played a role in their success.

In researching successful Black male college students, Bonner (2001) uncovered the importance of supporting students in developing a positive academic identity which includes understanding the relationships between identity, race and gender. A strong sense and understanding of one’s identity and self are necessary for success, especially in a less than supportive academic environment. Bonner (2003) further described his study which investigated successful Black male college students. In studying the students’ self-

perception, Bonner (2003) recognized the importance of identifying and integrating students' identities in their educational experiences. Reid and Moore (2008), like Bonner, also found that a healthy racial identity has been shown to promote increased levels of self-respect and a greater focus on how to best pursue academic achievements.

In conducting anti-deficit based research, much work has been done around students' perception of their mathematics identity and students' perception of their internal risk and protective factors, which have helped them find success. Davis (2014) utilized a critical ethnography and critical race theory as his framework to determine what role Black students' identity plays in their math experiences. According to Davis (2014), there are multiple systemic issues (including oppression, power, and privilege) that are preventing Black male students from participating in higher level mathematics courses. Davis' findings confirmed concepts he had uncovered in his literature review: interactions and relationships between student and teacher had an impact on math experiences for the students, students reported a need to feel challenged, peers and family were referenced as supportive but also caused for the material to be "boring." Overall, Davis concluded that intellectual property in predominantly Black middle schools was not equitable with what non-urban districts receive. Implications from this work highlight the need to consider issues of race, racism, and classism (forms of oppression) when seeking solutions.

Davis (2014) highlighted what feelings and impacts exist once students are in classes. Much of what Davis studied included real-time feelings of the students in their classes. Different age groups and, thus different phases in educational lives were studied. Davis worked with students over the course of a year. Davis' study focused on

factors that impacted students while they were enrolled in those types of classes (or not enrolled in them). Davis' study, an ethnography studying four students and their feelings in depth, had a significantly small sample size. Davis (2014) relied on data observed directly from and of the students. In conclusion, Davis found, when conducting an ethnographic study and interviewing students for their perspectives, that students' experiences are impacted by their relationships with others, including their peers.

Grant et al. (2015), like Davis, studied the mathematics identity of Black male students. Their study consisted of video observations of six Black male students participating in the Algebra Project Cohort Model initiative over the course of four years. While viewing the observations, Grant et al. (2015) focused on the agency, accountability, and work practices exhibited by the students. Their findings suggested students in the project developed confidence in themselves and their peers over the course of the four years, consistently chose to engage in mathematics, and relied on others for knowledge less as the years progressed. Additionally, Berry (2008) in his study of eight successful Black male students who had entered Algebra 1 as 8th graders found similar themes which the students articulated as having led to their success.

Similar to Davis et al. (2019), Berry (2008) found that support systems and strong, positive mathematical identities were key in establishing student success. In attempting to answer the question of what factors students encountered in mathematics and how they overcame those factors, he highlighted work that building level principals could and should control. Lowered expectations and teachers acting as gatekeepers kept Black male students out of higher level math courses, but when faced with strong support systems and recognition of their abilities, students had higher success rates of being

placed into Algebra 1 as 8th graders. One particular student referenced in Berry's study petitioned the principal to offer an advanced mathematics course so he could be a role model for others, as the principal often has the power to make the decision regarding course offerings and placements. Ford et al. (2011) also found that a strong racial identity in addition to positive self-esteem and self-concept helped students feel successful in gifted education programs.

McGee (2013) conducted a qualitative research study of 11 high-achieving Black males in urban charter schools. The researcher utilized a semi-structured interview protocol and the Phenomenological Variant of Ecological Systems Theory (PVEST) to determine what risk and protective factors Black males identified as having an impact on their mathematical success. Results from the study indicated the following themes: the impact (both positive and negative) of racial stereotypes, complications from being threatened and being perceived by others as a threat, and the lack of college-related opportunities and coursework. McGee references a study which analyzed four national surveys and found the following to have a positive impact on Black males' academic success such as positive interactions with peers, having fathers present in the household, fathers' educational background, high parental expectations, parental homework assistance, and feeling safe and cared for at school.

In a similar study, McGee and Pearman (2014) continued to investigate the internal risk and protective factors that helped Black male students achieve success in mathematics classes. In a semi-structured interview, McGee and Pearman investigated 13 high-achieving Black males from a charter school in order to provide more information on Black male strength and achievement in the absence of opportunity and

access. Findings from the study included internal protective factors of street know-how, mathematical/school perseverance, possessing multiple passions/outlets, capitalizing on the available mathematics opportunities, developing academic survival techniques, and collectivist-oriented ideologies and actions. Internal risk factors identified through the study included anxiety over being a Black male stereotype and fear and anxiety similar to Post Traumatic Stress Disorder.

McGee and Martin (2011) had done a previous study on Black students in college mathematics and engineering courses and found that these students persisted despite their racial identities being undervalued and challenged throughout their educational experiences. The students in their study adopted self-affirming strategies to help them succeed and be resilient in academic settings leading to their success and inclusion in STEM-oriented college courses. Proving stereotypes wrong, constructing self-directed and self-determined identities, and succeeding in order to serve as role models for others were identified by the students as reasons for their push to succeed in their higher level mathematics courses (McGee & Martin, 2011).

After conducting a meta-analysis of a number of the studies referenced above (Berry, 2005, 2008; McGee & Martin, 2011) and others, Berry et al. (2014) concluded that three key concepts impact students and their success in higher level mathematics courses: awareness and access, images, and agency. Each of these concepts is factors that students themselves have identified as impacting their success.

In conducting a case study of six Black males enrolled in Advanced Placement courses, Flowers and Banda (2019) sought to determine the relationship between successful completion of math and science related AP courses and the increased

likelihood of intending to pursue math and science courses beyond high school and how this relationship relates to Black males. Their work and findings focused primarily on the role that identity plays on impacting enrollment and success in these STEM related courses. Findings from their study showed that academic self-perception and the community of support students receive both leads to strong identities in students and the ability to succeed (Flowers & Banda, 2019). Recommendations they discovered as helpful in improving the underrepresentation of Black males in math and science related courses include intentionally recruiting Black male students into those courses and working with students to develop their self-efficacy and identity. Their work mirrors others in the desire to utilize the experiences and perceptions of successful students to help determine suggestions and recommendations to continue the work on reducing underrepresentation.

Further work in regard to identity has included research on students' academic self-concept. Flowers et al. (2011) described academic self-concept as an individual's view of themselves in relation to their work in school and their performance in school. Their study of self-concept, while focused on Black males in college, demonstrated that higher self-concept leads to higher academic achievement. Bonner (2001) also studied Black male students who were identified as gifted in a college setting. Looking at the perspective of those students, Bonner was able to identify the following concepts that influenced students and helped them achieve success: relationships with faculty, peer relationships, family influence and support, factors influencing college selection, self-perception, and institutional environment (Bonner, 2001).

Martinez (2017) conducted a survey to compare students' attitudes toward mathematics with their achievement in math classes. He then calculated the correlation between students' attitudes, race, and courses taken. For the students who considered themselves to be in the appropriate courses and on track with their peers, the achievement levels were found to be higher than those who considered themselves to be behind their peers. His work demonstrated that student attitudes towards themselves impact their academic performance and course placement as students are a key voice in understanding the concern. All of these studies highlight the voice of the student in understanding successes found in reducing the underrepresentation of Black students.

Teacher Perceptions

Davis et al. (2019) drew on their own experiences as Black male teachers in addition to their research to provide several recommendations to decrease the underrepresentation of Black male students in higher level courses including gifted courses and IB and AP courses. Their work highlights key factors keeping Black male students from higher level coursework as the use of standardized testing to determine placement, the lack of referrals from teachers, and low course grades (Davis et al., 2019). Each of these factors could be remedied by improving structures in place within schools. Their solutions to remedy these factors included:

- Increasing recruitment of Black males into higher level math courses
- Increasing support structures provided to Black males in these math courses
- Working with teachers to develop Black male students' identities
- Preparing teachers to teach Black male students

- Increasing the number of Black male teachers in higher level math courses, and
- Preparing Black male students to use mathematics to support their communities.

Each of these recommendations will take work on the part of families, teachers, peers, and school administrators to implement successfully.

Jett et al. (2015) also drew on their experiences as classroom teachers and researchers to provide input regarding how to create classrooms that can serve as mathematical communities which support all students. Their work highlighted the need for developing caring relationships beyond the classroom, accessing supports outside of the classroom, implementing culturally relevant pedagogy, and disrupting traditionally White institutional spaces. These strategies, like those mentioned above, will also require intentional and repeated acts from all stakeholders to fully integrate them into schools and create new norms for mathematics instruction and classrooms.

While not from an anti-deficit approach, Bol and Berry (2005) studied teachers' perspectives on what is causing the gap in achievement among mathematics students and much of their work can be utilized by other teachers. They conducted a survey of 379 secondary school math teachers and found teachers to believe that student characteristics, including motivational levels, work ethic, and family support, had the greatest impact on student performance (Bol & Berry, 2005). Their work also uncovered potential solutions which include additional professional development for teachers, changes in curriculum, strengthening the school community, and supporting policies that fund equity and reduce class size.

Teachers are impacted by the mathematics education programs, professional development programs throughout their careers, and standards that are presented to them by their schools, districts, and states. Martin et al. (2010) uncovered in their work that mathematics education is highly influenced by power relations despite mathematics being a gatekeeper for further knowledge. Their work highlights the need for those in power to develop standards and practices that include a variety of perspectives and approaches. Ford et al. (2011) also advocated in their work for educators, who are predominantly White, to be exposed to research by and about African-Americans. Without these considerations, the dominant group in power will control such practices as testing, placement, and tracking which cause the underrepresentation of groups such as Black males in higher level courses.

School-Based Practices

The research referenced above focused on student perceptions of mathematics identity and internal risk and protective factors as a way to focus on the students from an anti-deficit framework as well as the perspective of teachers on their role in supporting their Black students in mathematics courses. However, as Anderson (2016) pointed out, latent traits, including self-efficacy and identity, studied by many researchers referenced above, are not the sole factor creating success for Black male students—school structural supports also need to be investigated. Additionally, the curriculum and instruction utilized in public schools are prescribed by the state, often with little to no attention given to social, emotional, and personal needs. Ladson-Billings (2011) suggested a solution to this with culturally relevant teaching. She urged educators to deconstruct, construct, and

reconstruct the curriculum and to look to students as being filled with possibilities rather than deficits.

Wiggan and Hutchison (2009) wrote of the impacts of globalization and neoliberalism, which have drastic results on schools. These phenomena and resulting legislation, such as NCLB, have created a market approach to education where assessments, often created by large corporations such as Pearson, are used as accountability measures. With these accountability measures in place, teachers are often forced to focus solely on what is being tested. Darling-Hammond (2010) and Stromquist and Monkman (2014) also warned that schools in the United States face an extreme reliance upon standardized testing in part due to the standards-based reform of the 1990s, the legislation surrounding NCLB, and the neoliberal markets that exist and are dominated by large transnational corporations. This neoliberal impact and overreliance on standardized testing leave little room in the curriculum for teachers to focus on student social and emotional well-being which is much needed to support Black males in their mathematics courses.

In his work, Anderson (2016) examined school based practices in ninth grade and their impacts on student achievement in eleventh grade. His findings showed that partnerships with community colleges and universities, guest speakers in the fields of math and science, and field trips related to math and science helped to increase student test scores in math and science courses (Anderson, 2016). This work helps answer the question of what schools can do to support the underrepresentation of Black males in higher level math courses from a structural standpoint and offers specific suggestions on action steps to take.

DeMarrais and LeCompte (1998) wrote of schools and the lack of equality for educational opportunities due to race which is used to classify students despite having no scientific basis. Their work highlights various forms of curriculum, both planned and hidden. Much of the history of schooling and curriculum has been centered around the dominant cultural group with that group defining legitimate knowledge. Traditional schools and curriculums have included a humanist approach which focuses on a core of the finest elements or a social efficiency curriculum whose aim is to assign jobs and roles according to abilities. Much like the postmodernist/poststructuralist thinkers, some new ideas of curriculum include a reconceptualist approach in which one considers what kinds of knowledge should be included and whose interests should be served. DeMarrais and LeCompte (1998) wrote of the developmentalist curriculum which is a student-centered approach with a focus on the individual learner. Additionally, the social meliorist curriculum exists in which the goal is to make the world a better place. Students, teachers, and staff become agents of social change with the social meliorist model of schooling. Leonard (2018) advocated for specific curriculum revisions which include ways to combat the oppression that students face. Her work provides ideas for culturally specific pedagogy in the mathematics classroom which includes the concepts of social justice, including focusing on movements such as Black Lives Matter, to better meet the learning needs of Black students in the mathematics classroom.

The work of schools becomes essential as all humans, especially those with more privilege, share in the responsibility to advocate for equal rights. DeMarrais and LeCompte (1998) discussed schools and the lack of equality in educational opportunities due to race which is used to classify students despite having no scientific basis. They

outlined the various court cases and policies that have sought to establish equality in schools but also highlighted the need to continue to seek true equality for all students, including equality in regard to gender issues. While policies exist, there is much for schools to continue to work towards to gain true equality for all, including everything from hidden messages in the curriculum to implicit biases of educators.

School-Based Practices: Connection to Gifted Education

Placement into higher level mathematics courses is often similar to that of placement into gifted education programs (with students in gifted programs earlier in their educational career frequently being tracked into higher level mathematics courses by high school). Peters et al. (2014) wrote of current practices utilized within the United States to identify and serve gifted students. The typical identification process relies upon teacher recommendation often after results from achievement testing, such as the Iowa Test of Basic Skills or Northwest Evaluation Association (NWEA)'s MAP assessments, are released and analyzed. Students identified as gifted are then frequently pulled out into specialized classrooms or even schools to receive their differentiated services. The authors highlighted a number of solutions to improve the underrepresentation of minority groups in gifted programs, including utilizing alternate assessments, many of which could be more culturally neutral, and additional staff members to locate students who may benefit from gifted education. These same practices can and should be employed when making placement determinations for upper level mathematics courses.

In researching underrepresentation of Black students in gifted education, Ford (2010) noted the following as barriers to student participation:

a. lack of teacher referral

b. students' differential performance on traditional intelligence and/or achievement tests
c. stagnant and outdated policies and procedures for labeling and placement, and
d. social-emotional concerns and eventual decisions of Black and Hispanic students and their primary caregivers about gifted education participation (p. 32).

Each of these barriers, while referenced in the context of gifted education, could also connect to higher level mathematics course placement and be considered concerns leading to underrepresentation.

Winsler et al. (2013) noted that access to gifted education is highlighted as not equitable; Black students (and other minorities and low-income students) are underrepresented. Winsler et al.'s (2013) work titled "Being Black, Male, and Gifted in Miami: Prevalence and Predictors of Placement in Elementary School Gifted Education Programs" sought to determine a correlation between predictors of student performance and being identified as gifted. While conducting this longitudinal study, the researchers tracked data on 6,926 students in the Miami School Readiness Project (MSRP), 453 of whom were Black males identified as gifted, from preschool through 5th grade. Using purposeful sampling, the study focused on the Black males in the Miami School Readiness Project who, at age four, attended pre-K or community-based childcare with the assistance of subsidies. The researchers' design for the study was correlational, and they utilized hierarchical multiple regression analyses to interpret their data. The findings demonstrated that being identified as gifted is more likely for Black males who attended public school pre-K at age four, had higher readiness skills when entering kindergarten,

spoke a language other than English at home, were older when entering kindergarten, received higher grades in school, and scored higher on standardized tests of math and reading. Results from this study provide schools and school districts with information on what early childhood, family, and preschool variables result in an ultimate gifted placement which can then be used by schools to enhance recruitment and identification efforts.

Lynch and Kim (2017) conducted an experiment in which the effects of randomly placing children from a high-poverty urban public school district into an online summer mathematics program were investigated. Their work found that students who were provided with a summer intervention program and a provided laptop were more engaged in their math coursework than those who either were not in any program or were not provided with the laptop, thus suggesting resources and interventions are instrumental in helping urban students achieve more in mathematics courses.

School-Based Practices: Lessons Learned from Across the Globe

In looking to other countries across the globe for potential solutions, the United States can benefit from researching Hong Kong and its work with gifted education. Tommis (2011) described the principles of Hong Kong's programs for gifted education as needing to embrace equity and inclusiveness in that education should embrace gifted education for all students, and it should be a part of everyone's quality education and not solely for specialized schools. In order to meet the proposed goals and principles set forth, the Education Bureau of the HKSAR (2013) implemented a three-tier model in the 2000s for implementing gifted education, which is key for the United States to explore if it truly desires to increase the number of Black students in higher level coursework,

especially mathematics. In Hong Kong, level one of the model includes embedding the key elements of gifted education, such as higher-order thinking skills, creativity, and personal-social teaching and learning, into the curriculum for all students. Furthermore, enrichment and extension of the curriculum are expected to occur in all subjects in regular classrooms. This method of providing gifted instruction to students is in direct opposition to the current practices in the United States of identifying students first and then offering higher level coursework, especially in mathematics.

Once all students are offered the initial gifted curriculum, students are then identified to proceed to the next levels of the model. According to HKSAR (2013), the second level of the gifted education model includes conducting pull-out programs to allow for training such as creativity or leadership training. Additionally, students are also pulled out of the regular classroom for work in specific areas such as math, reading, or the arts. All of these pull-out programs are offered on the school campuses, thus further allowing access to all students. Unlike schools in the United States, these pull-out programs are intended to be offered at all schools and not solely offered based on the wishes of the state or local school system.

The last level of the model, Level Three, connects outside resources including counseling services, mentorship, and early entry to college to students who have been successful with prior levels of gifted education. The Education Bureau of Hong Kong partners with several institutes and outside organizations, including the Chinese University of Hong Kong, the Hong Kong University of Science Technology, and the University of Hong Kong, to provide further services for their gifted learners. The goal of Level Three partnerships remains to provide individualized educational arrangements for

the exceptionally gifted and to provide professional training for in-service teachers and parents of gifted students (HKSAR, 2013).

Darling-Hammond (2010) described educational practices which are common in Hong Kong mathematics classrooms. Students work collaboratively on real-world problems, participate in academic discourse to support their understanding, and assess their own and their peers' understanding of the concepts being taught. She further described Hong Kong's "Learning to Learn" reform plan, whose goal is to create a curriculum for all students which involves critical thinking, problem-solving, self-management skills, and collaboration, moving beyond traditional rote learning methods. An additional goal of the reform is to develop metacognitive skills in students to allow them to identify their own curricular strengths. These strategies are typically reserved for students identified as "higher performing" in the United States and are not often provided for all students.

Moving beyond the first tier of gifted education, Hong Kong has adopted a portfolio approach to identifying learners who need further differentiation in either of the next two tiers of gifted education. Tommis (2011) reported this process as diverse and broad, including teacher observation checklists, parent observation checklists, success in local and international competitions, academic success at school, intelligence tests, and standardized tests. This approach is certainly more broad and all-encompassing than the typical use of standardized achievement tests to determine placement into higher level mathematics courses in the United States.

Oakes (1992) in her research on tracking also noted the need for re-thinking the current norm in schools and moving towards a detracking model of schooling in which

students are homogeneously placed and then supported within their classes. To make this happen, she highlights the need for schools to support curriculum, pedagogy, assessments, and resource distribution. O'Neil (1992) also discussed Oakes's work with her and showcased the beliefs in countries such as Japan and Chine where hard work and persistence are analyzed to determine student ability as opposed to race and/or ethnicity.

School-Based Practices Within the United States

Within the United States, schools that have seen success in closing achievement and opportunity gaps and creating a more diverse population of higher level learners are often recognized as *Schools to Watch* by the National Forum to Accelerate Middle-Grades Reform. Ellis (2011) wrote of characteristics that these schools exemplify, including academic excellence, developmental responsiveness, social equity, and organizational structures and processes. The social equity standards, in particular, highlight schools' work to encourage schools to keep positive options open for all students. Additionally, Sergiovanni (2001) found that effective schools make an effort to serve all students and set high standards, monitor student performance, and reward effort and success. With identification plans that meet the needs of individual students and provide fair, democratic processes to all students, schools are certain to decrease the underrepresentation of Black students in higher level mathematics courses.

In studying urban school reforms, Payne (2008) identified five fundamental concepts needed for successful school improvement: instructional leadership, professional capacity, a strong learning climate, family/community involvement, and quality instruction. Each of these components can be impacted and implemented by school leadership, specifically the building principal. Additionally, in regard to planning

reforms with a purpose involved, Love (2019) encouraged reformers to consider poverty, race, and other systemic issues when taking on the role of a co-conspirator. Henig et al. (2001) echoed this sentiment when they encouraged reformers to move beyond the colorblind philosophy and acknowledge the influence of race on reform efforts. All these theoretical points and strategies from the texts support the practice of truly emphasizing a purpose in the reform effort being planned and ultimately implemented. In further reflecting on readings, it is evident, as Henig et al. (2001) highlighted, that without planning and considering issues beyond the students themselves, such as race and systemic poverty, reforms are frequently unsuccessful.

A reform of school curriculum is needed with multiple stakeholders involved to attain an effective number of student supports and a mathematics curriculum that supports all learners. Lemert (2010) highlighted this when describing the work of Patricia Hill-Collins, who wrote, “only collective action can effectively generate a lasting social transformation of political and economic institutions” (p. 552). This mirrors the social movements that Anyon (2014) wrote of, which were successful in that there was a collective purpose and plan behind the actions taken toward achieving the goals of the movement. In short, multiple stakeholders need to be involved to truly improve the opportunities available to Black male students in mathematics.

Payne (2008), in investigating the failure of past reforms, noted the need for adults to cooperate with each other and establish relationships and highlighted the quality of those relationships, which include family and community partnerships, as being essential to the success of reforms. Henig et al. (2001) further described Payne’s point in explaining and emphasizing the role that each of a number of stakeholders plays in

reform efforts. These works highlight the need for multiple stakeholders to work together and each contribute in the best manner for their situation for this curriculum reform, with an emphasis on student social and emotional well-being, to be effective. In a school building, the leader of the stakeholders is the building principal.

The Role of the School Principal

In researching how to increase college participation among Black males in STEM courses, Palmer et al. (2010) identified the following actions as having success: improving teacher quality for underrepresented students, encouraging enrollment among Black male students, advocating and ensuring access to higher level coursework, and encouraging collaboration among colleges and local schools. The key person in each school with the power to impact each of these actions is the building principal.

Just as the state culture in power determines which religion and which beliefs are agreed upon as the correct ones (Ben-Jochannan, 1991), the state culture in power determines what identification methods and resources to use to determine course placement. In studying religions, Ben-Jochannan (1991) pointed out that this is a result of "a group of powerful European men determin[ing] what was right and wrong," or in other words, racism and White supremacy (p. 10). This same practice has tragic consequences for students in regard to the opportunity gap in regard to access to mathematics courses.

The person in power who determines what identification methods and resources to use to determine mathematics courses is the school principal. The role of the school principal includes a variety of duties and responsibilities, including serving as the head instructional leader, recruiting and training staff, and creating systems and structures to keep students safe both physically and emotionally (Fullan, 2014; Hoerr, 2005;

Sergiovanni, 2001; Smith & Andrews, 1989; Smith & Piele, 1989). The Council of Chief State School Officers (1996) developed the *Interstate School Leadership Consortium: Standards for School Leaders*, which includes the following dispositions for school administrators to possess:

- The educability of all
- The inclusion of all members of the school community
- Ensuring that students have the knowledge, skills, and values needed to become successful adults
- The benefits that diversity brings to the school community
- All individuals are treated with fairness, dignity and respect
- Students and staff feel valued and important
- Barriers to student learning are identified, clarified and addressed
- Diversity is considered in developing learning experiences
- There is a culture of high expectations for self, student, and staff performance

All of these dispositions and others not cited are expectations of principals and, if done, would contribute to offering opportunities to Black males to participate in higher level mathematics courses. Payne (2008) also referenced the need for instructional leadership and the development of the professional capacity of staff to ensure successful reforms, each of which are key responsibilities of building principals.

Under the responsibilities of serving as an instructional leader and creating systems and structures, is the duty of the principal to create and implement a master schedule of classes and determine who is placed into those classes. North Carolina's

General Statute 115C-288 (n.d.) stated it is the building principal's responsibility to grade and classify students and that the principal shall consider the pupil's classroom work and grades, the pupil's scores on standardized tests, and the best educational interests of the pupil. What is important to note is that it also states that "[t]he principal shall not make the decision solely on the basis of standardized test scores" (North Carolina's General Statute 115C-288, n.d.) Thus, the principal holds a tremendous amount of power in determining the mathematics courses that Black male students are placed into and is required to review multiple data points and perspectives in making the placement decisions.

Gaps in the Literature and Need for this Study

In researching the issue of underrepresentation of Black males in higher level math courses, work has been done around the perceptions of the students themselves who have been impacted by this issue (Bonner, 2001; Davis, 2014; McGee, 2013; McGee & Pearman, 2014). Additionally, studies have been done relating to the perspective of the teachers in these classes and their role in supporting students (Davis et al., 2019; Jett et al., 2015). Both students and teachers alike, in addition to researchers (Anderson, 2016; Peters et al., 2014; Tommis, 2011), have identified successful school systems and structures both in and out of the United States that have impacted the placement and retention of Black males in higher level mathematics courses. What is missing from the research is the voice of the school principal. As seen in studies on the role and responsibilities of principals (Fullan, 2014; Hoerr, 2005; Sergiovanni, 2001; Smith & Andrews, 1989; Smith & Piele, 1989) and in studying the role of those in power in

general (Ben-Jochannan, 1991), those in power in schools have a tremendous amount of impact and influence.

This research study interacted directly with middle school principals in order to investigate, from an anti-deficit framework, their perceptions of structural and systemic issues leading to their success. This study was grounded in BlackCrit theory as it sought to explore and understand the impact of race and power on a critical issue in urban education, which directly impacts Black students. Additionally, the goal was to discover mindsets, strategies, and practices that can be put into place from an anti-racist standpoint to take action to decrease the underrepresentation of Black males in higher level math courses.

The goal of this research was to understand the perceptions and beliefs of successful middle school principals as to what they, as leaders of their schools, have done to support Black male students in entering and succeeding in higher level math courses. The findings of this study could potentially serve as guidelines, procedures, and other structural implications for schools to consider in providing further opportunities and preparing Black male students for future mathematics success from the lens of the middle school principal, thus including an important voice and perspective in this critical issue in urban education.

Conclusion

In reviewing the literature regarding the underrepresentation of Black males in higher level mathematics courses, it is evident that there have been studies done around the perspectives of both the students impacted and the teachers involved in schools. Additionally, work has been done around the curriculum utilized in schools, both in and

out of the United States. Many studies have also investigated a similar concern in that of underrepresentation in gifted education. The missing voice in the research is that of the building principal who, as the instructional leader of the school, plays an integral role in placing students into higher level courses and supporting them throughout their experience in these courses. This study sought to find the perspective of the building leaders who have had success in reducing the underrepresentation of Black males in higher level mathematics courses and closing the gap found in the literature around this important issue in education.

CHAPTER III: METHODOLOGY

Methodology Overview

In this chapter, I will review the purpose of this study. I will then provide an overview of the research design and a description of the research site, instrumentation, and participants used in the study. Additionally, I will review the data analysis procedures that were utilized upon collection of the data. This chapter will also include limitations and delimitations involved in the study.

Purpose of the Study

The purpose of this study was to examine the perspectives of successful middle school principals, a missing voice in the research described in the literature review, on their role in decreasing the underrepresentation of Black males in higher level mathematics courses. The practices and strategies shared by these principals provide input for other stakeholders on how to achieve success in increasing the number of Black male students both participating in, and hopefully ultimately retained in, courses such as Math 1. These ideas also suggest the ways in which others can influence policies and procedures implemented by schools and school districts in urban schools across the United States.

The research questions investigated by this study included:

- What factors do middle school principals identify as having had a positive impact on increasing the participation and success of Black males in higher level mathematics coursework?

- What do middle school principals perceive as their own impact on recruitment and participation of Black males in higher level mathematics courses?

In order to answer these questions, I conducted a case study of four middle school principals in North Carolina who have had success with increasing the number of Black male students in their Math 1 courses. The case study focuses on the principals and utilized the schools' data to determine what cases to study.

"Success" for the purposes of this study was defined as having both a School Performance Grade of an A and also a Grade Level Proficiency (GLP) score for the Black student subgroup of an A. This is the same as or higher than my own school during the 2018-2019 school year. During that school year, 84% of our Black students were grade level proficient (North Carolina School Report Cards, 2020), which is the bottom of the A level scale.

I first identified schools with a school performance grade of an A in math and then the same as or higher than Piedmont's GLP for the Black subgroup through a review of the North Carolina School Report Card database. I then emailed these principals and invited them to participate in my study and then spent time interviewing each of the participants over the course of a semester (August-December, 2022). While the case study participants were identified through school level data and successes with school level data, the cases studied were the principals themselves in order to determine their insights around why the schools were successful.

Research Design

The research design of this study outlines the approach that I, as the researcher, used to answer the research questions. A qualitative research method, more specifically a case study of four successful middle school principals, allowed for the collection of principals' perceptions on their role in supporting Black male students in higher level mathematics courses. As Rossman and Rallis (2016) noted, a case study "seek[s] to understand a larger phenomenon through intensive study of [specific instances or cases]," which is exactly what the research questions are attempting to identify (p. 81). As the researcher, I utilized a semi-structured interview protocol which Edwards and Holland (2013) described as having a list of questions or an interview guide but also flexibility in when and how the interviewee responds. This study used predetermined questions and open-ended conversations to determine principals' perspectives on the support and strategies they have utilized with their Black male students and their views on what has helped them be successful.

While much of the research previously conducted has been on either the internal factors supporting Black male students' success or the external factors that schools have put in place, this study focuses on the principals' perceptions on what school-related factors have had the most impact on their success. This design is relevant to this study as understanding the lived experiences, specifically pertaining to experiences in schools, will aid in further understanding an important situation in urban education.

Site of Research

Semi-structured interviews were conducted in North Carolina via Zoom at days and times which were convenient to the interviewee and agreed upon between me as the

interviewer and the interviewee. Each interview lasted approximately 45 minutes to one hour long in total. One interview required a follow-up phone conversation, and another interview was cut short due to an interviewee's illness and scheduling conflicts. Virtual interviews via Zoom were conducted to allow for live interaction between myself and the interviewees, eliminating the need for anyone to travel. Allowing the interviewees to participate via Zoom made the process convenient to them and increased the likelihood of participants joining the study. All interviews were recorded, with each participant's permission, to allow for transcription by Zoom. The transcripts were then reviewed manually for accuracy.

Instrumentation

As the researcher, I utilized a semi-structured interview protocol in order to gather data for analysis. I created a set of questions to utilize with all participants; however, I utilized additional questions and welcomed comments that arose during the initial interview and conversation with each participant. The interview protocol is available in Appendix A.

Participants

The proposed study aimed to gather responses from principals who have had success in supporting Black male students in taking Math 1 during their middle school careers. Criterion sampling, defined by Patton (2002) as selecting cases that meet the predetermined criterion of importance, was utilized. For the purposes of the study, success was initially defined as having a School Performance Grade of an A, and then I further looked at a Grade Level Proficiency (GLP) above 84% (which was also noted as an A) on the North Carolina School Performance Report Card Grade 2018-2019 for the

Black subgroup. There were 18 schools with an overall School Performance Grade of an A, and of those schools, five had a grade of A for their Black subgroup (1 had no Black subgroup data, which typically means the number of students tested was too small to collect data for). I was able to interview four of the five principals for this study (the fifth is my own middle school, where I serve as principal). These school principals were asked to be interviewed as they were identified as having success with improving the underrepresentation of Black males in higher level math courses. Principals who agreed to the interview completed a consent form allowing the interview to be recorded and were presented with a gift card for their participation in the study.

Data Collection Methods

Before conducting the interviews, I first completed the Instructional Review Board (IRB) process for the University of North Carolina at Charlotte. To collect the data, I contacted principals determined through North Carolina School Report Cards via direct email and phone calls. I explained the purpose of the study in an email and collected an electronic consent form from the participants. I then contacted the selected participants by phone to conduct the interviews. I utilized a semi-structured interview protocol in order to gather data for analysis. I created a set of questions to utilize with all participants; however, I utilized additional questions and comments that arose during the initial interview with each participant.

Data Analysis Methods

To ensure the quality of data analysis, I made certain that the interview questions were valid for the purpose of the study. After designing the interview questions, I asked two fellow researchers to review the questions to determine if they appeared to be

relevant, clear, and aligned with the purpose of the study. Rossman and Rallis (2016) described this process as member checking or participant validation, in which an interviewee is allowed to review and elaborate or correct notes, as a strategy to ensure the credibility of a qualitative study. Data analysis was conducted by transcribing and coding the interviews. I first transcribed, utilizing the audio transcript function in Zoom, each of the interviews conducted via Zoom. I accessed the audio transcript through the recording tab in Zoom to aid in my transcription; however, much of the recording was not captured properly by Zoom. I then needed to review the recordings multiple times to review the transcriptions and update them by hand. For one of the interviews done over the phone, I transcribed the recording by hand. After reviewing each transcription, I shared them with the participants of each corresponding interview to review in order for member checks to occur.

After transcription, I searched for preliminary codes in the individual transcripts to identify trends in the data engaging in a thematic analysis. Codes are defined as labels that a researcher interprets and uses to describe the content of text generated from data sources they are analyzing. Coding is the process of identifying these labels and finding relationships between them (Gibbs, 2007; Saldana, 2021). Next, I organized these codes into groups to determine categories and then overall themes. Wolcott (1994) described this process of data analysis, specifically thematic analysis, as a holistic approach to qualitative inquiry which allows the researcher to better understand the commonalities of what is being studied. Once I was able to discern several key words and phrases from the data, I further utilized Wolcott's (1994) thematic analysis to help in determining themes.

I first read through the transcript and highlighted any words or phrases pertaining to codes related to my research questions which are as follows:

1. What factors do middle school principals identify as having had a positive impact on increasing the participation and success of Black males in higher level mathematics coursework?
2. What do middle school principals perceive as their own impact on recruitment and participation of Black males in higher level mathematics courses?

Once I highlighted the words and phrases, I organized them into groups which became my initial categories. Each of the groups changed several times before I landed upon set categories. In analyzing my data, I then collapsed each of the categories into overarching themes which highlighted my participants' perspectives on their impact on increasing access to and participation in higher level mathematics coursework for their students.

Risks, Benefits, and Ethical Considerations

There were minimal risks involved in this study; however, it is possible that the schools the participants work at will read the research at some time in the future. An informed consent to participate in the interview was obtained from each of the participants. Before the consent was sent, I provided details of the nature and purpose of the research to the participants. The completion of the interview was not anonymous, but participants were deidentified for all reporting. Participation in the interviews was voluntary, and it was explained to participants before the study began that a pseudonym would be used in the results and discussion chapters.

Each research team referenced in the literature review, Chapter II, focused on the same overall topic; however, the design, sample populations, and methodology were different in each study. As referenced earlier, Anderson (2016) and Grant et al. (2015) studied data that was already in existence, while others, including McGee (2013), McGee and Pearman (2014), and Davis (2014), interacted directly with the students to get student input. As Anderson (2016) pointed out, latent traits, including self-efficacy and identity, studied by many researchers referenced above, are not the sole factor creating success for Black male students. School-level structural supports also need to be investigated. This research study is needed and will benefit humankind as it will interact directly with the leaders involved in decision-making, the building principal, in order to investigate structural and systemic issues which impact access and exposure to higher level mathematics courses. This research will make significant contributions to the field of urban education as it will identify from a school leader's perspective which systems and processes have had either a perceived positive or negative impact on student success.

Limitations

The results of this study are limited by the schools included and the principals willing to participate. There were only four principals included; therefore, a small sample size is a limitation. With this small sample size and a limited number of participants, the findings are somewhat specific and not generalizable. Data from the 2019-2020 school year is unavailable as schools in North Carolina did not participate in end of year testing due to the Covid-19 pandemic. Using data from 2018-2019 to determine participants presents a challenge in that leadership at several of these schools has changed since the time of the exams.

Principals are also being relied upon to present their own understanding of the policies and procedures they have implemented at their schools, while often other leaders, including assistant principals, often play a large role in scheduling students. I only included principals in this study and, as such needed to question newer principals about the strategies and processes that were in place upon their arrival to their school and what, if anything, they have changed or anticipate changing. It is also important to note that my positionality in this research serves as a limitation to the data and findings. My work and role as a principal is grounded in the belief that the principal has a direct role and impact in scheduling and retention of students. Further, I analyzed the data and findings through the lens of a White, female principal who has had success with Black male learners in mathematics courses yet seeks to find additional solutions and strategies to employ in my own school.

Delimitations

This study focused on schools whose North Carolina School Performance Grade was an A in 2018 - 2019 and also whose subgroup score on their school performance grade for the Black subgroup was also an A. The grades are calculated as follows:

> End-of-Grade (EOG) Mathematics assessments measure a student's performance on the NC Standard Course of Study (NCSCS) for Mathematics in grades 3–8. Some students are instructed in the NC Math 1 NCSCS in middle school and thus take the NC Math 1 EOC before grade 9. The Math Performance is a combination of EOG Mathematics scores at grades 3-8 and the NC Math 1 scores at grade 8. (North Carolina School Report Cards, Student Performance section, 2020)

As such, there are middle schools across North Carolina that were not included in this study but could possibly have had great success with reducing the underrepresentation of Black male students in their Math 1 courses. Also, this study did not include charter schools or private schools and did not include schools that may have had success with this concern in recent years. There was EOG testing in 2021, unlike in 2020, due to the Covid-19 pandemic; however, these results were not included in the study as many students across North Carolina were learning remotely for most of the school year.

Trustworthiness

As the researcher, I sought to make certain that the interview questions had face validity. Validity, a measure of whether or not a study measures what it intended to measure, is often described in four forms: face, construct, content, and criterion validity. Middleton (2019) provided an overview of each of these forms of validity, with face validity describing the appearance of the test being used, construct validity describing whether the test measures what it intended to measure, content validity describing whether or not the test represents all, and criterion validity describing whether a test aligns to external criteria measuring something similar.

After designing the interview questions, I asked two fellow researchers to review the questions to determine if they appeared to be relevant, clear, and aligned with the purpose of the study. Upon completion of the interview, my notes were transcribed and shared with participants via email and/or Google Docs to review in order for a member check to occur.

Practical Significance and Future Implications

Each research team referenced in the literature review, Chapter II, focused on the same overall topic. However, the design, sample populations, and methodology were different in each study. As referenced earlier, Anderson (2016) and Grant et al. (2015) studied data that was already in existence, while others, including McGee (2013), McGee and Pearman (2014), and Davis (2014), interacted directly with the students to get student input. As Anderson (2016) pointed out, latent traits, including self-efficacy and identity, studied by many researchers referenced above, are not the sole factor creating success for Black male students—school-level structural supports also need to be investigated. This research study interacted directly with the principals responsible for putting these structural supports in place in schools in order to investigate structural and systemic issues. This research will make significant contributions to the field of urban education as it identifies from a leadership perspective which systems and processes have had either a perceived positive or negative impact on student success.

Conclusion

In summary, the research study is of great need due to a concerning trend in urban education and a dire need for solutions to the concern of underrepresentation of Black males in higher level mathematics courses. Much of the research on Black male students has been deficit-based and focused on what has caused the underrepresentation of Black males in higher level mathematics courses. The findings from this research study, like the others cited in the literature review, approach the concern from an anti-deficit standpoint and offer schools solutions from the perspective of the very leaders who have had success in improving this issue. School leaders can learn specific strategies, programs, protocols,

and/or best practices to be sure and implement in school buildings. The principal perspective is key to understanding what school-related factors should be replicated in order to increase the number of opportunities available for students.

CHAPTER IV: FINDINGS

The purpose of this qualitative study was to identify the factors that successful middle school principals identified as having had an impact on decreasing the underrepresentation of Black male students in their higher level mathematics courses. The findings that emerged demonstrate the creative solutions that principals have uncovered while working towards solutions to this issue with the framework of their school districts' and the state's current guidelines and policies. The study was conducted through the theoretical and conceptual frameworks of BlackCrit, with a focus on the anti-racist and anti-deficit aspects of BlackCrit, to acknowledge the impact that race has on decision making and to focus on active solutions that principals are taking to end racist policies and practices to support their students. The study contributes to the broader literature by providing a deeper understanding of solutions that current principals have implemented and with which they have found success. The findings from this study are useful to stakeholders in education as potential ideas for implementation to prevent mathematics classrooms from continuing to be the highly segregated spaces they currently are in urban schools (Johnson, 1984; Stiff & Harvey, 1988).

The research questions that guided this study and analysis were as follows:

- What factors do middle school principals identify as having had a positive impact on increasing the participation and success of Black males in higher level mathematics coursework? (RQ1)
- What do middle school principals perceive as their own impact on recruitment and participation of Black males in higher level mathematics courses? (RQ2)

To address these questions, BlackCrit, with a focus on anti-racist actions and anti-deficit thinking, was used as a lens to develop an interview protocol, analyze individual interviews, and then identify findings.

Research question 1 (RQ1) sought to elicit from participants the factors that they identified as increasing representation and success of their Black male students. Participants were asked questions within their interviews that expounded upon experiences with outside influences that positively impacted their work. Responses elicited from the participants highlighted such factors as district guidelines, rubrics, and mandates created by both the state and school districts, and parent/family input which influenced their decision making when placing their Black students into their math courses. The principals shared these factors and how they worked with them to improve the representation of Black males in their higher level mathematics courses.

Research question 2 (RQ2) sought to elicit from participants what they identified as their own personal impact on increasing the representation and success of their Black male students. Participants identified a number of strategies and processes they implemented which support their role in scheduling Black male students into higher level math courses. These strategies influenced the work principals did in hiring and utilizing staff, communicating with families, and following district guidelines while also considering alternate data points to make the best decisions to support their students.

The major themes and subthemes which emerged from the data were identified from the analysis of the interviews guided by the research questions. This chapter first explores the participants and provides a profile for each of them. Next, each major theme and subtheme is discussed. The themes of *relationship building within the school*

community, creating and fostering a diverse teaching staff, and *utilizing a variety of data points in decision-making* support Research Question 1, the factors which were identified as having a positive impact on the participation and success of Black males in higher level mathematics coursework, and also Research Question 2, what middle school principals perceive as their own impact on the recruitment and participation of Black males in higher level mathematics courses.

Participant Profiles

The proposed study aimed to get responses from principals who have had success in supporting Black male students in taking Math 1 during their middle school career. For the purposes of the study, success was defined as having a School Performance Grade of an A and also a Grade Level Proficiency (GLP) above 84% (which was also noted as an A) on the North Carolina School Performance Report Card Grade 2018-2019 for the Black subgroup. There were 18 schools with an overall School Performance Grade of an A, and of those schools, five had a grade of A for their Black subgroup (1 had no Black subgroup data, which typically means the number of students tested was too small to collect data for). I was able to interview four of the five principals for this study (the fifth is my own middle school, where I serve as principal).

The principals of each school that was identified as successful with GLP overall and for their Black subgroup were asked to share their school's current demographics and math course enrollment statistics to situate the work being done within the current school year. Additionally, these school principals were then asked questions around what they perceive as factors and impacts they have had on success with improving the underrepresentation of Black males in higher level math courses. Principals who agreed

to the interview completed a consent form allowing the interview to be recorded and were offered a gift card to participate.

The four principals who participated in this study shared a wide variety of background information, knowledge from working in the education field, and value to this study. While they all work in different types of schools across North Carolina (urban, rural, magnet, etc.) and have been at their respective schools for varying amounts of time, they do share experiences as veteran principals. Each of the principals interviewed has been in education for over 15 years. It is also worth further noting that three of the principals interviewed work at schools that have been designated as *Schools to Watch.* My interview protocol included two different sets of questions depending upon the number of years each principal had served at their school (one set of questions for principals who had been at their school for over three years and one set of questions for principals who had been at their school for one through three years). It was important for me to include both sets of principals to determine what principals identified as their own impact but also what outside factors they were able to identify as having contributed to their school's success.

Principal 1

Principal 1 is a White male who has served as principal for the past 13 years, eight of which have been at his current middle school. Prior to this principalship, he served at an elementary school as principal and has also been both an assistant principal and a classroom teacher, specializing in English/Language Arts instruction. The school he serves at is a predominantly White neighborhood middle school in a largely urban

school district. With just over 1,300 students, approximately 10% of the students are identified as Black students.

Principal 2

Principal 2 is a White male who has served as principal at his current middle school for eight years. Prior to serving as a principal, he was an assistant principal and classroom teacher, specializing in special education. He has worked at both the middle school and high school levels. The school he serves at is a predominantly White neighborhood middle school in a suburban school district which he further described as conservative. The student population is approximately 1,300 students with approximately 10% of the students identified as Black students.

Principal 3

Principal 3 is a Black female who is in her first year as principal at her current middle school. The school she serves at is a small (approximately 245 students) magnet school in a rural county with just over 20% of its students identified as Black students. The magnet theme is supporting academically and intellectually gifted (AIG) students. In order to enter middle school, students must perform at the college and career level on their EOG exams. This principal has had 100% of their students pass the EOC with the Black subgroup outperforming other subgroups in growth scores in recent years. While Principal 3 has only been at her school for one year, she was asked to identify what she has seen put in place and what she anticipates either keeping or changing to continue the positive work being done at her school

Principal 4

Principal 4 is a White male in his third year as principal of his current middle school but his eighth year overall as a principal. Prior to serving as a principal, he was an assistant principal, classroom teacher, and professor, specializing in high school history. The school he serves is a traditional suburban middle school serving approximately 600 students. Just under 20% of its students identify as Black students. Principal 4 was reluctant to participate at first in the interview and was only able to complete part of the protocol due to scheduling conflicts and illnesses.

Each of these schools and principals was chosen as they had outperformed my own school, where I have served as principal and worked towards reducing the underrepresentation of Black males in our own higher level math courses, Math 1 and Math 2. I am a White female who has served as principal at my current middle school for eight years. Prior to serving as the principal, I also served as the assistant principal at the same school. I also have experience working as a high school teacher, specializing in mathematics. Similar to all the principals interviewed, I have been in education for over 15 years.

Themes

The three major themes that emerged from data analysis address each of the research questions and highlight what principals identified as the factors impacting their work and the impact they perceive of their own work with this issue. The first major theme is *relationship building within the community*, the second major theme is *creating and fostering a diverse school staff,* and the third major theme is *utilizing a variety of data points in decision-making*. All three major themes include two sub-themes that

support the answers to each of the research questions. The themes and subthemes are outlined in the table below and detailed in the following discussion. Within the discussion, the research questions are each addressed and further discussed and situated within the broader research in Chapter V. Additionally, each of the themes is connected to the critical frameworks used in this study.

Table 2

Themes and Subthemes Uncovered

Major Theme	Subtheme 1	Subtheme 2
Relationship building within the school community (1)	*Connections with families (1.1)*	*Fostering relationships with students (1.2)*
Creating and fostering a diverse school staff (2)	*Hiring and supporting diverse staff (2.1)*	*Innovative strategies and use of staff (2.2)*
Utilizing a variety of data points in decision-making (3)	*A variety of assessments (3.1)*	*Collaborative approach to identifying and scheduling students (3.2)*

Theme 1: Relationship Building Within the School Community

One theme that emerged in response to the research questions was the importance of building relationships within the school community to support Black male students. Two sub-themes emerged when discussing and reflecting upon relationship building—connections with families and fostering relationships with the students. The relationships mentioned are among the principals, their staff members, and students' families. Additionally, the principals referenced relationships with students, not in regards to discussing placement options with them, but rather in terms of fostering a belief in students and helping build their confidence in themselves. Building and fostering relationships has helped the principals and their staff maintain open communication and

dialogue with families to discuss placement in mathematics courses. This is key to creating a culture of trust and open dialogue where principals and their staff are able to consult with families to help place students in math courses where they will be challenged, successful, and on a positive trajectory. Working with students and supporting them has helped students maintain a positive trajectory in their math coursework.

Subtheme 1.1: Connections with Families. In discussing factors that have an impact on increasing enrollment of Black males in higher level math courses (RQ1), two of the principals interviewed noted the strategy of "open access" to allow for greater numbers of Black male students to take higher level math courses. Principal 1, who is serving in a predominantly White school in an urban school ddescribed open access as:

> allowing parents, families, and students to choose to enroll in a certain course despite not having been identified by school staff as eligible for that course. With open access, the family (or the student) connects with the school and provides their viewpoint and desire for the student to be placed in the higher level course. The school then allows for that placement to happen.

This practice and work done with families to include their input in supporting students is a factor which has impacted the scheduling of Black students into higher level math courses.

It is important to note that the principals interviewed who mentioned open access advocated against the sole use of open access and allowing students entry into courses when not fully qualified. While they reference the practice as a strategy which helps with increasing representation, they also highlight the importance in first talking with families

about the implications for their students, a further connection with families which addresses the question of their own impact (RQ2). While this strategy and practice may seem to limit students who are placed into higher level mathematics courses, it works as a practice to connect with families and encourage students to develop a stronger foundation in mathematics first so they can then find success at a later time. As an example, when students are not fully qualified according to various data points, Principal 2 connects with their families to talk about building strength first in Math 7 and then entering Math 1 in 8th grade:

> I said if you are worried about Math 1 in 8th grade, if I drop you to Math 7, you take a regular class, you're going to crush it, you're going to score a 5. You're gonna be fluent, you're gonna help others, and then you're gonna earn your 5 and you're gonna make it into Math 1.

He further shared information from conversations he has had with families whose students have not been considered as qualified for the higher level mathematics and how he encouraged them to build a stronger background first. He noted, "I [asked] them isn't it best to learn math really well. Be at the top of your class. Learn it fluently."

Principal 2 also referenced that the conversations are not just between himself and families but also his staff. He leads his team in a review of data, student performance and then placement options, but he has utilized his staff to also have conversations with families. He noted asking his assistant principal to "reach out to the families and drive the conversation." He and his staff maintain the belief that it is "best to learn math really well [and] be at the top of your class" before advancing each year. He has those conversations

with his students and their families but shared that he does ultimately place students into the higher course if the family chooses so.

Principal 3 does not utilize the practice of open access; however, she echoed the importance and use of talking with parents and families on their input when determining course placement and helping them understand the criteria set in place. She stated,

> If the criteria are not met, students are not placed in the course. For example, if the guideline was the 97th percentile and a student scored at the 94th percentile, they do not get placed into the course. This has worked for us and we have 100% of our students passing the EOC and our Black subgroup outperforms the others.

Whether it is through open access or open communication with families, data obtained from the principals interviewed in this study shows that connections with families impact the work being done on placing students into math courses. These principals have met with success on EOG testing in math with their Black subgroup and identified that their work in connecting with families is helping with reducing the underrepresentation of Black males in the higher level math courses in their middle schools.

Subtheme 1.2: Fostering Relationships with Students. While discussing the relationships between staff and students and how this supports placement into higher courses, principals noted the impacts that their own work has had (RQ2). In addition to working with students' families and taking their input into consideration, principals shared information about both themselves and the staff they work with concerning fostering relationships with students with someone to believe in them, help build their confidence in themselves, and hold high expectations of them. Principal 2 addressed the

fact that the Black subgroup of students is often overrepresented in lower level classes in his county, so he acknowledged "[part] of my role as the principal is to make sure that our minority students are comfortable and learning and feel safe here." While students weren't referenced as being part of the decision as to where they are placed in math, the relationships that staff develop with students were highlighted as instrumental in helping students succeed. Additionally, principals work to ensure students are placed properly (which sometimes results in not being placed into the higher course) so that they can achieve success and build a strong background in their mathematics courses.

While it is not always the principal who is directly building and fostering the relationships with the students, principals highlight their mindset and expectations of staff to prioritize this belief in students. Principal 1 shared:

> If there's a kid on the threshold, we will tell the teacher we want you to have a conversation with this kid and tell them you believe in them and that you're going to recommend them for that course. Just that conversation alone creates that kind of buy-in and that's awesome.

He further noted when reviewing data with his team and discussing students who do not qualify with traditional data points for the course, "[e]ven if they're borderline, my default is to put them in [the higher level course]. We're not gonna hold them back." He also shared the viewpoint that challenging students is more acceptable to families stating, [i]f you're looking for an opportunity for a challenge, the parents and students generally don't push back on that."

Principal 3, unlike Principal 1 who places students in courses without having the traditional data points required, highlighted that it is important to place students in the

correct class in order to encourage them and build their confidence for future success. When reviewing data points, she and her school utilize district guidelines and do not place students in higher level courses if they do not meet the prescribed guidelines. In pointing out the success of her students, in particular having 100% of her students pass the EOC and her Black subgroup outperforming other groups, she explained: “placing them in the correct class encourages students and helps them build confidence in themselves.” Building a strong foundation helps her students to achieve in the future as they progress to higher level courses.

Principal 2 referenced staff and relationship building with students in terms of hiring and assigning teachers to teach various courses. He highlighted the need for positivity and love of one’s students in order to determine who teaches which courses, as these relationships help lead to the success of students. He acknowledged that this is something he looks for when hiring and assigning teachers to sections of math courses. He noted in describing one of his newer teachers:

> I need positivity. I work hard on that kind of thing. I need folks that are positive and love to teach our learners. My rookie comes from banking but kids can count on him. I can count on him. It’s about pedagogy and placement but it’s also about positivity and showing up.

He further noted that once students are in the higher level classes, he ensures that teachers do not “lower the bar” for them.

The relationships fostered with students by principals, often indirectly through their staff, include believing in students, encouraging staff to do as such, and helping students build confidence in themselves. This is an impact that the principals interviewed

noted they have had on increasing representation and success of Black male students in their higher level math courses. The principals shared this perception of believing in students and helping build their confidence as one of the reasons they have been successful.

Theme 2: Creating and Fostering a Diverse School Staff

In order to best support their Black male students, the principals discussed the importance of hiring and supporting a diverse school staff. This includes both teachers and administrators who can serve as advocates and role models for their Black male students. In addition to these benefits, a diverse staff also helps principals in broadening their own experiences and focusing on the needs of various subgroups of students. With a variety of lengths of time spent at each school and also with staffing becoming more and more difficult in post-Covid times, the principals also acknowledged strategies they are using to support the staff they do currently have and help create structures that their current staff can implement to better support their students.

Subtheme 2.1: Hiring and Supporting a Diverse Staff. A factor which the principals interviewed as having had a positive impact on their work towards lessening underrepresentation (RQ1) is the staff they have been able to hire or had the opportunity to work with within their schools. Additionally, they noted where they have worked to move teachers around and schedule teachers intentionally as an impact they have had on these issues (RQ2). The staff that the principals' reference includes not just teachers but also school administrators. A key responsibility of teachers, as Principal 2 noted, is hiring and scheduling teachers. He states, “I select the teachers and sections they are going to teach, what grade level, that kind of stuff.”

Principal 1 shared the example of a Black male teacher at his school who he moved to a grade level and team so that all students going through his school would have the opportunity to be in class with a Black male teacher for at least one part of the middle school career. Principal 1 shared:

> I moved a teacher from 8th grade to 7th grade on purpose so that every kid that comes through [my school] has a minority teacher. With this move, that means every kid on a team has a Black teacher.

He further acknowledged searching for a more diverse staff to represent his students when he is hiring teachers. He noted:

> I'm trying to hire more minority teachers. I just hired a minority dean and I think I could already see that it's paying some dividends for the kids. When we're scheduling we look at it from a lens of, do we have people who look like each other in the room? When they are the only one like themselves you know that's hard. I don't know what exactly that feels like but I can't imagine feeling great.

Principal 2, a White principal at a predominantly White suburban school, shared the example of a Black male assistant principal who stepped in to advocate for higher placement of the Black male students at their school. This school administrator presented the principal with the idea of placing all the Black male students into the Math 1 courses in 8th grade in order to expose the students to the higher level math course. At first, he was hesitant to trust the strategies the assistant principal was suggesting but saw the successes that were had. He noted:

> I have an African American male assistant principal who really coming out of Covid suggested to me that we nurture everybody. I thought it was a terrible idea.

> But he was like, let's put them all in advanced and more recently we've had conversations about advanced and how we have more minority students in advanced. We've advanced and they've done well but we haven't lowered the bar for them.

They have worked together to review rosters of students and have conversations around nurturing Black male students to ensure they are confident and able to be successful in the higher math classes. As noted in discussing the previous theme, Principal 2 also believes in ensuring students are placed where they will be successful and noted that he and his assistant principal at times debate where to place their Black male students. He relies upon the assistant principal to connect with families and drive the conversation around math placement.

Principal 3, a Black female principal, is only in her first year at her current school and noted while unable to hire new staff at this time, acknowledges the importance of seeking a diverse teaching staff. She stated:

> [t]he teaching staff is not diverse. The teachers come to the school and stay at the school; however, two positions prior to my appointment were of non-white staff.

She discussed a Black female curriculum facilitator who she recently promoted but may have to return to the classroom due to staffing needs.

With a variety of situations, including the ability to hire new staff, the flexibility of being allowed to move teachers throughout the school, and the openness to working with staff already on one's team, the principals interviewed highlighted the importance of a diverse staff and the need for Black male students in particular to have a teacher and/or staff member who they can consider a role model and/or advocate for them.

Subtheme 2.2: Innovative Strategies and Use of Staff. In the absence of finding a diverse staff to hire or the ability to fill positions, principals shared strategies they have used with their current staff as one of the impacts they have had on increasing the representation of Black males in their math courses (RQ2). All principals interviewed shared a variety of strategies they have created and implemented within their own schools which they perceive as having led to their success. These strategies encompass ideas around the overall schedule for their students' days at school, creative staffing solutions, and professional development conducted with their staff.

Principal 1 discussed a hiring strategy utilized in order to help create small group instruction within the math classrooms. He noted:

> I created co-teaching situations with those part time teachers, and I did it on purpose. So they were free during academic enrichment which we call "Boost," and then they would co-teach the other two blocks that they were working with. And we put them in classes, usually our Math 8 classes, so we have two adults and lower the ratio even though it's a non EC class just to ensure that we have a small group instruction. We've got more individualized support and that's the strategy.

In terms of the daily schedule for students, Principal 3 shared that their school utilizes a similar time of day to that discussed by Principal 1. It is a flex time in which their students return to homerooms for extra support. This time is a time for students to ask questions of their teachers and strengthen their academic progress. This is a key resource that could be utilized in particular to support Black male students who need extra work to be successful in their math courses.

Principal 3 also explained in detail several of the professional development opportunities they worked with their staff on in regard to supporting students. A recent focus has been on rigor and questioning in the classroom with the goal of getting students to engage more in their lessons. This is monitored through walkthroughs with the administrative team and building coaches. Additionally, Principal 3 conducted a study of culturally responsive leadership and has been working to implement these best practices within her school.

While Principal 2 did not discuss a separate flex block of time, he did share a strategy of utilizing high school students to push into math classes to offer extra support and tutoring. Similar to the strategy noted by Principal 1 regarding seeking more individualized attention, he noted:

> We've got high school kids coming over to tutor and we pull kids out to help the teacher and get them more individualized attention.

The principals interviewed acknowledged that they have not had the opportunity to hire 100% of the staff they currently have but still recognized the need for solutions to reduce the underrepresentation of Black males in their math courses. This need is fulfilled through their creative and innovative strategies for how they utilize the staffing and schedules that they do have currently at their schools.

Theme 3: Utilizing a Variety of Data Points in Decision-Making

In discussing factors that have impacted student placement into courses and also work principals have done themselves on placing students, the principals interviewed spoke of utilizing multiple data points, including teacher, staff, and parent input, to make decisions on mathematics course placement. None of the principals interviewed

referenced specific supports, protocols, or resources provided by the state or their districts as the sole factor in addressing this concern, with the exception of the state mandated Level 5 legislation. This legislation impacted student placement as it requires schools to place students into Math 1 by 8th grade based upon their EOG scores and not any information from the parents, teachers, or other assessments. While this has been a key change and helped increase the number of Black male students in higher level math courses, it is not the only data point or strategy referenced by the principals interviewed.

Subtheme 3.1: A Variety of Assessments. In discussing factors that had a positive impact on increasing the participation and success of Black males in higher level mathematics coursework (RQ1), the principals interviewed discussed utilizing a variety of assessment data beyond the traditional EOG data which have helped these efforts. Principal 1 referenced using a district created rubric which reviews data points including MAP and EOGs, but also using a school-created readiness test.

Principal 2 discussed moving past the district's prior practice of simply placing students into courses based upon their AIG classification. While they still use AIG classification as one factor, he further explained, "[we] no longer use a sole test score or any other sole variable to place children. We use the EOG scores and other qualifiers to place them from Math 7 into Math 1 classes." He spoke further of the impactful change in North Carolina legislation which was the passing of an advanced math legislation in 2018 that requires middle schools to automatically place students who score a Level 5 on their EOG exams into a higher level math course. He shared that "[the] old school way was you qualified solely with AIG qualification. They were designated through the county as intellectually gifted. Now it's the level 5 law."

Similar to both Principal 1 and Principal 2, Principal 3 also referenced input from the school district in that the district sets Math 1 criteria for students scoring in the 90th percentile to gain entrance to Math 1. She further added that the school must review both NWEA (MAP) scores and EOG scores before making a determination on placement. As seen in all the principal interviews, schools have begun reviewing additional assessment data beyond the EOGs which principals have noted as having had a positive impact on increasing the participation and success of Black males in higher level mathematics coursework.

Subtheme 3.2: Collaborative Approach to Identifying and Scheduling Students. While discussing data points that principals used in placement and scheduling, an additional subtheme arose from the analysis of the interviews which principals identified as their own impact on the recruitment and participation of Black males in higher level mathematics courses (RQ2). All principals interviewed noted the need for a collaborative approach in identifying and scheduling students into higher level math courses. Also, all of the principals interviewed noted that not just one person does all of the scheduling, nor does one person make the determination for placement of students into courses. While principals all identified guidelines and restrictions presented to them by both the state and their individual school districts, they further expanded upon these guidelines by using multiple stakeholders to make the best scheduling and placement decisions for each of their students.

When asked specifically who does the scheduling at their school and who makes the placement decisions, the following statement was shared by Principal 1:

> We sit down at the table and we look at the structures. My math facilitator leads a lot of the data analysis of it, and then we're all at the table. What we're talking about is how are we going to [go beyond] the cut score because I am not a believer in that I'm going to be a kid's gatekeeper.

It is important to note that with the collaborative approach to scheduling students into courses, schools and principals have purposefully avoided allowing teachers and/or one staff member to be a gatekeeper and preventing students from advancing for one reason or another. Berry (2008) identified teachers acting as gatekeepers as one of the reasons Black male students have lost access to higher mathematics courses and both Principal 1 and Principal 2 noted that teacher recommendations had become only one part of the process of determining access to courses as teachers often do not look holistically at the students and their ability to succeed in higher courses.

As an example of how and why principals have moved away from using just a teacher recommendation to determine placement, Principal 2 noted that teachers often refer to behavior as a concern when determining the class schedules of students. He and his scheduling team listen to the teachers and hear their concerns but ultimately move students based on the best social setting for a student to achieve success. He reported:

> Teachers don't have a lot of say where kids go until after they start. They do their own assessment, but I'm also pretty pig-headed about that. You know if it's truly math and numbers, and I determine that based on who's talking to me, then I'll make some moves. But oftentimes it's about behavior, and you know I mean we're dealing with young people, so, yeah, I think the point is really great about social setup.

As can be seen in all the principals' interviews, a key influence that principals have had on decreasing the underrepresentation of Black males in their higher level math courses has been utilizing a collaborative approach and listening to more than just one voice in the decision-making process.

Connection to Research Questions

Each of the three themes emerged in response to both RQ1 and RQ2. The table below, Table 3, highlights how each theme answered each research question.

Table 3

Themes and Connections to RQs

Major Theme	RQ1	RQ2
Relationship building within the school community (1)	*Open access, staff connections with families*	*Open communication with families, Build confidence and promote high expectations*
Creating and fostering a diverse school staff (2)	*Hiring advocates for students*	*Strategies for staff use in absence of ability to hire*
Utilizing a variety of data points in decision-making (3)	*Level 5 legislation*	*Expectation/mindset of collaboration and multiple voices/data points*

Within the first theme, *relationship building within the community*, principals answered RQ1 by identifying factors which they note as having had a positive impact on increasing participation and success of Black males in higher level mathematics coursework. These factors include the utilization of open access in scheduling and placing students into courses and utilizing their staff to connect with families to drive conversations and relationship building. In answering RQ2, their own perceived impact on the recruitment and participation of Black males in higher level math courses,

principals highlighted the importance of open communication with families to discuss best options for placement and the fostering of student relationships to build confidence and promote high expectations among staff and students. It is important to note that the principals interviewed acknowledged that while they aren't always doing the work and building relationships directly with students and families, they have created the expectation and mindset with their staff that this must occur (and have even, at times, shifted staff and responsibilities of staff to further foster and promote these relationships).

Within the second theme, *creating and fostering a diverse teaching staff,* principals addressed RQ1 by identifying factors which they note as having had a positive impact on increasing participation and success of Black males in higher level mathematics coursework. These factors include the ability to hire both teachers and administrators who have served as advocates and role models for their Black male students – the principals shared instances of their staff working to question placements, connect with families, and overall broaden the focus of their work on their Black male subgroup of students. In answering RQ2, their own perceived impact on the recruitment and participation of Black males in higher level math courses, principals highlighted the work they have done in the absence of having the ability to hire additional staff or staff who fully represent their student body. The impact of their work can be seen in strategies such as moving current staff to different positions within the school, creating small group instructional settings, and creatively using academic enrichment time within the day to focus on specific student needs.

The third theme, *utilizing a variety of data points in decision-making,* also emerged in response to both RQ1 and RQ2. In terms of factors which have impacted their

work (RQ1), principals noted the passing of the Level 5 legislation by the state as a major impact on their work, in addition to various district and school level rubrics, readiness tests, and additional data points to consider when placing students into their math courses. They highlighted the ability to move beyond a sole data point, such as one EOG score or AIG designation, as a positive impact on their work to decrease underrepresentation of Black males in higher level mathematics courses. When discussing their own perceived impact (RQ2), principals shared the work they have done in either collaborating with others and/or setting the expectation that not just one person should serve as the determining voice in student placement (they have created school communities which have moved beyond the teacher acting as the gate-keeper to higher level courses).

Conclusion

The findings of this study highlight important work being done by principals in middle schools to decrease the underrepresentation of Black male students in their higher level math courses. Each of the three major themes connects to the theoretical frameworks of BlackCrit (specifically focused on anti-racist actions with an anti-deficit approach) while answering the research questions. Within each theme, answers to both research questions emerged and were further identified as subthemes.

The themes of *relationship building within the community* and *utilizing a variety of data points in decision-making* connect to anti-racism in that principals are working with others to actively combat the racist policies and structures creating the issue of underrepresentation. Rather than rely upon the traditional pathways and processes used to place students, principals are working with students and their families to make decisions

on math placement. Principals are taking into account conversations with students, parents, and teachers as they work to place their Black male students into their math courses.

The theme of *creating and fostering a diverse teaching staff* connects to the theoretical framework of BlackCrit in that principals identify the importance of staff who represent the students they wish to support. Black male students, and Black students in general, benefit from seeing themselves represented in the staff at their school. With a focus specifically on the experiences of Black students in schools, a concept explored in Dumas and ross' (2016) work with BlackCrit, principals noted that success in reducing underrepresentation is possible.

All of the themes discovered support the work from an anti-deficit approach in that questions asked of principals focused on what work was supporting students and not what factors in students' lives were having a negative impact on their school placement and performance.

Chapter V provides a discussion of these research findings and how they connect to the research surrounding this critical issue in education.

CHAPTER V: DISCUSSION

This chapter provides a summary of the findings of this study and how these findings are situated within current research. Additionally, this chapter highlights how what was learned in Chapter IV supplements what is already known about this topic and how these findings add to the current research. This chapter will first review the purpose and need for this study and then provide an overview of each of Chapters I - IV. The study's findings will then be discussed as themes, and following that discussion, recommendations for key stakeholders and recommendations for future research will be discussed. Finally, a summary of the study and conclusion will be shared.

In researching the issue of underrepresentation of Black males in higher level math courses, research has been done on the students' perspectives of the impact this issue has directly on them (Bonner, 2001; Davis, 2014; McGee, 2013; McGee & Pearman, 2014). Additionally, studies have been done relating to the perspective of the teachers in these classes and their role in supporting students (Davis et al., 2019; Jett et al., 2015). Both students and teachers alike, in addition to researchers (Anderson, 2016; Peters et al., 2014; Tommis, 2011), have identified successful school systems and structures both in and out of the United States that have impacted the placement and retention of Black males in higher level mathematics courses.

The purpose of this study was to determine the factors that successful middle school principals, the missing voice from current research, identified as integral in helping to increase Black male students' enrollment in higher level mathematics courses. As the instructional leader of the school, the building principal is the primary person responsible for creating systems and structures in their schools (Sergiovanni, 2001),

which are the systems and structures that should be corrected to enable success for all students.

The study was grounded in the theoretical framework of BlackCrit as the interview questions focused pointedly on the experiences of the Black students that principals have worked with in their middle schools and also sought input from participants who have had success with their Black subgroup of students in the past. Additionally, the study sought solutions and specific actions participants took, which had an anti-racist approach—an approach which focused on the actions they took to combat the racist policies and structures creating the issue of underrepresentation. Finally, there was an emphasis on anti-deficit approaches to solutions. Connecting to Sergiovanni (2001), this approach looked at the issue as a problem schools should be correcting for the students and not what the students should be doing differently. The research questions that this study answered were as follows:

- What factors do middle school principals identify as having had a positive impact on increasing the participation and success of Black males in higher level mathematics coursework?
- What do middle school principals perceive as their own impact on the recruitment and participation of Black males in higher level mathematics courses?

In Chapter I, the background of this issue was discussed along with the purpose and need for the study. Chapter II presented an overview of current literature related to this topic and descriptions of the theoretical framework and approaches guiding the study. Chapter II presented the background on underrepresentation from the perception of

both students and teachers and included connections to current school based practices. Chapter III shared what methodology was utilized for this study and the processes for data collection and analysis. Chapter IV presented the findings from the study and organized the findings into three major themes, each with two sub-themes which answered each of the research questions.

Connection of Themes to Current Literature and Research

The findings of this study share principals' perspectives on the concern over the underrepresentation of Black males in higher level mathematics courses. Several of the findings connect to previous studies and others offer new insights from the principals' perspectives on how to increase representation of Black male students. This section discusses findings within each theme and how they connect to previous research and studies referenced in Chapter II of this study.

Relationship Building Within the School Community

In highlighting the importance of relationship building within the school community, the principals in this study reinforced what successful students and teachers have reported as essential to their success in earlier studies. Davis (2014) wrote of relationships as the number one component to success identified by the students included in his study. Support systems, including a community of support, were uncovered by Berry (2008) and Flowers and Banda (2019) as what students report as having had an impact on their success. These relationships and systems of support mirror what the principals in this study shared as having had a positive impact on increasing representation of Black male students in their higher level math courses.

While the principals interviewed focused mainly on relationships with families and not just the students themselves, they also noted the importance of building confidence within their students and fostering a strong belief in students that they can be successful. Grant et al. (2015) discussed the importance of confidence building when researching the perspectives of the students themselves, and Martinez (2017) uncovered that belief in oneself impacts academic performance. In looking at teachers' perspectives on what leads to success, Jett et al. (2015) also identified relationship building by teachers as crucial to supporting students. Further, the principals' emphasis on relationship building within the community connects directly to Kishimoto (2018), who wrote of the importance of creating a sense of community, particularly in the classroom, as a key practice of anti-racism. A community is exactly what the principals described when they referenced the relationships that not only they, but also their staff members, have built with their students' families.

Unlike studies done with the students themselves, the principals interviewed did not mention focusing on student identity and/or agency as a factor they perceive as having a positive impact on recruitment and participation of Black males into the higher level mathematics courses. The importance of building and maintaining a strong student identity was uncovered in several studies conducted around student perspectives (Bonner, 2001; Flowers & Banda, 2019; McGee & Martin, 2011); however, the relationships mentioned by principals focused primarily on relationships with families in that when families advocate for their students, principals are willing to listen and heed their advice and suggestions. Open access to the curriculum and courses was referenced as a common practice, but the principals did not reference or highlight tapping into the feelings and

beliefs of the students themselves as others uncovered in their work (Bonner, 2001, 2003; Davis, 2014; Grant et al., 2015). This suggests that principals are either leaving out an important voice in their own work and decision-making, that of the students themselves, or perhaps the age of the students (middle school) is a determining factor in relying more upon families than solely the students.

One new insight uncovered from one of the principals is the positive impact of placing students into a more challenging situation than they are traditionally qualified for. Principal 1, who serves at a predominantly White school yet in an urban school district, noted when on the threshold or possibly not possessing the traditional requirements for placement into higher level courses, they have found success when erring on the side of challenging the student versus maintaining the status quo. Studies done with the students themselves in earlier works have not focused on the impact that challenging oneself has over taking a course which would be considered easier for the student.

Creating and Fostering a Diverse Teaching Staff

Each of the principals interviewed shared stories and examples of staff they have either hired themselves or utilized to best support their students and recognize the importance of a diverse teaching staff as key to reducing underrepresentation in the mathematics classrooms. This echoes the work of Davis et al. (2019) who found that increasing the number of Black male teachers is key to supporting students. While the principals noted that they do not always have the diverse staff needed, particularly Principal 3 who noted teachers often come to her school to work and stay, they mirror Davis et al. (2019) in acknowledging the importance of having the teachers they do have on staff better identify students to place into higher level math classes, create support

structures for students, and better preparing teachings to support their Black male students. The principals, specifically Principal 1, also connected to the work of Berry (2008), who warned against teachers setting lower expectations and acting as gatekeepers.

While researching how to increase college participation among Black males in STEM courses, Palmer et al. (2010) identified improving teacher quality for underrepresented students. While their work did not highlight what principals in this study uncovered (the need for creating a diverse teaching staff), it did connect to the theme of supporting the teachers and staff that one does have in their school as a building leader. The principals interviewed shared strategies of supporting their current teaching staff to best support their Black male students in mathematics courses by such actions as creating small groups for instruction and working with a co-teaching model when possible. Supporting the current teaching staff connects to the work of improving teacher quality to then better support the students.

All of this insight gathered from the principals and their focus on hiring and supporting a diverse staff connects to Ford (2010) who highlighted an "inverse relationship between teacher and student demographics" (p. 33). Ford (2010) noted that nearly 85% of the teachers in the United States are White and there is a need for preparing those teachers to work with students from different backgrounds and cultures. This mirrors what principals' report as needing to first and foremost hire a diverse staff, but in the absence of the ability to hire, provide support and professional development for their current teachers to best support their Black male students.

An additional insight gained from this study involves the importance of providing professional development to the staff who will be working with the students in schools. The principals interviewed noted the need to support their staff in better identifying and supporting Black males in their higher level math courses with professional development around best practices. One of the principals interviewed also noted specific topics for professional development, rigor and questioning, and culturally responsive leadership. This mirrors both Bol and Berry (2005) and Davis et al. (2019) who found the need for professional development for educators a key need in decreasing the underrepresentation of Black students. This need for support and professional development also relates to Oakes's (1992) findings in determining what is needed to end tracking – support with curriculum and pedagogy and not simply just an end to current tracking policies and procedures.

A new insight uncovered from this study is the acknowledgment of the principal's direct role in helping create and nurture a diverse staff. The principals highlighted their own actions, such as moving teachers to different grade levels, making the hiring decisions, and placing students with particular teachers, as strategies that have helped support their Black male students. As Sergiovanni (2001) wrote and the principals in this study articulated, the building principal is the primary person responsible for creating these systems and structures in their schools that principals identify as having had a positive impact on improving the underrepresentation of Black males. Previous studies conducted with students and teachers, and which investigated school specific strategies did not directly name the principal as a key lever in creating and nurturing a diverse staff, but the principals interviewed articulated their own specific actions.

Each of the principals in this study were identified as having had success and were also noted to be veteran principals and educators. They each provided answers and suggestions to the questions asked of them. As such, it is evident from these interviewees that the principal has a direct role in solving this concern. One additional insight is the importance of the direct action and advocacy that principals take in creating systems and structures within their schools. Without this direct role and involvement, one could argue that success may not be found.

Utilizing a Variety of Data Points in Decision-Making

Each of the principals interviewed shared the viewpoint and examples of the importance of utilizing a variety of data points when making decisions around who to place in which classes. Kishimoto (2018) wrote of the importance of questioning who has access to knowledge and Kendi (2019) also urged anti-racist educators to move away from standardized tests to measure aptitude and intelligence and utilize other data points, descriptors, and characteristics. This is exactly what principals are doing when they reflect upon the data presented to them through traditional pathways such as the EOG exam scores and various district rubrics. The principals interviewed shared such strategies as looking at MAP scores, school-created readiness tests, and family input to help place students into Math 1, the higher level math courses offered at the middle school, rather than just the Level 5 score on the EOG. This also connects to the work being done with gifted education in Hong Kong schools, which have adopted a portfolio approach to identifying learners who need further differentiation in either of the next two tiers of gifted education (Tommis, 2011). This approach, like some of the strategies

referenced by the principals interviewed, includes teacher and parent input in addition to reviewing results from standardized tests.

This theme uncovered while interviewing the principals mirrors Bonner (2000) who, in investigating the issue of underrepresentation in regards to Black male students in gifted programs, and Oakes (1992) who investigated underrepresentation through the practice of tracking, noted that one of the reasons for underrepresentation was concerns with standardized testing which is frequently used to determine placement into gifted programs and/or higher level tracks of courses. Additionally, Tommis (2011) pointed out the use of multiple data points for gifted education access and placement in Hong Kong as a successful strategy for making the programs more inclusive and Peters et al. (2014) advocated for the use of alternative assessments to determine placement into gifted education programs.

Two of the principals interviewed mentioned open access as one of their strategies to help with increasing representation and diversity in their higher level mathematics courses. While not the only solution and one not to be used in isolation, it mirrors Hong Kong's three tier approach to providing access to gifted education in which they allow all students access to the gifted programming first and then work to support students as they progress through the gifted programs (HKSAR, 2013). The new insight gained from this study in regard to the use of open access is the inclusion of parent and family communication in conjunction with the open access. Principals are offering entry into the courses where families wish for it to happen, but are also working with the families to guide their decision making to help provide the best placements and better support.

An additional new insight gained from this study is the importance of a collaborative approach to decision making. While the principal serves as the instructional leader and the ultimate decision maker in determining placement into math courses, all of the principals interviewed highlighted the work they do in collaborating with others (teachers, families, fellow administrators) to help determine the best course of action when placing their students into math courses. This collaboration is, at times, direct and includes the principal but also exists within the culture and expectations they create for their school community. Just as Oakes (1992) emphasized in her work, school leaders need to be able to confront and disrupt the norms, which are often racist and classist, which are currently determining their scheduling and placement practices. According to the principals interviewed, it is rarely ever just one person or one datapoint that determines a student's course placement and they, the principals, are a key lever to creating a mindset and/or norm that collaboration and multiple datapoints, viewpoints, and perspectives be considered. This is a key concept to embrace in order to help alleviate the underrepresentation of Black male students in higher level mathematics courses.

Recommendations for Key Stakeholders

Key stakeholders involved in the underrepresentation of Black males in higher level mathematics courses include principals and school building leaders, parents and families, and school district leaders and policymakers. Based on the findings from this study, which connect to previous studies and research, I recommend to stakeholders that there should be a focus from all parties on the key themes that were identified from the principals' interviews: relationship building within the school community, creating and

fostering a diverse staff, and utilizing a variety of data points in decision making. This section offers recommendations to each of these stakeholder groups and highlights what is needed to decrease the underrepresentation of Black males in higher level mathematics courses.

Principals and School Building Leaders: Make Relationship Building a Priority

The findings from this study and that of previous studies show that principals and other school building leaders should make relationship building a priority in the work they do. Relationships and community building have been cited as key elements to achieving success in studies conducted with students (Berry, 2008; Davis, 2014; Flowers & Banda, 2019) and teachers (Jett et al., 2015) and now the principals themselves. Theme one in particular, *relationship building within the school community*, directly speaks to building relationships with students and their families and expecting and supporting staff in doing the same. However, the other two themes uncovered, *creating and fostering a diverse teaching staff* and *utilizing a variety of data points in decision-making*, also include building and maintaining relationships with others as key elements to success.

It is essential that all principals and school building leaders learn from this work and insights and focus on the following:

- Establishing open lines of communication and dialogue with students and their families
- Supporting staff in their advocacy for students and creating a trusting environment where staff can share their viewpoints
- Getting to know students as more than just a test score

Additionally, the principals interviewed reference collaboration in determining student placement; therefore, principals and other school building leaders should work to build strong relationships, with open communication, among themselves, their staff, their students, and the families, so that effective collaboration can occur.

Parents and Families: Advocate for Higher Placement Levels for their Students

The findings from this study and that of previous studies uncover key components of reducing underrepresentation that parents and families connect to. Much of the work done in previous studies centered around the importance of building and maintaining a strong student identity (Bonner, 2001; Flowers & Banda, 2019; McGee & Martin, 2011) and building one's confidence and belief in oneself (Grant et al., 2015; Martinez, 2017). However, what this study uncovered from the principals is that the work being done involves connecting primarily with the adults in the students' lives and not directly with the students themselves. As such, parents and families should continue to advocate for higher placement levels for their students and remain in open dialogue with their students' schools as they serve as the voice for their students in the middle school years.

While the principals in the study referenced utilizing district and state guidelines as initial placement decisions were made, they all also mentioned meeting with parents and families and listening to their concerns regarding the placement of their students. Additionally, while the principals cited open access as not a sole solution to the concern of underrepresentation, it is important for parents and families to be informed of their rights and ability to advocate for their students and to take advantage of policies such as open access when they exist. As such, I specifically recommend to parents and families to:

- Remain informed and involved in the coursework available to their students.
- Do not hesitate to connect with the school administrators to discuss concerns and advocate for advanced placement.

As students learn and grow, it is important for the adults in their lives to remain involved to ensure that students are not missing opportunities in their schooling, particularly in their mathematics courses. Parents and families need to know the availability and impact of taking Math 1 (and possibly higher math courses) in middle school, and not rely entirely upon the schools to be the decision-maker.

District Leaders and Policymakers: Encourage Communication and Collaboration

Relationship building among schools and families is an evident theme in this study and in previous studies of this topic. However, this study uncovers the missing voice from previous research studies, that of the building principal. As Sergiovanni (2001) noted in his work, the building principal is responsible for creating structures and setting practices which become routine for all stakeholders to implement and also influencing policies which require these elements to occur. All of this is key work in reducing the underrepresentation of Black males in higher level mathematics courses - the leadership in place in schools can make the necessary changes happen.

This study was needed because the principal voice is missing, yet successes are happening in schools in alleviating this concern. As such, district leaders and policymakers should encourage and foster communication among principals around best practices and successful strategies uncovered to help support Black male students in their mathematics courses. In interviewing Principal 1, he made the comment: “Why don’t we

talk about this together? We never talk about this issue, yet you and I both have great ideas and a desire to fix this issue."

He articulated with that comment the lack of focus on this issue among school leaders. District leaders and policymakers have the ability to create conditions, expectations, and even requirements around principals and schools moving towards having these conversations and working together to solve the issue. Therefore, I recommend to district leaders and policymakers the following actions:

- Embed time in district meetings for principals to have discussions around their work
- Provide professional development for principals and building leaders around supporting their Black male students in higher level mathematics coursework
- Create conditions and expectations for principals to identify gaps in their data and collaborate with others to discuss potential solutions

Without expectations from district leaders and policies to support the work, principals will continue to work in silos on this work – success will be had in various schools but without the ability to connect with and learn from each other, overall improvement and elimination of the underrepresentation of Black males in higher level mathematics courses will never occur for all.

Recommendations for Future Research

I propose these three topics for future research to further support finding solutions to the underrepresentation of Black males in higher level mathematics courses:

- Exploring the professional development offered to principals to support their work in reducing the underrepresentation of Black males in higher level math courses
- Researching the work done in elementary schools to prepare Black male students for higher level math courses in middle school
- Studying the impact and success rate of students who were placed into these courses based upon a rubric versus those who were identified in other manners (e.g., teacher recommendation, family advocated for placement, etc.)

Explore Professional Development Offered to Principals

It is interesting to note that of the four principals interviewed, and in comparison to myself and my own school, all of the principals identified as successful for this study can be considered veteran principals. Each principal, while potentially new to the school they are serving, has almost 10 years of experience as a school administrator. This begs the question of what is being done to support principals in their work around this issue. Veteran principals often have a "bag of tricks," multiple connections to other principals, and years of experience to pull from when deciding how to best support their Black students. However, none noted a systemic professional development offered to them to allow for these conversations and learning around what others have done to be successful. It would be advisable to review the professional development that is currently being offered and potentially review professional development opportunities offered to other educators in different roles to find what is working in schools.

Another interesting connection to further explore is that of the characterization of schools as *Schools to Watch.* Of the principals interviewed for the study, three work at

schools which have been identified in the past as *Schools to Watch.* Ellis (2011) wrote of characteristics that these schools exemplify, including academic excellence, developmental responsiveness, social equity, and organizational structures and processes. The social equity standards in particular highlight schools' work to encourage schools to keep positive options open for all students which could include keeping multiple options for mathematics course placement open for Black male students. The professional development work done by *Schools to Watch* can be further explored to possibly determine the connection between this professional development and the successes schools are having in reducing underrepresentation. If found to be a strong connection, this could potentially become a professional development program that all middle schools and principals are encouraged to participate in.

In her work regarding tracking, Oakes (1992) promotes the practice of detracking and creating homogenous classrooms. However, she emphasizes the need for schools to work through elements of change which include updating normative, technical, and political aspects of school. Without a focus on these concepts and professional development and support regarding disrupting current practices, any changes principals make are likely to be unsuccessful, unwelcome, and/or unsustainable. As such, principals will need professional development to work at reducing the underrepresentation of Black males in their higher level mathematics courses.

Research Work Done in Elementary Schools

The focus of this study was on middle schools as it is a personal connection to my own work as a middle school building principal in North Carolina. Our school's own data show the concern of the underrepresentation of Black males in higher level mathematics

courses despite overall success on the NC School Report Card Grade and EOGs. As such, all of the principals interviewed for this study currently work in a middle school and the interview protocol followed focused on questions that their current work has done to impact student placement and participation in higher level courses. What was missing from my study was a focus on what prior work had been done to support Black male students before their arrival to middle school.

A potential future research study could be to review the work done in elementary schools and how that is setting students up for success in middle school and beyond. It would be important to uncover work being done in earlier schooling so that educators can learn from it and implement strategies even before middle school. Elementary school principals are likely to be doing work to support their Black male students, but they were left out of this study due to the nature of my own focus.

Study the Connection Between Success and Placement Method

This study was conducted as a qualitative study to find middle school principals' perspectives on the issue of underrepresentation of Black males in higher level mathematics courses. Each of the principals interviewed discussed using multiple data points to make placement decisions which emerged as one of the themes of the study. The data points referenced throughout the interviews continue to connect with traditional placement methods and descriptors of successful students, particularly standardized testing. It would be an important extension of this research to expand upon the identifiers and other data points and descriptors used to help place students into higher level courses. What could also become a future study is a deeper dive into the correlation between the success rate of the students placed into mathematics courses based upon these multiple,

and potentially different, data points. There could be a quantitative study to research the success rate of those placed into mathematics courses based solely on one datapoint such as the EOG test results versus those placed by parent request, teacher recommendation, or other identifying factors.

Conclusion

The purpose of this study was to uncover what successful middle school principals identified as factors, both from outside influences and from their own impact, which helped create their success in decreasing the underrepresentation of Black males in higher level mathematics courses. Previous studies around underrepresentation had focused on the perspective of students and teachers in addition to highlighting overall school structures, both in and out of the United States, where success had been found. However, this study highlighted a key voice missing from previous research—that of the building principal, the key instructional leader and decision maker in the school building. The study and research questions were grounded in both BlackCrit and anti-racism theories with a focus on anti-deficit approaches to solutions. The findings revealed key themes which connect to previous research and uncovered new insights. The findings can help support school leaders in creating solutions to this critical issue. The following conclusions can be drawn from this study:

- Relationships are essential
- A diverse staff helps support students
- No one data point could or should determine placement and/or success of students

This study was conducted as a case study to be able to better understand those who are currently experiencing success and what can be learned from their work and

experiences. The participants, all principals who have had both overall successes with testing data and also success with the achievement of their Black students on mathematics EOG testing, were able to provide a voice that is currently missing from the research yet crucial to finding and implementing solutions. This voice is crucial as principals are the leaders of their schools as they lead the work on a daily basis.

REFERENCES

Anderson, K. A. (2016). Examining organizational practices that predict persistence among high-achieving Black males in high school. *Teachers College Record, 118*(6). https://doi.org/10.1177/016146811611800605

Anyon, J. (2014). *Radical possibilities: Public policy, urban education, and a new social movement: 2nd edition.* Routledge.

Asante, M. (2017). *Revolutionary pedagogy: Primer for teachers of Black children*. Universal Write Publications LLC.

Bell, D. A. (1995). *Who's afraid of critical race theory?* University of Illinois Law Review.

Ben-Jochannan, Y. (1991). *African origins of the major "Western religions*." Black Classic Press.

Bergerson, A. A. (2003). Critical race theory and White racism: Is there room for White scholars in fighting racism in education? *Qualitative Studies in Education, 16*(1), 51-63. http://dx.doi.org/10.1080/0951839032000033527

Berry, R. (2005). Voices of success: Descriptive portraits of two successful African American male middle school mathematics students. *Journal of African American Studies, 8*(4), 46–62. https://www.jstor.org/stable/41819068

Berry, R. (2008). Access to upper-level mathematics: The stories of successful African-American Middle School Boys. *Journal for Research in Mathematics Education, 39*(5), 464-488. https://www.jstor.org/stable/40539311

Berry, R. Q. (2003). Mathematics standards, cultural styles, and learning preferences: The plight and the promise of African American students. *The Clearing House, 76*(5), 244-249. https://doi.org/10.1080/00098650309602013

Berry, R. Q., Ellis, M., & Hughes, S. (2014). Examining a history of failed reforms and recent stories of success: mathematics education and Black learners of mathematics in the United States, *Race Ethnicity and Education,17*(4), 540-568. https://doi.org/ 10.1080/13613324.2013.818534

Bol, L., & Berry, R. Q. (2005). Secondary mathematics teachers' perceptions of the achievement gap. *The High School Journal, 88*(4), 32-45. https://digitalcommons.odu.edu/efl_fac_pubs/29

Bonner, F. A. (2000). African American giftedness. *Journal of Black Studies, 30*(5), 643-663. https://doi.org/10.1177/002193470003000501

Bonner, F. A. (2001). *Gifted African American male college students: A phenomenological study.* https://eric.ed.gov/?id=ED459558

Bonner, F. A. (2003). To be YOUNG, gifted, African American, and male. *Gifted Child Today, 26*(2), 26-34. https://doi.org/10.4219/gct-2003-97

Bonner, F. A. (2010). *Academically gifted African American male college students*. Praeger/ABC-CLIO.

Council of Chief State School Officers. (1996). *Interstate school leaders licensure consortium: Standards for school leaders*. The Council of Chief State School Officers.

Darling-Hammond, L. (2010). *The flat world and education: How America's commitment to equity will determine our future.* Teachers College Press.

Davis, J. (2014). The mathematical experiences of black males in a predominantly Black urban middle school and community. *International Journal of Education in Mathematics, Science and Technology*, *2*(3), 206–222. https://files.eric.ed.gov/fulltext/EJ1066358.pdf

Davis, J., Anderson, C., & Parker, W. (2019). Identifying and supporting Black male students in advanced mathematics courses throughout the K-12 pipeline. *Gifted Child Today*, *42*(3), 140-149. https://doi.org/10.1177/1076217519842234

DeMarrais, K. B., & LeCompte, M. (1998). *The way schools work: A sociological analysis of education.* Longman.

Diop, C. A. (1974). *The African origin of civilization: Myth or reality*. Lawrence Hill Books.

Dumas, M. J., & ross, k. m. (2016). "be real black for me." *Urban Education*, *51*(4), 415–442. https://doi.org/10.1177/0042085916628611

Edwards, R., & Holland, J. (2013). *What is qualitative interviewing?* Bloomsbury.

Ellis, T. (2011). Outsiders in the middle: African American students and culturally responsive middle schools. In G. A. Wiggan (Ed.), *Power, privilege and education: Pedagogy, curriculum and student outcomes* (1st ed., pp. 29 – 54). Nova Science Publishers.

Flowers, A. M., & Banda, R. M. (2019). An investigation of Black males in advanced placement math and science courses and their perceptions of identity related to STEM possibilities. *Gifted Child Today*, *42*(3), 129-139. https://doi.org/10.1177/1076217519842213

Flowers, L. A., Moore, J. L., Flowers, L. O., & Clarke, M.J. (2011). The relationship between academic self-concept and career self-efficacy among African-American males in STEM disciplines at two Historically Black Colleges and Universities: An exploratory study. In H.T.F. and William F. Tate (Eds.), *Beyond stock stories and folktakes: African American' paths to STEM fields*. (pp. 73-83). Emerald Insight.

Ford, D. (2010). Multicultural issues: Underrepresentation of culturally different students in gifted education: Reflections about current problems and recommendations for the future. *Gifted Child Today*, *33*(3), 31–35. https://doi.org/10.1177/107621751003300308

Ford, D. Y., Harris, J. J., Tyson, C. A., & Trotman, M. F. (2001). Beyond deficit thinking: *providing access for gifted African American students*. *Roeper Review*, *24*(2), 52–58. https://doi.org/10.1080/02783190209554129

Ford, D. Y., Moore, J. L., & Scott, M. T. (2011). Key theories and frameworks for improving the recruitment and retention of african American Students in gifted education. *The Journal of Negro Education*, *80*(3), 239–253. https://doi.org/https://www.jstor.org/stable/41341131

Fullan, M. (2014). *The principal*. Wiley.

Gibbs, G. (2007). *Analyzing qualitative data*. Sage.

Grant, M. R., Crompton, H., & Ford, D. J. (2015). Black male students and the algebra project: Mathematics identity as participation. *Journal of Urban Mathematics Education*, *8*(2), 87 –118. https://digitalcommons.odu.edu/stemps_fac_pubs/37

GreatSchools Staff. (2013). *Why is algebra so important?* https://www.greatschools.org/gk/articles/why-algebra/#:~:text=%E2%80%9CAlgebra%20is%20critically%20important%20because,school%20program%2C%E2%80%9D%20he%20says.&text=The%20first%20year%20of%20algebra,II%2C%20trigonometry%2C%20and%20calculus

Harper, S. R. (2010). An anti-deficit achievement framework for research on students of color in STEM. In S. R. Harper & C. B. Newman (Eds.), *Students of color in STEM: Engineering a new research agenda. New Directions for Institutional Research* (pp. 63-74). Jossey-Bass.

Harper, S. R., Patton, L. D., & Wooden, O. S. (2009). Access and equity for African American students in higher education: A critical race historical analysis of policy efforts. *The Journal of Higher Education, 80*(4), 389 - 414. https://repository.upenn.edu/gse_pubs

Henig, J. R., Hula, R. C., Orr, M., & Pedescleaux, D. S. (2001). *The color of school reform: Race politics, and the challenge of urban education*. Princeton University Press.

Hoerr, T. R. (2005). *The art of school leadership*. Hawker Brownlow Education.

Hong Kong Special Administrative Region. (2013). *Introduction of gifted education in Hong Kong.* http://www.edb.gov.hk/en/curriculum-development/major-level-of-edu/gifted/hong-kong-development/introduction.html.

Jett, C. C., Stinson, D. W., & Williams, B. A. (2015). Communities for and with Black male students: Four strategies can be effective in creating supportive learning

environments. *Mathematics Teacher*, *109*(4), 284 – 289. https://www.academia.edu/17917917/Communities_for_and_with_Black_Male_Students

Johnson, M. (1984). Blacks in mathematics: A status report. *Journal of Research in Mathematics Education, 15*(2), 145-153. https://doi.org/10.2307/748890

Kendi, I. X. (2019). *How to be an antiracist*. Random House.

Kishimoto, K. (2018). Anti-racist pedagogy: From faculty's self-reflection to organizing within and beyond the classroom. *Race Ethnicity and Education*, *21*(4), 540–554. https://doi.org/10.1080/13613324.2016.1248824

Ladson-Billings, G. (2011). "Yes, but how do we do it?" In J. Landsman & C.Lewis (Eds.), *White teachers/diverse classrooms: Creating inclusive schools, building on students' diversity and providing educational equity* (2nd ed.) (pp. 33-46). Stylus.

Lemert, C. (2010). *Social theory: The multicultural and classic readings (4th Edition)*. Boulder, Colorado: Westview Press.

Leonard, J. (2018). *Culturally specific pedagogy in the mathematics classroom*. Routledge.

Leonard, J., & Martin, D. B. (2013). *The brilliance of Black children in mathematics: Beyond the numbers and toward new discourse*. Information Age Publishing.

Lorde, A. (1984). *Sister outsider: Essays and speeches*. Crossing Press.

Love, B. (2019). *We want to do more than survive: Abolitionist teaching and the pursuit of educational freedom.* Beacon Press.

Lynch, K., & Kim, J. (2017, March). Effects of a summer mathematics intervention for low-income children: A randomized experiment. *Educational Evaluation and Policy Analysis*, *39*(1), 31-53. https://doi.org/10.3102/0162373716662339

Martin, D. B., Gholson, M. L., & Leonard, J. (2010). Mathematics as gatekeeper: Power and privilege in the production of knowledge. *Journal of Urban Mathematics Education*, *3*(2), 12-24. https://doi.org/10.21423/jume-v3i2a95

Martinez, J. (2017). Mathematics attitudes and achievement of U.S. high school sophomores based on race. *Critical Questions in Education*, *8*(1), 17-26. https://eric.ed.gov/?id=EJ1129432

McGee, E. O. (2013). Threatened and placed at risk: High achieving African American males in urban high schools. *The Urban Review*, *45*(4), 448 – 471. https://doi.org/10.1007/s11256-013-0265-2

McGee, E. O., & Martin, D. B. (2011). ¨You would not believe what I have to go through to prove my intellectual value!¨ Stereotype management among academically successful Black mathematics and engineering students. *American Educational Research Journal*, *48*(6), 1347–1389. https://doi.org/10.3102/0002831211423972

McGee, E. O., & Pearman, F. A. (2014). Understanding Black male mathematics high achievers from the inside out: Internal risk and protective factors in high school. *The Urban Review*, *47*(3), 513 –540. https://doi.org10.1007/s11256-014-0317-2

Merriam-Webster. (n.d.). *Middle school*. Merriam-Webster. Retrieved November 1, 2021, from https://www.merriam-webster.com/dictionary/middle%20school

Middleton, F. (2019, September 6). *The four types of validity.* Scibbr. https://www.scribbr.com/methodology/types-of-validity/.

Milner, H. R. (2012). Beyond a test score. *Journal of Black Studies*, *43*(6), 693–718. https://doi.org/10.1177/0021934712442539

Moore, J., & Lewis, C. (2012). *African American students in urban schools*. Peter Lang.

NASSP. (2020, June 4). *Tracking and ability grouping in middle level and high schools*. https://www.nassp.org/tracking-and-ability-grouping-in-middle-level-and-high-schools/.

North Carolina General Statutes. (n.d.). *Enacted legistaion statutes.* https://www.ncleg.gov/EnactedLegislation/Statutes/HTML/ByChapter/Chapter_115C.html

North Carolina School Report Cards. (2020). *North Carolina state report*: *State profile 2015-2020.* https://ncreports.ondemand.sas.com/src

Oakes, J. (1992). Can tracking research inform practice? technical, normative, and political considerations. *Educational Researcher*, *21*(4), 12–21. https://doi.org/10.3102/0013189x021004012

Office of Civil Rights. (2016). *Office of civil rights data*. Retrieved 7 July 2017, from http://ocrdata.ed.gov/Page?t=d&eid=29140&syk=6&pid=736

O'Neil, J. (1992, October 1). *On tracking and individual differences: A conversation with Jeannie Oakes*. ASCD. Retrieved April 12, 2023, from https://www.ascd.org/el/articles/on-tracking-and-individual-differences-a-conversation-with-jeannie-oakes

Palmer, R. T., Davis, R. J., Moore, J. L., & Hilton, A.A. (2010). A nation at risk: Increasing college participation and persistence among African American males to stimulate U.S. global competitiveness. *Journal of African American Males in*

Education, 1(2), 105–124. https://diversity.utexas.edu/black-male-education-research/2015/02/a-nation-at-risk-increasing-college-participation-and-persistence-among-african-american-males-to-stimulate-us-global-competitiveness/

Paris, D., & Alim, H. S. (2017). *Culturally sustaining pedagogies: Teaching and learning for justice in a changing world*. Teacher's College Press.

Patton, M. Q. (2002). *Qualitative research & evaluation methods*. Sage.

Payne, C. M. (2008). *So much reform, so little change: The persistence of failure in urban schools.* Harvard Education Press.

Penuel, W., Meyer, E., & Valladares, M. R. (2016). *Making the most of the every student succeeds act (essa) - helping states focus on school equity, quality and climate*. National Education Policy Center.

Peters, S. J., Matthews, M. S., McBee, M. T., & McCoach, D. B. (2014). *Beyond gifted education: Designing and implementing advanced academic programs*. Prufrock Press Inc.

Reid, M. J., & Moore, J. L. III. (2008). College readiness and academic preparation for postsecondary education: Oral histories of first-generation urban college students. *Urban Education, 43*(2), 240-261. https://doi.org/10.1177/0042085907312346

Rossman, G., & Rallis, S. (2016). *An introduction to qualitative research: Learning in the field*. (4th Ed.). Sage.

Royce, E. (2019). *Poverty & power: The problem of structural inequality*. Rowman & Littlefield.

Rury, J. L. (2013). *Education and social change: Contours in the history of American schooling*. Routledge.

Saldaña Johnny. (2021). *The coding manual for qualitative researchers*. SAGE Publications.

Sergiovanni, T. J. (2001). *The principalship: A reflective practice perspective*. Allyn & Bacon.

Smith, S. C., & Piele, P. K. (1989). *School leadership: Handbook for excellence*. ERIC Clearinghouse on Educational Management, College of Education, University of Oregon.

Smith, W. F., & Andrews, R. L. (1989). *Instructional leadership: How principals make a difference*. Association for Supervision and Curriculum Development.

Stiff, L. V., & Harvey, W. B. (1988). On the education of Black children in mathematics. *Journal of Black Studies, 19*(2), 190 - 203. https://www.jstor.org/stable/2784437

Stromquist, N.P., & Monkman, K. (2014). *Globalization and education: Integration and contestation across cultures.* Rowman and Littlefield.

Tommis, S. (2011). *Gifted education policy and the development of exceptionality: A Hong Kong perspective.* Giftedness in East Asia Symposium, 1 - 3 August 2011.

Tuck, E. (2012). *Urban youth and school pushout: Gateways, get-aways, and the GED.* Routledge.

Walker, E. N. (2007). Why aren't more minorities taking advanced math? *Educational Leadership, 65*(3), 48 - 53. https://eric.ed.gov/?id=EJ779286

Wiggan, G., & Hutchison, C. (Eds.). (2009). *Global issues in education: Pedagogy, policy, practice and the minority experience.* Rowman and Littlefield.

Winsler, A., Karkhanis, D. G., Kim, Y. K., & Levitt, J. (2013). Being Black, male, and gifted in Miami: prevalence and predictors of placement in elementary school gifted education programs. *Urban Review, 45*(6), 416 – 447. https://psycnet.apa.org/doi/10.1007/s11256-013-0259-0

Wolcott, H. (1994). *Transforming qualitative data: Description, analysis, and interpretation* (pp. 9-54). Sage.

Zhao, Y. (2007). Education in the Flat World: Implications of Globalization on Education. *EDge: Education in the Flat World,* 3-19. http://zhaolearning.com/wp-content/uploads/2011/02/KappanEdgeZhao.pdf

APPENDIX A: SEMI-STRUCTURED INTERVIEW PROTOCOL

1. State your name and years of experience as a principal.
    a. How do you identify yourself?

2. Where in North Carolina are you currently serving as principal?
    a. How long have you been in this current position?
    b. What is your background in education?
    c. Describe your middle school's demographics.

3. What math courses are available for your students?
    a. What are the titles of the courses?
    b. What are the levels of the courses?
    c. Describe your teachers in those courses.
    d. How do students generally perform in those courses?
    e. How do your Black male students perform in those courses compared to others?

4. Tell me about your experiences as a building principal in North Carolina.
    a. For principals who have been at their current school for at least the past 3 years:
        i. How do you typically schedule students into math classes?
        ii. What role do you play in that process and in decision-making?
        iii. What role do teachers play in that process and in decision-making?
        iv. What role do students play in that process and in decision-making?
        v. How does race play a role in your scheduling decision-making?
        vi. Are there any unique steps or strategies that you implement to ensure the success of Black male students?
    b. For principals who have been at their current school for 1 - 3 years:
        i. What scheduling systems and processes were in place when you arrived to the school?
        ii. What processes did you keep in place? Which did you update and/or change? Why did you keep, change or update what you did?

5. Are there any examples of policies or practices you have used that you can share with me (rubrics, parent/student contracts, etc.)?

6. In your experience with implementing policies and practices to increase representation, have you encountered resistance from stakeholders?
    a. From your staff?

   b. From your students and/or their families?
   c. How have you addressed any resistance?

7. Any closing thoughts on your experiences in supporting your Black male students in higher level math courses?