# A CRITICAL RACE EXAMINATION OF FOUR YOUNG BLACK MEN'S PARTICIPATION IN COMMUNITY COLLEGE DEVELOPMENTAL/REMEDIAL MATHEMATICS

By

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#### ABSTRACT

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Counterstory, an analytical tool of Critical Race Theory, was used in this dissertation to foreground the voices of four young Black men completing a non-credit bearing developmental or remedial mathematics (DevRemMath) course at Suburban Community College (SCC). This study presents young Black men's first-person perspectives about the conditions that determined their learning and doing of postsecondary mathematics, which is operationalized in this dissertation as *participation*. Their narratives further clarify the race-gender dimensions of participation, and the factors that promoted or deterred participation in DevRemMath at SCC. The study offers several implications for advancing racial justice in DevRemMath and postsecondary mathematics learning, which include reframing how faculty and administration respond to the needs of young Black men in planning and delivering DevRemMath instruction, as well as naming the significance of faculty interactions with young Black men to counter barriers to their academic success. The dissertation concludes with recommendations for (re)structuring DevRemMath spaces in order to better strengthen young Black men's participation in the learning and doing of postsecondary mathematics.

*Keywords:* Critical Race Theory (CRT), Counter Storytelling, Master narrative, Developmental mathematics, Remedial mathematics, Black males, Community College Copyright by DURRELL ANTONIO JONES 2021 This dissertation is dedicated to my brother in heaven, Michael James Foster. Thank you for all of your support and love. Wish you were here.

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# **KEY TO ABBREVIATIONS**

DevRemMath	Developmental/Remedial Mathematics
SCC	Suburban Community College
PPSC	Previous Private Suburban College

#### CHAPTER ONE - INTRODUCTION

As a Black male doctoral student, and more specifically candidate, in the program in Mathematics Education, or PrIME, at Michigan State University, equipped with a Bachelor of Science degree in mathematics and a Master of Science degree in mathematics education, I am often positioned by some as successful in mathematics. Objectively, I consider such positioning to be an accurate framing of someone I did not know. I never considered myself to be successful in mathematics; however, a survivor of mathematics. I was afforded opportunities to continue in mathematics at times because, as I perceived, someone in power saw something bigger than me. On other occasions there was, for example, some institutional initiative to increase the presence of someone who looked like me in roles such as an employee with a math background, on internships with a focus on recruiting minoritized students, or more directly as a math teacher in public school, where both my gendered and raced identity is sparse (Bryan & Williams, 2017; Davis et al., 2013; Milner et al., 2013). No matter the circumstances that led to my presence in these particular spaces, I entered with skepticism of my intellect manifested verbally and in writing; I found myself in uncomfortable social situations where I was unclear about the motivation for things said and done to me. I was constantly under attack, but I survived. Surviving, barely surviving, and sometimes not surviving mathematics at all should not be what we expect for students, and especially young Black male students, to experience in public schooling.

Mathematics learning environments tend not to be set up or organized to cater specifically to support their unique learner identities and are marked by the absent presence (Martin, 2019) and villainizing (James & Lewis, 2014) of their Black maleness in these spaces. For instance, Black boys in mathematics are often identified early in education as requiring

behavioral management in order to be a part of the learning process such as being heavily medicated or being transferred to an alternative learning context (Artiles & Trent, 1994; Chinn & Hughes, 1987; Harry & Anderson, 1994; MacMillan & Reschly, 1998; Patton, 1998; Shifrer et al., 2011). Research also suggests that some of these same young Black boys will become young Black men who then will demonstrate, based on standardized tests, that they underperform in areas of K–12 mathematics as compared to their White counterparts (Jencks & Phillips, 1998; Plucker et al., 2010). Plucker et al. analyzed 2009 National Assessment of Educational Progress (NAEP) data and found that, "although underrepresented subgroups are experiencing substantial gains in some states, there are no "model" states that are closing gaps among all subgroups or types of exams" (p. 18). They conjectured it would take approximately 60 to 70 years to close the "excellence gap" for Black students.

An underperformance can also be recognized in developmental and remedial mathematics spaces at the postsecondary level in community colleges. As a result of what is known from the mathematics education literature about the perceived failure of young Black men in these areas of mathematics, understanding the route these young Black boys and men take on their road to completion of mathematics courses and what they experience along the way is of great concern. In order to address this concern, as others have, I focused this dissertation study on the experiences of four young Black men, Dudley, Elbert, Walter, and William, as they navigated a specific postsecondary developmental and remedial mathematics, or DevRemMath, context at a specific suburban community college (SCC). Through these young men's perspectives, the study highlighted instances of racial assaults before and during their time in DevRemMath at SCC that shape how, when, and where these young men decided to participate in learning and doing mathematics in DevRemMath at SCC.

# **Past Mathematical Experiences and Positionality**

How I thought and continued to think with respect to being a successful mathematics learner and doer was in part due to my mathematical history colored by experiences, or interactions, with instructors, advisors, and others in positions of power. I gleaned from these interactions there was something more that existed on the periphery, separate from the mathematics. There seemed to be lurking variables that influenced instructor's interactions with me in general related to how the person thought, felt, or viewed me personally, or there was some big picture purpose for my presence that took precedence over my well-being. By interactions, I am referring to any contact I had with an instructor such as a face-to-face conversation, email exchange, or other form of communication.

Whether privately or publicly, extremely supportive or crushingly demeaning, I received messages from these individuals in power that made me feel I served a purpose for being in the mathematics space, or I did not deserve to be there. I can recall several accounts in my mathematical history where interactions in mathematics spaces led me to believe I was intellectually inept, my presence and behavior was physically intrusive and inappropriate, or I was just simply unprofessional. I was told by instructors both in K–12 and postsecondary education my preparation seemed "weak" and they were concerned about my potential success before entering the course, during the course, and sometimes even after completing the course. Yet, the grades I received on assignments in these classes were generally similar to that of my Black and non-Black counterparts. Furthermore, my verbal contributions, in the form of responses and questions, in class often demonstrated a deeper understanding of the underpinnings of many of the mathematical concepts we covered in class especially in the upper-level undergraduate mathematics courses. When moments arose where I was able to articulate

clearly what a particular concept was, my contributions were met with surprise and sometimes even ridicule. What these experiences suggested to me as an aspiring young Black male mathematician and educator is my presence and participation in mathematics was unwelcomed, unwanted, and despised. In the next section, I will discuss past experiences to illustrate this point.

I was aware of challenges motivated young Black males face acquiring a credential in higher education mathematics; however, I was unaware of why this was the case and what this meant for my journey through mathematics. One of the earliest memories where I felt my presence was unwelcome in mathematics was when I was enrolled in an upper-level mathematics course with a professor named Professor Water for this discussion. I attended a meeting during scheduled office hours to ask questions from a study group created the night before. Upon entering the office, Professor Water appeared agitated, interpreted from a formal tone and rapid vocal response. I asked if this was a good time to ask questions about homework. Upon affirmative confirmation, I asked a question. Professor Water responded with a question, which I expected, and I took a moment to think. After only a few seconds, Professor Water stated, "Don't come into my office unprepared." The volume and pace of Professor Water's voice increased and quickened respectively, coupled with curt responses, rustling of papers and an attendance to other tasks. Nervous, diminished, and fearing being further insulted, I pretended Professor Water provided me with enough information to answer my questions. I left the office. An hour later in our scheduled class, Professor Water walks in the door late and stated to the class, "I would have been here earlier but someone disturbed me from getting my 32 ounces of water in before 10 am." The class, totaling eight, looked at me with puzzled faces knowing I was the only one who went to the office before class. I remained quiet for the rest of the class period. Consequently, I

did not go back to Professor Water's office alone for the rest of the semester or for any other class I took with this professor. I was so negatively impacted by ongoing verbal mistreatment I transferred to another institution and changed my major, fearing I would be subjected to further interactions with this professor in other spaces and classes. I returned to finish my degree only after damaging life experiences left me with few options.

I experienced another uncomfortable situation when I was enrolled in a program structured such that I spent part of my time in one part of the state and the other time in an area approximately two hours away. Again, I was taking an upper-level math course with a professor, whom we shall call Professor Fax. Professor Fax required students to turn in assignments at least two days before the official class, which met once a week for three hours. The homework assignments were to be submitted in a developmental fashion. When students submitted an assignment, the instructor provided feedback and questions, and handed the assignment back to students to resubmit with corrections. Because of an unsolvable transportation and timing issue, returning two days earlier was not feasible and I submitted my assignments three days earlier instead. On a particular occasion, I was not able to submit my assignment early. Professor Fax agreed I could fax my assignment on the regular schedule. I faxed the assignment from the institution with whom the department had a relationship. Moments after faxing, I received an email stating I should not have faxed the assignment from the institution, that it was unprofessional, and that my behavior reflected negatively upon the entire program. A subsequent class and a meeting with program officials resulted in supervised meetings with me and Professor Fax because a meeting with me alone with Professor Fax was deemed unsafe. I left the program and never reconciled being shamed, insulted, and stereotyped. I did not complete my degree.

In both of the aforementioned examples, I did exactly as I was instructed in the classroom, while away at another institution, and in a meeting with school officials. My adherence to scheduling and silence were interpreted as inappropriate and toxic for these mathematics spaces. Somehow, I inconvenienced one professor and placed another in an unsafe situation. These experiences impacted the timeliness and inevitable completion of my degrees. I managed to finish one degree but unfortunately did not finish the other. The challenges I faced were not connected to the content but with the context of mathematics, and more specifically the interactions with individuals charged with a responsibility to support me both faculty and administration. Similarly, this dissertation project aimed to delve deeply into the context of mathematics learning at SCC, and the nature of the interactions with instructors to discern the conditions that facilitated or impeded young Black men's participation in developmental and remedial mathematics. For example, I interacted with several mathematics instructors in both K– 12 and postsecondary spaces who, after recognizing my ability in mathematics, still insulted me, patronized me, and frequently displayed skepticism about my perceived above average mathematics intellect and ability.

My story countered dominant discourses of meritocracy and neutrality that pervade mathematics spaces. That is, success in mathematics is predicated on hard work and natural ability; because of the purported neutral nature of mathematics, being universally understood, every student has an equal chance of success (Rodriguez, 1998). Well, I have been described as a Black man whose intellectual characteristics aligned with hard work and natural ability. What can be gleaned from analyzing my own experiences are unnamed occurrences that indicate there is more to the road to success in mathematics for Black men than just hard work and natural ability. A claim of hard work may contribute to some of my outcomes in mathematics courses;

however, a claim of hard work may not provide clarity on what contributed to the behaviors of these instructors. Further, a claim of neutrality is insufficient in naming what was happening when my instructors acted in the ways they did towards me. Essentially, I did not learn the mathematics content void of the mathematics context. My learning of the mathematics concepts was affected by my treatment in the mathematics context.

Notwithstanding the negative effect of the interactions with mathematics instructors and other faculty, my experiences as a young Black man in mathematics still had potential to be interrogated for instances that could have prevented and could have simultaneously encouraged my participation in mathematics. There are alternate ways these instructors could have responded that would have been more supportive to me as a young Black man in mathematics. I was successful in mathematics, not because of my experiences but despite them. Herein laid part of what was the impetus for this dissertation study. As instructors of young Black men in mathematics, particularly DevRemMath, there is an opportunity to think about how the interactions with young Black men can impact young Black men's participation, and thereby success, in these spaces. There was an opportunity in this dissertation study for me to understand what were the conditions that enabled young Black men to be successful in DevRemMath with minimal costs to their overall well-being. There is a dearth of understanding of contextual variables that potentially reduce opportunity gaps and facilitate Black men's participation and achievement in developmental mathematics, from their first-person points of view. My study focused attention on Black male experiences in a particular DevRemMath setting and provided some insight about what these young men experienced and how they were affected by these experiences on their road to completion of their respective courses.

What was distinct about my story from some young Black men in DevRemMath at SCC was that I graduated from high school in the top 5% of my class and entered into a credit-bearing Calculus course my first semester as an undergraduate. What was similar is I experienced some of the same financial and social issues community college students typically face. For instance, because of programmatic issues and a rescinding of my full-scholarship which included on-campus housing and a stipend, I was re-saddled with the same financial distress and uncertainty I experienced most of my life. I therefore had to acquire a vehicle for transportation to and from campus because I lived approximately eight miles (an approximately two-hour walk) from campus and there was no public transportation in the town where the university was located. I had to work to pay for the car. As a result, I had less time to study, make connections with classmates, and experience the type of college life for which I planned. Figuring out how to get to class and making social connections is typically the norm at commuter-based postsecondary learning spaces like community colleges.

Even with all the success I experienced before college, I was still vulnerable to threats along my postsecondary journey. I was not just vulnerable to financial issues. I found myself the victim of intellectual social assaults such as stereotype threat (Larnell et al., 2014; Lyons et al., 2018) and other biases. Preconceived notions about young Black men like me tend to play a role in what pedagogical approaches and interactions instructors have with young Black men. Larnell, et al.'s investigation of stereotype threats to young Black men in DevRemMath provides a view into my vulnerability and the impact of my racialized experiences in mathematics. Young Black men's vulnerability in DevRemMath spaces is precisely why there needs to be more attention paid to the contextual variables specific to DevRemMath spaces.

Inevitably my story, and the story of other Black males in mathematics, is fertile ground for conversations around what happens when you work hard and demonstrate comparable outcomes to your Black and non-Black peers yet encounter unexplained reasons about your "success" or "failure" in particular mathematics settings. And how mathematics spaces continue to demonstrate anti-Black ideologies. I continued in the field of mathematics, not as an act of resistance or to prove I could be successful, but out of desperation to change my life trajectory. I was always aware of the master narrative of an underachievement of Blacks, and in particular young Black men, in mathematics yet I had not fully learned the power of an intellectual tool like stereotype management (Larnell et al., 2014; McGee & Martin, 2011b). I want to be clear at this point in the story; my persistence in the field of mathematics is not a belief in a meritocratic myth hard work in mathematics paid off or my "... work ethic, values, drive and individual attributes such as aptitude and intelligence, determine[ed] success or failure" (Zamudio et al., 2011, p. 12). My persistence was fueled by a belief, based on evidence beyond negative interactions with individuals in power in mathematics, which I would have to be a survivor of mathematics. How I decided to show-up to learn and do mathematics both mentally and physically was shaped largely by the conditions that were created by my instructors. For instance, if I felt my presence was welcomed by my instructor, I was present physically. If I felt my instructor engaged me intellectually, I was present mentally.

#### **The Present Study**

This study centered young Black men's voices in a way that clarified their perceptions about what worked and what did not with respect to their unique race-gender learner identities. Centering young Black men's voices allowed for better understanding of the factors that facilitated or frustrated their participation in DevRemMath. Ultimately, considering the United

States history of anti-Black racism in K–12 and postsecondary education (Dancy et al., 2018; Dumas, 2016; Mustaffa Bishop, 2017), I argued that young Black men's ability to be learners and doers of mathematics in noncredit-bearing postsecondary mathematics courses hinge primarily on the nature of their interactions with instructors and the structure of the mathematics learning environment.

It is known from mathematics education literature that "at the interpersonal and intrapersonal levels, mathematics learning and participation can be characterized as racialized forms of experience; that is, as experiences in which socially and personally constructed meanings for race emerge as salient in interactional experiences related to mathematics" (Martin, 2019, p. 461). It is known to some degree what learning and doing mathematics looks like for Black males in pre-college (Berry, 2005; Berry, 2008; Berry et al., 2011; Martin, 2000; Martin, 2012; McGee & Pearman, 2014; Stinson, 2008; Terry, 2011; Terry & McGee, 2013; Thompson & Lewis, 2005) and in higher education in general (Ellington & Frederick, 2010; Jett, 2011; McGee & Martin, 2011b; Wood & Turner, 2010); however, there is not a wealth of knowledge of what these experiences look like more specifically in DevRemMath spaces.

It has been stated that there is a desire for more Black (male) students in science, technology, engineering and mathematics (STEM) without talking about what it takes to invite them in and support them in STEM. There is not enough knowledge yet obtained about enough ways these spaces are assaultive. This is the contribution of my dissertation. I aimed to, through the narratives of young Black men to make visible how and why interactions between instructors and Black men matter for enabling young Black men's success as learners and doers of postsecondary mathematics. This means thinking more about where, when, and how instructors say and do what they do with young Black men in DevRemMath, and how what is done regardless of the reason has the potential to invite young Black men into learning mathematics or discourage their participation.

In this first chapter, I introduced a concern for young Black men's failure in non-credit bearing developmental and remedial mathematics courses as evidenced by myriad studies. I will provide the design of the study. Next, I will bring attention to a paucity of literature that could explain what factors, from young Black men's first-person perspectives, help to shape their participation in learning and doing mathematics in DevRemMath. Finally, I advance the discussion into the power of critical race theory (CRT), and in particular the use of counterstorytelling as a methodological tool to examine the narratives of young Black men's experiences in the years leading up to, and their subsequent enrollment in, DevRemMath. I will do this in large part with the aim of countering majoritarian narratives of young Black men's participation, and thereby success, in these spaces. In the next section, I will present examples of experiences while also making clear my own positionality in this work.

#### **The Research Problem**

Some of the mathematics education (ME) literature illustrate students in the United States in DevRemMath continue to underperform on indicators of achievement (Adelman, 2004; Bahr, 2010; Hagedorn et al., 1999). Astonishingly, the largest proportion of students who are entering into and failing out of these courses are Black, and in particular Black males not to mention other minoritized student groups comparatively trail behind their White counterparts (Adelman, 2004; Attewell et al., 2006). From this point forward, my work will be centered on the lived experiences of young Black men in DevRemMath.

Young Black men's reported failure has raised flags in the ME community, especially because of the negative impacts their academic underperformance has on both students and institutions in terms of time, money, and other costs (Merisotis & Phipps, 2000; Phipps, 1998). For instance, Bonham and Boylan (2011), interpreting data from a National Center for Education Statistics (NCES) study in their manuscript about the state of DevRemMath, reported "a student placing in the lowest level of developmental mathematics at a community college must take approximately 10 hours of mathematics courses before even having an opportunity to attempt college-level mathematics" (p. 14). This means some young Black men will take several courses costing them more money, yet these courses will not count for credit towards their degree program sought. Taking longer and paying more to complete their degree than other "collegeready students" should not be the reality for these students entering into postsecondary education especially considering added social and economic issues that increase young Black men's likelihood they will not complete college. With the issue of student failure in DevRemMath spaces now so visible in ME literature and the educational community at large, figuring out why this issue is occurring is paramount if we are to understand how to address, minimize, and/ or counter their failure.

## **Overview of Study**

This study was qualitative and exploratory in nature. It drew on elements of both narrative and phenomenological forms (Creswell, 2014) of research. From a phenomenological perspective, I examined the lived experiences of four young Black male students in a particular DevRemMath context at SCC located in the suburb of a major Mid-Atlantic metropolitan area. A goal of this study was to present these four young Black men's stories through the method of counter storytelling (Berry, 2005; Berry, 2008; Berry et al., 2011; Harper, 2007; Terry, 2011; Warde, 2008; Warren, 2017). Through these young men's narratives of their experiences and interactions within DevRemMath, a clearer picture emerged for understanding how race and power structured their access to educational opportunity and how these young men experience continued oppression in DevRemMath courses specifically.

More specifically, the focus of this dissertation study was on the conditions, as interpreted through these young Black men's first-person perspectives, that promoted or deterred their learning and doing of mathematics, which is operationalized as student participation in mathematics. When I used the word "promote" in this study, I asked students to describe for me what was happening when they were sitting, standing, or moving about in the classroom while the instructor lectured, facilitated group work, or supervised some other instructional activity. The student recognized, was invited, and/ or seized an opportunity to include themselves in the practice of learning and doing mathematics. I asked students to identify and describe a moment or moments when something happened in the classroom that encouraged or promoted their participation (e.g., raised a hand, asked a question, answered a question, or demonstrated some other behavior that suggested the student was preparing to enter in learning and doing mathematics). In this sense, I interpreted participation and engagement to be distinct. Participation was the initial act of taking part in an activity, and engagement was the continued involvement in an activity preceded by participation. Conversely, I used to "deter" or "deterrents" to frame how students described what discouraged or prevented them from participating in the mathematics.

This dissertation project was not concerned with the participants' actual engagement or extent to which they engaged in DevRemMath courses. I did investigate the external conditions young Black men perceived most determined how they chose to participate in their respective SCC DevRemMath course, and the rationale they provided for why they acted or behaved in particular ways. The notion of what engagement looked like for each student may be highlighted

in this project but interrogating the specificities of their engagement to make specific claims about the participants was beyond the scope of this study. I drew from the collective narratives of these participants to discern the conditions that likely encouraged or deterred their participation in DevRemMath, and as a result conjectured from a CRT perspective, what their experiences revealed about the ways anti-Black racism and white supremacy structured opportunity in this particular academic context. Because the majority of student's classroom contexts were structured and primarily influenced by instructor decision-making, whether face-to-face or in an online environment, first-person experiential knowledge related to both context and content derived from student's perspectives proved most useful to interrogate what worked and did not work for strengthening these young Black men's academic success in postsecondary mathematics.

#### **Research Questions**

Using what the young Black men in this study described as conditions that contributed to their participation in learning and doing mathematics inside and outside of the classroom related to one specific developmental mathematics course, MAT003 Fundamentals of Mathematics, I examined: (a) the conditions most determining young Black men's participation within the classroom environment; (b) the nature of young Black men's interactions with their instructor, and (c) young Black men's interactions with DevRemMath course materials. In order to examine these ideas, I answered the following overarching research questions:

 What do these young Black men describe as participation, or the learning and doing of mathematics, in this specific developmental and remedial mathematics context?

2. What do these young Black men describe as conditions that either promote or deter their participation, or the learning and doing of mathematics, in this specific developmental and remedial mathematics context?

This study contributed to filling a void in the literature by examining young Black men's lived experiences in developmental mathematics through their lenses. The focus of this study was specifically on understanding what young Black men perceive as opportunities to learn in a DevRemMath space. Put differently, this study highlighted what these young Black men described as the conditions that promoted or deterred their participation in learning and doing mathematics in DevRemMath at SCC. By participation, I am referring to actions taken by a student inside of the physical classroom or some other space designated as an extension of or part of the classroom space. For example, Blackboard, a learning management system used by SCC and many other institutions of higher learning would be such a space where these young men participated in learning and doing mathematics.

#### **Significance of Study**

As stated earlier, understanding the contextual variables, such as characteristics of the learning environment or instructor behavior, most likely to impact young Black men's participation in developmental mathematics was vital. To get at this understanding, I turned my attention to an important informational source about what makes Black men successful in developmental mathematics, the young Black men themselves. Berry (2005) stated that "it is critical to focus on the success stories of those Black men and boys who are successful to identify the strengths, skills, and other factors it takes to foster success" (p. 61). The narratives shared about how these young Black men experienced this particular DevRemMath context, including what they did to be successful in these spaces provided valuable insight on what then

should or could happen structurally to establish learning environments in higher education that enable young Black men to find academic success in mathematics. In this study, I provided additional voices of Black male success specifically in a developmental mathematics context.

In this dissertation study, I used counter story, as an analytical tool of CRT to push back against negative caricatures of young Black men as failures in DevRemMath. CRT, at the outset, did not position students as lacking but offered a frame for critical investigation of a space where racialized bodies exist in what I would be considered an oppressive state. Said differently, I disrupted a White supremacist mathematical learning environment. I took a more critical view into ME as some called for in the literature (Ladson-Billings & Tate, 2006; Martin & Gholson, 2012; Skovsmose, 1994; Stinson & Bullock, 2012) "in order to challenge the master narrative and discursive, representational practices that continue to construct Black DevRemMath students as mathematically illiterate and intellectually inferior to DevRemMath students from other social groups" (Martin & Gholson, 2012, p. 203). So instead of perpetuating the dominant discourse of students failing in DevRemMath spaces because they potentially lack the skills and dispositions towards mathematics other successful mathematics students possess, I adopted the mentality that Black male students in this specific DevRemMath context were failing because of something deeper and more pervasive; students may be successful if behaviors, policies, or practices could be unmasked to discontinue the vicious cycle of oppression in this already vulnerable population in DevRemMath spaces. Consequently, this dissertation work shed light on the experiences of four young Black men in a particular DevRemMath space and provided a way of moving the discourse forward specific to the potential and mathematical brilliance of young Black men in DevRemMath spaces are framed and mathematics spaces in higher education more generally.

Furthermore, I addressed the call of others in the field of ME to use CRT in more educational contexts (DeCuir & Dixson, 2004; Jett, 2011; Terry, 2011) to understand, through student's first-person perspectives of their experiences in a DevRemMath space, the potential inequity that seemed to be occurring as evidenced by the dismal achievement outcomes of students of color in community college DevRemMath mathematical classrooms. DeCuir and Dixson (2004), Howard (2008), and Terry (2011) addressed the Pre–K to 12th sector, while Jett (2011) tackled the graduate school mathematics context. I investigated an understudied context, a community college DevRemMath space. With this study, I add substantively to the work of these scholars. I borrowed from Terry in terms of using his criterion for establishing a counter story and contributing ideas about what constitutes a counter story from others (Berry, 2005; Berry, 2011; DeCuir & Dixson, 2004; Howard, 2008). In this process, I established an alignment of descriptive narratives of young Black men to features of counter story while at the same time interpreting what aspects of young Black men's racialized experience shaped their participation in DevRemMath. I will address this process further in the methodology section.

## Summary

I began this chapter with a narrative of my own journey into and through mathematics in higher education. I presented the struggles that accompanied me and the lessons I learned that brought me investigating the study's topic. I realized that my ability to learn and do mathematics was less about content and more about context. The conditions of my learning mattered significantly to my persistence and success as a Black male mathematician. The interactions I had with my instructors left an indelible mark on understanding of myself as capable of participating in postsecondary mathematics, and consequently, the decisions I would make and continue to make about how to participate.

I highlighted in this chapter that there is a dearth of literature that clarified the contextual variables (e.g., course timing structure or alignment of rigor of content to student learning needs) that shape Black men's participation in DevRemMath in community colleges, especially from Black men's first-person points of view. Without this, there is a limited understanding of the cultural, social, and personal factors likely to bolster their success. While Black men attending community colleges do not need all of the same things, more attention to the factors that facilitate their success, as they give voice to those factors, may advance structural interventions and measures intended to raise Black male student achievement in postsecondary mathematics. There is a need to respond to the structural impediment to Black men's success in college-level mathematics courses. The present dissertation study responded to this call.

#### CHAPTER TWO - REVIEW OF LITERATURE

In this chapter, I will argue that greater attention be paid to what young Black men in DevRemMath spaces say about their experiences if there is a desire to realize increased academic success for young Black men. I contended that a comprehensive strategy aimed at improving the success of young Black men in DevRemMath cannot and should not be developed without careful consideration of what young Black males experienced or may have to endure to be successful in DevRemMath spaces. I will show how others in the field of ME shared this same vision. Following, I will discuss the literature that highlights a brief historical and contemporary look at schooling in the United States to include the community college contexts, the current state of Black males in community college, the state of DevRemMath limited by an overabundance of quantitative studies. I also call for, as others have, the use of CRT to foreground the voices of young Black men and demonstrate how their experiences in community college DevRemMath spaces, not unlike any education space, is raced and gendered in ways that demonstrate the pervasiveness of White supremacist and anti-Black logics and social forces.

## Schooling in the United States - Then and Now

In order to paint a qualitative picture of what could be happening to Black males in DevRemMath in postsecondary contexts, there needs to be an understanding regarding what schooling has looked like and continues to look like. From a mathematical perspective of sets in Set Theory<sup>1</sup>, society can be thought of as a set, and public schooling as a subset of the larger set.

<sup>&</sup>lt;sup>1</sup> Set Theory defined: https://plato.stanford.edu/entries/set-theory/#Bib

By definition, a subset takes on all of the characteristics of the set, save for marked differences in some characteristics of the set. For example, all real numbers can be described as rational or irrational. In the rationals, there are integers (whole numbers that can be written as negative or positive numbers, including zero). The interesting thing about integers is that all of them can be written as rationals. This allows for integers to be considered a subset of the rationals. This implies then that integers are allowed to take on most of the characteristics of rationals. The distinction here lies in how the number is represented. Rationals also include terminating and repeating decimals, which are not integers by definition. Understanding rationals allows for an understanding of some important characteristics of Integers. If schooling is a subset of the larger United States society, then schooling takes on many of the characteristics of United States society save for marked differences. There needs to be an understanding of some key characteristics if there is to be an understanding on how to combat racist behaviors that systematically oppress Black students.

We have seen over the course of history in the United States a mistreatment of Black people in overt and covert ways from slavery to Jim Crow to a new system of order and control of Blacks through law enforcement, police brutality, and mass incarceration (Roberts, 2004; Thompson, 2010; Wacquant, 2002). This coordinated mistreatment persists today. Resistance to all of these systems of oppression took the form of sit-ins, boycotts, civil disobedience, and other forms of protests. At the same time, opposition to Black resistance manifested from those in power in the form of White flight to desegregation of neighborhoods, All Lives Matter to Black Lives Matter, and Color-Blind, or neutral ideologies, to any kind of talk of race, Black identity or a highlighting of issues of racial inequality in society just to name a few.

As a consequence, there have also been seen similar overt and covert racist and oppressive behaviors manifested in the United States public schooling throughout history. For example, following the landmark decision in the case of *Brown v. Board of Education*<sup>2</sup>, opposition to Black student presence in public education spaces has been enacted through various acts of physical violence against Black students, White flight (Farley et al., 1980), differential assignment of Black students to special education (Artiles & Trent, 1994; Kunjufu, 2009; O'Connor & Fernandez, 2006; Patton, 1998), higher rates of disciplinary action for Black students (Fenning & Rose, 2007; Mendez & Knoff, 2003; Monroe, 2005; Monroe, 2006; Skiba et al., 2002; Townsend, 2000; Wallace et al., 2008), underrepresentation of Black students in college track curriculums in postsecondary education (Francis & Darity, 2021; James et al., 2017), and other informal ways of covertly ensuring Black inferiority in schooling, including racial microaggressions (Burt et al., 2020; McCabe, 2009; Smith et al., 2016; Watkins et al., 2010). These actions against Black people have led to the current state of Black students in schooling. For example, Black people have settled in predominantly segregated areas in suburban and urban areas. In their study on experiences in two major suburbs of Northeast metropolitan areas, Ascher and Branch-Smith (2005) pointed to "how strained resources, a history of racialized conflicts resulting in troubled governance, and a perception of students as "inner city" all contribute to low student achievement in public schools in predominantly Black suburbs" (p. 1956). Bonilla-Silva (2006), in their book on how White people use narratives to

<sup>&</sup>lt;sup>2</sup> Brown v. Board of Education: case number 347 U.S. 483 (1954)

justify racial inequities in public institutions, highlighted that in modern times, "inner-city minority schools, in sharp contrast to White Suburban schools, lack decent buildings, are overcrowded, have outdated equipment--if they have equipment at all--do not have enough textbooks for the students, lack library resources, are technologically behind, and pay their teaching and administrative staff less, which produces, despite expectations, a low level of morale" (p. 27). This was a similar situation throughout my own public schooling history growing up in a rural community where restoration of a particular building, which still stands as a symbol of slavery in the local town, was prioritized over new textbooks for the Calculus course in which I was enrolled. These studies illustrate how society cannot ignore the presence and operation of racism, both overtly and covertly, in public schooling contexts, because of the negative impacts on Black students. Teacher perceptions of Black students such as colorblind, or neutral, educational ideologies have no place in anti-racist agendas aimed at exposing inequities and racism in educational spaces (Ferguson, 2003).

Unfortunately, a racist reality exists in pre-college contexts. Like pre-college contexts, postsecondary contexts exist as a subset of larger society. As a consequence and because of the invisible operation of racism that is often left unchecked in postsecondary education, some of the same oppression can be observed. In the next section, I will discuss postsecondary contexts by exploring the higher education context more generally, and the community college space more specifically. I will argue that there is to be an understanding on how to achieve success for young Black men in DevRemMath, one must look through a historical and modern racialized lens imposed on Black people through the oppressor's racial gaze.

#### The Community College Context

Since their inception, community colleges have and continue to focus on supporting communities in which they are located by creating programs designed to address workforce needs of that community (Kasper, 2003). Community colleges serve as both a terminal and transitional space for students who, for a myriad of reasons, decide to enroll in community college versus some other path. This path could happen after or during high school considering the increased number of dual enrollment programs showing up on community college campuses (Stewart, 2004).

Community colleges tend to be less expensive than four-year colleges and universities. This makes community college a more attractive option for some while a necessary path for others to access higher education. Community colleges also commonly offer a larger number and wider range of courses at varied days and times throughout the year. This flexibility allows some students an option to reach graduation faster, as both community college and four-year university students may take additional classes in summer months at community colleges. Additionally, having such an assortment in course offerings means certain students can take courses simply to enhance their employability. Because of a great diversity in the student body, community colleges are faced with continued refinement of their foci and agendas in order to address the needs of their students and communities at large (Vaughn, 2006).

Stewart (2004) reported that "minority students make up approximately 30% of community college enrollments nationally" (p. 15). Based on the changing demographic landscape of the nation coupled with domestic technological advances requiring varied skill sets for future jobs, undoubtedly the percentage of minority students attending community colleges will increase. Stewart also explained that "80% of students juggle both school and work" (p. 15). This is sometimes a very different experience than that of a traditional four-year university student and implies viewing contextual variables (i.e., pedagogical approaches, interactions, and other structural aspects of the classroom) through a slightly different lens.

The important role community colleges play in the education of students in society cannot be denied. For instance, many four-year institutions have now started to limit, and in some cases completely eliminate, developmental mathematics course offerings leaving community colleges to become a significant [offeror] of these courses. In many cases, the community college is the only access to higher education otherwise unavailable to minoritized students.

Additionally, in Fall 2018, community colleges accounted for "approximately 40% of all first-time college student enrollments" based on a report by the National Student Clearinghouse Research Center (NSCRC, 2018, p. 4). This suggests 40% of the next fall incoming class of freshmen will likely become commuter students for the first time because many community colleges offer minimal or no residential facilities. This also suggests a large number of minoritized students will now transition to a space where they will contend with multiple barriers to focusing solely on learning in the classroom. For instance, young Black men, a heavily affected minoritized group, face both overt and covert forms of racism while trying to pursue their dreams of higher education. From microaggressions (Burt et al., 2020; McCabe, 2009; Smith et al., 2016; Watkins et al., 2010) to stereotype threat (Brooms, 2016; James & Lewis, 2014; Johnson-Ahorlu, 2013), young Black men are constantly under attack by resisting internalized racism (Brown et al., 2017, Harper, 2007; Kim & Hargrove, 2013) and coping with racial battle fatigue (Smith et al., 2007; Smith et al., 2011; Smith et al., 2016). As such, learning in higher education for young Black men becomes social, psychological, and cultural warfare

rather than simply an intellectual exercise. What this shows is Black men are likely vulnerable to such conditions in a schooling context that already serve those who are likely academically vulnerable.

My dissertation study aimed at further expanding conversations on how to best to support community college students, and more specifically young Black men who are enrolled in developmental mathematics in community college and navigating an oppressive educational and social milieu disguised as a safe space for academic inquiry. In the next section, I will discuss what some have said about the experiences of young Black men in the community college setting.

#### **Experiences of Black males in Community College**

As mentioned earlier, there is a dearth of literature about the contextual aspects surrounding the experiences of young Black men in the community college setting. For the studies that do exist, there are few with a specific focus on the unique experiences of Black males' in DevRemMath. One goal of DevRemMath courses is to prepare students for creditbearing college level mathematics courses. Though few, there is some insight to be obtained from the literature into the experiences of young Black men in community college.

According to Wood and Turner (2010), "Black males have the lowest graduation rate among all males in every racial-ethnic category" and "the lowest mean grade point average (GPA) among male students in the community college" (p. 136). In this same study, the authors focused on the experiences of Black men in a particular community college and found that young Black men saw faculty who " (a) were friendly with students from the onset; (b) checked in on student academic progress; (c) listened to student concerns; (d) were proactive in addressing performance issues; and (e) encouraged students to succeed" (p. 143) as elements that
contributed to their engagement with faculty. Their study was vital because some young Black men view faculty as "both supports and barriers to academic success" (p. 143).

Bush and Bush (2010) found in their analysis of Black male community college students' perspectives that "faculty interaction predicted if African American [Black] male students persisted, transferred, and maintained a higher grade point average" (p. 40). Woods and Turner (2010) reported that "the likelihood of success (e.g., persistence, achievement, graduation, or transfer) for Black males attending community colleges is low" (p. 2). Wood and Williams (2013) found "regular interactions with faculty, meeting with academic advisors, and studying are integral to student success" (p. 19). These studies point to the power of focusing on young Black men's experiences as they relate to interactions with faculty as potential predictors of trajectories of young Black men in DevRemMath. Still other studies point to aspects of young Black men's experience that contribute to their success including their social integration, campus involvement, and outside responsibilities including work and family, counseling and self-concept (Flowers, 2006; Glenn, 2003; Hagedorn et al. 2001; Mason, 1998; Strayhorn, 2012; Wood & Ireland, 2014; Wood & Turner, 2010; Wood & Williams, 2013). Because of the goals of this dissertation, focusing on young Black men's perspectives of classroom related experiences is important to understanding young Black men's participatory patterns.

The aforementioned studies provided valuable insight to some degree about how Black male community college students saw their success. At the same time, this current dissertation study highlighted the distinctive voice of Black male DevRemMath students and contributed some nuance to the conversation. This dissertation study was vitally important because of the scarcity of literature that centered the voices and experiences specifically of young Black men in

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DevRemMath spaces. In the next section, I will talk about what some have done in DevRemMath spaces in an attempt to increase the success of young Black men.

#### Initiatives Completed in DevRemMath to Increase Success

Stigler et al. (2010) theorized about how to address the issue of student failure in DevRemMath when they explored the consideration of teaching students to make sense of mathematics first in the process of being successful in mathematics. Then the assumption is that we, as educators, would be able "to accelerate and deepen students' learning and create in them the disposition to reason about fundamental concepts" (p. 5), and inevitably realize success. I argue in years prior, those in the ME community taught DevRemMath students to make sense of mathematics. What may have been missing is a focus on what contextual variables contribute to sense making in mathematics.

Probing students specifically about their sense making in mathematics in interviews on a prior research project, I found DevRemMath students of color did and do have mathematical dispositions that involve sense making in mathematics. Studies still show that Black males are largely unsuccessful in math courses, even after mathematics content makes sense to Black males (Leonard & Martin, 2013), in terms of completion and culminating markers of performance in DevRemMath (Adelman, 2004; Bahr, 2010; Hagedorn, Siadat et al., 1999). Consequently, knowing whether or not a student makes sense of mathematics material can only tell you part of the story. There is not enough known about what happens during the time that Black males are in these DevRemMath classrooms to say with certainty that everything is being done to ensure their success, although sense making in mathematics is a critical step in the route to success in mathematics.

### Supplemental Instruction

Researchers have presented the use of supplemental instruction (SI) and both the shortterm and long-term effects on DevRemMath students (Bowles et al., 2008; Hensen & Shelley, 2003; Ramirez, 1997; Ogden et al., 2003; Wright et al, 2002). Included in the training of SI instructors were cognitive and situated learning perspectives (Cobb & Bowers, 1999), including multiple intelligences (MI) theory. MI theory and other similar theories can sometimes include inventories to inform instruction; however, some of these inventories do not take into consideration that learning and teaching do not take place in a vacuum of social influences. Young Black male DevRemMath students can be taught how to learn math and in what context may work best for them. However, if these same students encounter issues that prevent them from fully engaging in the learning process and if those issues are not addressed, these students will likely not be successful. It turns out Black males in a larger societal context are viewed in ways that position them as incompetent, unsuccessful, and failures even before they enter the DevRemMath space. This is information one can garner by simply tuning into any media outlet. With this reality, likely Black male DevRemMath students do not experience simple mathematics content instruction. They sometimes receive a kind of instruction that is on the periphery or in the blind spots of the DevRemMath classroom.

### **Technology Integration**

There are also scholars in the ME literature who employed technology (Boggs et al., 2004; Taylor, 2008) as a means of aiding instruction in the classroom. Boggs et al. thought that perhaps using technology to assist students in their learning would be more interesting to students and would be more relevant given the widespread belief by some that technology will be used more in the workplace in the near future. Boggs et al.'s position, like many others

including myself, assumes that more students can be reached and perhaps support students' success in mathematics if they are offered options to engage with mathematics. Technology could be part of the solution to support Black male student success in DevRemMath. That is, maybe Black male students in DevRemMath will be more successful if they are able to use technology to support their learning. We could find out more about how young Black men engage with technology.

Cullinane and Treisman (2010) in an early report presented "a comprehensive initiative to create two new pathways, the Statway and the Mathway, to enable developmental mathematics students to complete a credit-bearing, transferable mathematics course in one academic year while simultaneously building skills for long-term college success" (p. 4). Their ideas in the paper were hopeful and sought to address many of the concerns other authors have put forth in the literature surrounding student success in developmental mathematics. Yet, like countless others, Cullinane and Triesman weaved an intricate web of optimistic possibilities rich with explanations influenced by "senior leaders of the major mathematics and statistics professional organizations as well as distinguished community college mathematics and statistics faculty members" (p. 9). At the same time this conversation was rich; it was also absent of what students may potentially experience while working to build these skills for long-term college success. At the time of the report, a comprehensive strategy to support students in reaching success had not been established. Inevitably, the failure rates of Black male students in DevRemMath as evinced by the reports (Adelman, 2004; Allen, 1992; Attewell et al., 2006; Bahr, 2010; Hagedorn et al., 1999) suggested that the incorporation of technology may have helped in specific cases; however, not enough to say that technology greatly impacts Black male student success in DevRemMath and should be the sole focus.

The aforementioned studies are primarily quantitative and demonstrate Black men's overrepresentation of failure in DevRemMath. On one hand, the studies provided valuable information about the reality of young Black men's presence in this space. These studies also collectively framed Black students in DevRemMath spaces around their failure and not their successes. It can be said with some certainty that it appears from the literature that Black males fail at the highest proportion of other ethnicities, including their White counterparts in DevRemMath spaces. What cannot be said with certainty is what contextual variables play a role in young Black men's success. The former framing does not provide enough information to strongly inform what specifically could be done in DevRemMath spaces to increase the success of young Black men.

Not surprisingly, like many other studies, these studies have something in common; the studies placed accountability mainly with students for their own failures, and focused attention on students' presumed lack of dimensions, characteristics, dispositions and habits of mind towards mathematics. Additionally, these studies relied heavily on quantitative analyses about achievement to guide their strategizing and implementation of such strategies. Even further, the studies took approaches to addressing the issue of student failure by consulting the ones who design and teach these courses, the ones in "power." These individuals in "power" would likely bolster meritocratic rhetoric that students who work hard in mathematics will see the fruits of their labor because mathematics is universally understood and neutral. These strategies and perspectives have not worked to produce the kinds of results that would suggest the mathematics community is doing all it can to increase Black male student success in these spaces.

After teaching Black students to make sense of math first, supplying them with supplemental instruction, throwing in some technology, and rolling out a comprehensive

initiative, some dramatic shifts should be seen today, but that is not the case. Although some studies, like the ones previously mentioned and other similar ones, yielded promising results with implementation, there could be more, as others have argued in the mathematics education literature, more could be done for those students. There is still a number of Black males struggling to complete their DevRemMath programs (Bailey et al., 2010). Gutierrez (2008) asserted there is no need for another study that presents information regarding the "gap" in achievement. There is also no need for another strategy that places accountability within the student. We need strategies that seek to do more than place accountability on Black male students for their "failures." We need to consider options that allow involvement of the ones most impacted, Black males, in conversations about how to support them to be successful in DevRemMath. Otherwise, how do we really know what can make them successful?

I did not advocate in this dissertation study for an elimination of quantitative studies to understand what was happening in DevRemMath contexts. My study foregrounded the voices of Black males in a specific DevRemMath and allowed for a more supportive intellectual conversations around the blending of quantitative and qualitative analyses. In this way, a comprehensive picture of the experiences of Black males in DevRemMath spaces was painted. With the results from my study, I was able to add to conversations where this blending of analyses forms a more critical framing around the issues that Black male students could face in DevRemMath settings. These additions to scholarly conversations are included in the conclusion chapter of this dissertation.

What I posited in my dissertation study was, as Stinson and Bullock (2012) described, a way to engage in a journey with young Black male DevRemMath students as a critical mathematics scholar who worked to "dismantle the constructors' hegemonic power and the

reproduction and execution of that power through institutions such as media and schools" (p. 46). My study contributed asset-based perspectives that included naming pedagogical approaches and other instructional strategies that likely improved these specific young Black men's participation in DevRemMath. This study also contributed to other bodies of work already centering young Black man's voices in mathematics and in DevRemMath specifically. A particular strategy used by many scholars to foreground the voices of young Black men about their racialized experiences in mathematics spaces is counter storytelling in CRT.

#### **Critical Race Theory (CRT): A Theoretical Framework**

There are scholars at work in the field investigating and employing CRT as a methodological tool in qualitative analyses (Delgado & Stefancic, 2012; Knaus, 2009; Ladson-Billings & Tate, 1995; Leonardo, 2013). More specifically, there are those who have used counter storytelling at the K–12 level (Berry, 2005, 2008; Berry et al., 2011; Terry, 2011; Thompson & Lewis, 2005; Thompson & Davis, 2013) and postsecondary level (Goings, 2016; Harper, 2007; Jett, 2011; Warde, 2008; Warren, 2017) with the aim of unmasking racism and oppression by foregrounding narratives of successful students of color.

Before going any further, it is important to understand a little bit about CRT and how I planned to proceed with the use of CRT to counter a very pervasive hegemonic dominant discourse that insists Black males are failures in DevRemMath spaces. Coupled with this general framing is the reality that some studies mentioned earlier in this chapter suggest that Black male DevRemMath students could be perceiving themselves as working hard, but that the perception of their lack of effort by faculty may be part of why they are failing. I used CRT as a theoretical framework: (a) to explicitly frame the conversation around young Black men's academic success, or lack thereof, in DevRemMath specific to their racial experiences and race-

consciousness, Peller, 1990); (b) to critique a liberalist view of DevRemMath spaces as neutral spaces (colorblind liberalism); and (c) to illustrate how the structure of DevRemMath creates a space where the primary beneficiaries are Whites (structural determinism).

As such, in the next section, I will provide a brief history and description of CRT and its guiding principles. I then move into a discussion of how some have used counter storytelling, a central tenet of CRT, to foreground the voices of successful Black students. I will then guide the discussion to the potential of CRT in DevRemMath, in the same ways CRT has been used in other mathematical contexts, to foreground the voices and experiences of Black males students about what could potentially be happening in DevRemMath spaces.

# **CRT** in the Literature

Though there is a paucity in mathematics education literature of researchers who included race as integral to their studies and even further the voices of those most affected, including African Americans, Ladson-Billings and Tate (1995) theorized about the potential of using race, and in particular CRT, as "an analytic tool for understanding school inequity" (p. 48). CRT, which notably began in criminal law (Bell, 1992; Delgado & Stefancic, 2012; Jett, 2011; Leonard, 2013; Ladson-Billings, 2010), is described by scholars as "a movement involving activists, scholars", and others intent on examining and thus changing, in our society, the historical and ongoing tensions in "the relationship among race, racism, and power" (Delgado & Stefancic, 2012, p. 2). Within CRT are identified themes, tenets, and features that provide a framework for interrogating, and thus challenging, laws, rules, policies, practices, procedures or systems that, on the surface, seem to not favor any particular group of people, namely White people, over another based on race. Mathematics, like most other disciplines, is dominated by White individuals. It has been imagined as a space for and by White men, which is important for

trying to reorganize and rethink the mechanisms by which non-White men, or in the case of this study Black men, get access to mathematics and find success in this content area. CRT has been used to expose the disparities or inequitable treatment of minorities that result when we do not interrogate for instance legal or educational systems (DeCuir & Dixson, 2004). Thus, CRT provides a means for us to reimagine the DevRemMath space as a space where Black males can be more included in stories of success.

Solórzano and Yosso (2001) considered there to be five themes that make up CRT in education, by stating, "centrality of race and racism and their intersectionality with other forms of subordination, challenge to dominant ideology, commitment to social justice, centrality of experiential knowledge, and a transdisciplinary perspective" (pp. 472–473). The issue facing DevRemMath is one where Black males have not realized notable success even after a wealth of strategies have been employed. Because a particular race and gendered group of people, Black males, continue to be unsuccessful, I would describe this phenomenon as a form of subordination. If the research community continues to subject Black males to a lower rank by continuing to put forth rhetoric in studies that position Black males as failures, then more meaning can provide context to what is happening to Black males in DevRemMath.

According to Jett (2011), CRT is informed by four fundamental principles including: (a) the normality of racism; (b) the nontraditional approach to scholarship, including the use of counter storytelling as an "epistemological resource" to speak against the negative framings of people of color in dominant narratives; (c) a critique on liberalism, or the idea that laws and other policies are colorblind partly because those in power understand what liberty and equality look like; and (d) the argument that Whites have been the beneficiaries of legislation like affirmative action (p. 23). CRT, in particular the use of counter storytelling, is how we can get the voices of

Black men in DevRemMath to be heard, which is how I intended to present the narratives of students in a particular DevRemMath context.

Leonardo (2013) helped us to understand the goals and utility of CRT as a theory and an analytical tool by specifying that "CRT focuses its attention more on conceptual and practical strategies to end racism and less on ending race as an organizing principle" (p. 571). DeCuir and Dixson (2004) shared that "CRT focuses directly on the effects of race and racism, while simultaneously addressing the hegemonic system of White supremacy on the "meritocratic" system" (p. 27). Further, "like CRT in legal studies, CRT in education proceeds by unmasking apparently nonracial phenomena as precisely racial in their nature" (Leonardo, 2013, p. 712). In doing the work of my dissertation, I: (a) assumed racism is normal, (b) used a humanizing scholarship approach of counter storytelling, (c) asserted that those developing policies have been operating under a "mathematics is neutral" guise, and (d) proclaimed that students who benefit the most from the DevRemMath policy changes are Whites. Like Jett, and others who used counter storytelling to foreground the voice of minorities, I would like to "continue the legacy of mathematical brilliance among African American students" (p. 25) by highlighting what Black male students relay about their experiences, or more specifically, their access to participate, or learn and do mathematics, in DevRemMath. More specifically I illustrated in my study how what students say about the DevRemMath space can seek to encourage or discourage their participation in learning and doing mathematics in that space.

To rearticulate, CRT is both a theory that helps us understand how to frame a conversation about the impact of covert racism operating in certain academic spaces, and it is an analytical tool (Jett, 2011; Solórzano & Yosso, 2002) to interrogate, for instance, teacher practices, course policies, or other procedures affecting Black males in DevRemMath. For

instance, if a student encounters an instructor that behaves in ways that suggest to the student the instructor is afraid or somehow uncomfortable in the student's presence, this interaction may have a negative effect on the students' ability to engage with the teacher or teaching, content, or space in general. If this behavior was somehow influenced by race (White instructor teaching an entire classroom of Black students), department chairs or other administrators may want to interrogate this interaction. With the aforementioned knowledge, an intervention with both the teacher and students could shed light on what is happening in the classroom to create this feeling for the student and perhaps a strategy for moving forward could be adopted. However, we may never get at this kind of rich and compelling information if we do not investigate students' experiences. These kinds of contextual pieces of information have been missing from studies about Black male students and their experiences in developmental mathematics.

# **CRT** and Counter Storytelling

According to Jett (2011), counter storytelling is an "epistemological resource" to speak against the negative framings of people of color in dominant narratives. Because the data set I use in this dissertation study recorded and transcribed narratives of young Black men, counter storytelling was the most appropriate methodological tool to investigate how these students experience this particular DevRemMath space. Using counter storytelling of CRT "acknowledges that Black male DevRemMath student voices are legitimate and provides a forum in which their voices can be heard" (Berry, 2005, p. 47) and "provide alternative lenses of analyses and interpretations of the experiences of African American students as mathematics learners" (Berry, 2011, p. 11). Counter storytelling is not just about providing alternative points of view, but providing those points of view with the intention of exposing how race works invisibly to oppress people of color. In the case of my study, I contend that DevRemMath spaces have and will continue to be oppressive spaces for Black males if there is not a change in how issues of supporting their success in these spaces are approached. Without counter storytelling, the covert forces working against people of color to sustain White dominance in DevRemMath is unknown.

In the case of DevRemMath, counter storytelling is used as a way of shifting the accountability of failure in DevRemMath spaces from solely on the student to sharing accountability with other aspects of the learning space. I made a structural argument of the failure of DevRemMath courses, shifted the dominant discourse away from what students are doing wrong, and focused more critically on what institutions and institutional agents such as DevRemMath instructors are doing to meet the needs of young Black men in DevRemMath.

# Existing Master Narratives in Young Black Men's Learning and Doing of Mathematics

With an aim of connecting young Black men's experiences in DevRemMath to issues related to power and oppression, I used counter storytelling as method to analyze the degree to which young Black men's perspectives of contextual variables (i.e., pedagogical approaches, interactions, and other structural aspects of classroom) did or did not align to ideas of colorblind liberalism and structural determinism to challenge dominant ideology about mathematics spaces and in particular DevRemMath spaces.

There were some narratives that surfaced through the analysis of myriad studies in the literature mentioned earlier in this chapter regarding approaches taken to support young Black men's success in DevRemMath. One dominant narrative is that current approaches and interactions with young Black men are race-neutral, meritocratic, colorblind, and provide equal opportunity for all students to be successful in DevRemMath. Put another way, young Black men in DevRemMath are viewed as not impacted by the current context of DevRemMath, and that the

issue for young Black males is related to content. This dissertation study disrupts such a notion, or assumption, that young Black men participate in mathematics and are not affected by contextual variables and that their participation is not solely predicated on how they think, feel, or perceive the content. Consequently, if young Black men do not perceive they have an opportunity to participate in mathematics because of a particular contextual variable, this suggests a scenario where there is not "equal opportunity or access" to the content in DevRemMath.

Another narrative that emerged from the literature is incorporating advice and experience from teachers, instructors, and other policy makers without including the voices of young Black men in those structural considerations is an optimal strategy to support young Black men's success in DevRemMath. A counter story to this master narrative would disrupt the notion or assumption that we do not need to use information gleaned from an investigation of the experiences of young Black men in concert with faculty and staff feedback and other quantitative markers of success.

A more prominent master narrative gleaned from the literature is the underachievement of young Black men in DevRemMath. A counter story to this master narrative would include voices of young Black men illustrating their mathematical brilliance through their participation in learning and doing mathematics. It is through this participation in mathematics we have an important opportunity to guide and support young Black men to additional markers of success including outcome marks in the form of grades. As Milner and Howard (2013) pointed out, master narratives are ideas that should be analyzed because they appear in discourses in the literature and pervade the policy making spaces in educational institutions.

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A counter argument to a claim of an impact contextual variable could have on young Black men is that any student can be impacted by contextual variables in DevRemMath. Notwithstanding the fact that an instructor could interact with any student in similar ways, this study is focused specifically on what contributes to the success or failure of young Black men in DevRemMath. To ask this question would be to disregard the intent and focus of this study; however, this study could be included with other studies in an effort to seek deeper understanding of the role contextual variables play in contributing to the success of all students.

I intended to illustrate through an analysis of individual and collective narratives of young Black men in DevRemMath ways young Black men perceive their racialized existence in DevRemMath in concert, or not, contextual variables of this space. In the following section, I will talk about how others have used CRT and in particular counter storytelling in their research with young Black boys and men. These counter stories will counter master narratives of (a) current contextual variables (i.e., pedagogical approaches, interactions, and other structural aspects of classroom) in DevRemMath as race-neutral, meritocratic, colorblind, and provide equal opportunity for all students to be successful; (b) young Black men as underachievers; and (c) young Black men lacking valuable narrative contributions about best ways to support their success in DevRemMath space.

In the next section, I will describe ways a few scholars have used CRT in mathematics education research. In particular, I will address what some scholars have done to shift the conversation around student failure in mathematics to what Black student success looks like in mathematics. I will then move the conversation to the role CRT played in this dissertation study by shifting the conversation from failure of Black students in DevRemMath to a conversation around intelligent, motivated, successful young Black men with positive beliefs and attitudes toward mathematics in DevRemMath. I will also emphasize how race or the operation of racism may place a role in either promoting or deterring their success in mathematics.

#### **CRT in Mathematics Education**

Scholars argued for a move to analyzing the narratives of students of color (Berry, 2011; Bullock, 2012; DeCuir & Dixson, 2004; Howard, 2008; Jett, 2011; Knaus, 2009; Martin & Gholson, 2012; McGee & Martin, 2011a; Warren, 2017) to better understand how to support students to be successful in mathematics spaces. At the K–12 educational level (Berry, 2005, 2008; Berry et al., 2011; Joseph & Jordan-Taylor, 2016; Terry, 2011; Thompson & Lewis, 2005) and the postsecondary level (Goings, 2016; Harper, 2007; Jett, 2011; Warde, 2008); a score of researchers highlighted Black male success in mathematics. The presence of these studies should continue to grow in number and variety. This will continue to give validity to counter storytelling as a methodological tool in research in mathematics education and legitimacy to the rich and powerful narratives that Black students can provide about their racialized mathematical experiences.

DeCuir and Dixson, through their analysis of three African American students at a predominantly White school that served students from Pre–K to 12th grade, engaged five prominent features of CRT including: (a) counter storytelling, (b) permanence of racism, (c) Whiteness as property, (d) interest convergence, and (e) critique of liberalism. What was powerful from their study is the realization that "race and racism" profoundly affected these three students, and that "their stories show the insidious nature of racism and how it manifests in a variety of educational contexts" (p. 29). What DeCuir and Dixson were able to do in their study was to highlight very specific and descriptive interactions three Black students had with other students and faculty. These descriptions allowed the reader to paint a vivid picture of how the interactions unfolded. In interpreting meaning from behaviors during and outcomes of the interactions, DeCuir and Dixson aligned the interactions with features of CRT. In this way, these three Black students were able to attach meaning to their experiences as racialized and influenced by the invisible operation of racism. With their analysis of the alignment to the features of CRT, DeCuir and Dixson's study could guide school policy. For instance, Malcolm, a student from the study recognized "racist behavior and unfair discipline procedures" (p. 27) taken by the school. Having a study like DeCuir and Dixson's could provide insight to policy makers about how to recognize when racism is operating and inform next steps to changing such racist policies. Revealing features of racism operating in the particular DevRemMath context in my study could guide policy in the design and implementation of DevRemMath courses in community college or other postsecondary contexts.

In Howard (2008)'s case study using counter narratives of African American males, a level of awareness these males have around race and how race influenced their interactions with teachers, how they were viewed by others, and the work these students put in to oppose "negative racial stereotypes" was presented. For instance, one student from Howard's study talked about the geometry class had substitutes the entire year. One cannot authentically expect any student, let alone young Black male students, to be successful in this kind of environment. That fine-grained level of detail would not have been obtained if the Black student was not asked to share his narrative. Another important finding from Howard's study is the feeling that many Black students had about the lack of "space" to be able to talk about the racialized experiences (Martin, 2009). A thought that could be raised here is what benefits could be wrought having a space for Black students to discuss their racialized mathematical experiences within a

DevRemMath context. Powerful information can be acquired through the utility of counter storytelling in CRT.

Jett (2011) provided a perspective about the use of CRT in ME research using African American male graduate students in mathematics and mathematics education. Jett, like previously mentioned scholars using CRT, had a goal to provide a platform for students' voices about their racialized experiences. Jett encouraged researchers to combine CRT with other theoretical constructs to support students in ME contexts. I agree with Jett and also argue, as Jett did, that cross-disciplinary incorporation of theories could also inform CRT and better support the needs of students in DevRemMath.

I share with these scholars a conviction for impacting change on a large scale in the field of mathematics, ME, and DevRemMath contexts. This push essentially for social change is also at the heart of what CRT aims to support. This change must include all voices, especially the voices of the ones who are most impacted in DevRemMath spaces. Put another way, there needs to be critical thought about what students are telling about their experiences to see if there are other lurking variables impacting students' ability to be successful in DevRemMath. Probing more deeply in ways that allow for us to gain a detailed picture of what is happening in DevRemMath spaces, policy makers, instructors, and the like, are not making decisions for, about, or on students but with students about what platforms, class structures, and content delivery methods best suit students' learning needs. Further, interrogating spaces in more nuanced ways is especially important considering many scholars have offered solutions yet few have included in the conversation narratives to further explain the alarming rates of failure of the ones most affected—students of color.

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### **Summary**

In this chapter, I argued that if we want to see authentic change in young Black men's participation, retention, and thereby successful completion of DevRemMath courses, there needs to be a focus on structural changes in postsecondary mathematics education. These changes may include how faculty: (a) think about organizing learning environments to better engage young Black men; (b) interact with young Black men, including attention their demeanor faculty; and (c) more deeply consider how they value the voices of young Black men when discerning how best to support their academic success. We must move away from models that assume DevRemMath spaces are colorblind, neutral, and provide equal access to all students. I also insist that racially just ME learning resist both excluding voices of young Black men in pedagogical decision-making and framing young Black men as underachievers in DevRemMath spaces.

Given there is more to learn about what is happening to young Black men in DevRemMath—and not simply their grades (outcomes)—our rhetoric around the success of young Black men in DevRemMath could be more informed by nuances gleaned from their experiential knowledge. This is what my study aims to do. That is, my study involved a purportedly neutral space, included voices of young Black men and presented young Black men around their multiple identities as learners and doers of mathematics. In this way, this dissertation project contributes to what is known about the problem so that the change wanted is closer to becoming a reality.

There is a need in the ME community to better understand contextual factors that sustain or undermine Black males' success in DevRemMath from their first-person perspectives. What is also important is understanding the specific approaches to effectively implementing pedagogical strategies young Black men describe will improve their learning outcomes. This is especially

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important when thinking about how pedagogy may shift with the structural changes in DevRemMath courses or programs. Quantitative studies are certainly powerful tools for naming a problem but are limited in nuancing and probing the lived experiences of young Black men in DevRemMath. We can no longer operate solely from what is gleaned from quantitative studies that can have the propensity to, without qualitative, or contextual data frame young Black men in DevRemMath as failures.

My argument for change involved critically thinking about how there is a need to hear from the voices of young Black men because they are the ones most impacted by this space in terms of success. With this knowledge, only then can there be authentic forward movement with pedagogical and other structural reform efforts aimed at supporting young Black men's success in DevRemMath. CRT was an appropriate theoretical framework for this work for its utility to name how DevRemMath classrooms can be racially oppressive spaces. I aimed to paint a qualitative picture of what could be happening to young Black men in postsecondary DevRemMath by privileging their voices in the research study, design, and reporting.

### CHAPTER THREE – METHODOLOGY

In this chapter, I will talk about the methodology of my study and the specific methods used including how I solicited research participants, collected, analyzed, and synthesized data. I considered multiple types of data to ensure triangulation of data which contributed to the trustworthiness of my study. I was especially interested in arriving at a data saturation point, or place in the analysis of data "when newly collected information does not add to the knowledge, and when the analysis does not need more information to flesh out the categories" (Carey & Asbury, p. 43).

While phenomenological in nature. this study was a CRT oriented work. I used counterstorytelling, a tenet of CRT, to expose blind spots that potentially hurt young Black men in a specific DevRemMath context. In particular, I was concerned about the harm young Black men underwent with the implementation of a redesigned developmental mathematics course sequence. In order to think about the ways that

In this study, I sought to answer two research questions:

- 1. What do these young Black men describe as participation in the learning and doing of mathematics in this specific developmental and remedial mathematics context?
- 2. What do these young Black men describe as conditions that either promote or deter their participation in the learning and doing of mathematics in this specific developmental and remedial mathematics context?

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## **Research Setting**

The research site for my dissertation study was at an accredited community college<sup>3</sup>; SCC is located in a suburb of a major North Atlantic metropolitan city. SCC has two campuses that serve approximately 9,000 to 10,000 students each academic year with a graduation rate of 14%. In addition, the student body is 58% White, 16% Black, 8% Hispanic, 6% Asian, and 12% other.<sup>4</sup> I recently secured a full-time mathematics faculty position at the institution and elected to initially teach mostly non-credit bearing developmental or remedial mathematics courses. As noted, I described these courses as DevRemMath throughout this study. The term, non-credit bearing, is used to identify courses for which students must pay yet these courses do not count towards students' degree program of study. Students must pass these DevRemMath courses in order to take credit-bearing mathematics courses and progress towards completing required courses for programs at or transfer out of SCC.

The specific context of this study is in a newly formed six-credit DevRemMath course called MAT-003, or Mathematical Fundamentals. MAT-003 was designed to replace two already existing three-credit DevRemMath courses, MAT-001 and MAT-002, both offered at the college. In MAT-001, the focus was on students' learning of the fundamental arithmetic concepts of addition, subtraction, multiplication, and division while introducing algebraic concepts whenever possible. Based on content, this course would be the equivalent of a pre-algebra course. In MAT-002, which is essentially a beginning algebra course, the focus is on students' learning the

<sup>&</sup>lt;sup>3</sup>Suburban Community College is accredited by the Middle States Commission on Higher Education. https://www.msche.org.

<sup>&</sup>lt;sup>4</sup> Demographic information provided by Collegescoreboard.ed.org.

fundamental algebraic concepts of simplifying expressions, solving equations and inequalities, graphing, operating with exponents, using scientific notation, and quadratics.

The newly formed MAT-003 course was formed as part of a campus developmental mathematics reform initiative to lessen the number of non-credit bearing mathematics courses a student needs to take to enroll in a credit-bearing mathematics course. The reform effort was implemented without a pilot structure, completely eliminating any course offerings of MAT-001, save for one section for a specific program on campus, and only leaving a few section offerings of MAT-002 in the Fall of 2019. SCC campus administration and the mathematics department decided to proceed in this way after considering a few points. First, the campus changed leadership and there was a renewed vision to realize increased pass rates for students in all mathematics courses, especially DevRemMath courses, over the next few years. Table 1 provides a breakdown for each semester.

### Table 1:

Student	Fall 2017	Spring 2018	Fall 2018	Spring 2018	Fall 2029 Implementation of MAT-003	Spring 2020
Black male	42%	41%	45%	47%	30%	41%
Black female	49%	57%	52%	72%	42%	46%
White male	60%	57%	61%	56%	51%	77%
White female	69%	65%	68%	80%	63%	83%

Pass Rates within Race and Gender Group by Academic Semester in DevRevMath at SCC

Next, there were students already enrolled in MAT-001 who based on preparation from this course, would need preparation for MAT-002 but not necessarily MAT-003 which essentially would have students relearn concepts from MAT-001. Finally, there were students

who took the mathematics placement exam and students' scores placed them directly into a course that would not require MAT-001 content.

Currently, the mathematics department, in concert with campus administration, is in conversations with coordinators from all of the departments across the campus to continue to redesign mathematics courses offered in an effort to: (a) lessen the number of courses students are required to take to reach a credit-bearing developmental mathematics course, (b) more appropriately place students in math courses suited to where students are mathematically, and (c) provide more corequisite course support models to better support students through their math courses.

### Placement Into MAT-002 or MAT-003

Students who enroll at SCC take a placement exam to determine the math course they are allowed to take. In the past, a student placed in MAT-001 would also be required to take MAT-002 afterwards. The intended outcome with the implementation of MAT-003 was that all students would spend only one semester instead of two to get to a credit-bearing mathematics course. The draw back to this thinking is that students enrolled in MAT-003, who may have originally only needed to take MAT-002, would now have to pay more for a DevRemMath course. With the current course structure, students are placed into MAT-002 or MAT-003 based on the score they receive on the Mathematics Placement Exam (MPE) or ACCUPLACER (James, 2006; Medhanie et al., 2012). There has been an ongoing conversation about the futility of ACCUPLACER and its predictive power for student success in developmental programs (James, 2006; Mattern & Packman, 2009). Medhanie et al. (2012) in their study of more than 1,300 students found that "ACCUPLACER does not contribute to either the prediction of enrollment or subsequent success in such courses" (p. 332). Other researchers pointed to factors

that may be more helpful in determining placement into postsecondary mathematics courses including high school GPA, ACT scores, socioeconomic status of the high school and the number of mathematics courses taken (Donovan & Wheland, 2008; Kowski, 2013; Ngo & Kwon, 2015).

Placement of students in DevRemMath courses at SCC was based on a range of scores and the "cut-off" for placement score ranges are actually decided by the mathematics department at SCC. The process of deciding score ranges in the mathematics department at SCC was historically based on faculty feelings or experience and not necessarily on a formally researched method. Students were placed into MAT-002 if they obtained a high enough score within a range of scores. Any lower than this range of scores, the student was automatically placed into MAT-003. Placement into MAT-003 assumed students would receive the most developmental, or basic mathematical concepts, preparation SCC had to offer. Students were allowed to take the MPE more than once although the policy on additional times a student may take the MPE were not completely clear and not generally widely communicated to incoming students. When asked, the conversation was that if a student took the MPE twice and did not place into a credit-bearing course, the department recommended the student to take the non-credit bearing mathematics course their score indicated.

If a student was placed into MAT-002, the student only had one non-credit bearing mathematics course to take. In some cases, and with faculty support, students could bypass MAT-002 and MAT-003 completely and go directly into a credit-bearing mathematics course depending on the students' program of study, high school transcripts, or some other form of proof the student had sufficient preparation. From conversations with other faculty, students did not often exercise this option nor was this option communicated regularly to students. Again, this

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was because of a generally agreed upon philosophy of the mathematics department that students who placed into MAT-003 would best benefit from taking the MAT-002 or MAT-003 before attempting to take a credit-bearing mathematics course.

# SCC Demographics<sup>5</sup>

In Spring, 2020, 16% of the total number of students enrolled in MAT-001, 002, and 003 were African American, or Black and male, 19% African American, or Black and female, 13% White male, 23% White Female, 4% Hispanic male, 5% Hispanic female, and 25% other. Class sizes, or the number of students enrolled in each of the classes, MAT-001, 002, and 003 were capped at 21 students.

# **Participant Selection**

In order to obtain participants for the study, I used a non-probabilistic sampling technique of convenience sampling (Creswell, 2014) where students were chosen based on their convenience and availability. I also used maximum variation sampling (Seidman, 2006). Maximum variation sampling allowed me to recognize that young Black men are not monoliths and this allowed me as the researcher to capture these students diversity in age, enrollment, academic standing, major, etcetera. I chose these sampling techniques to contribute to the trustworthiness of my study and to decrease bias in the sampling process.

I solicited young Black men, the focus of the research study, at the beginning of the Spring 2020 semester with a flyer that briefly explained the purpose of the study, the students'

<sup>&</sup>lt;sup>5</sup> Demographic data for the Spring 2020 semester was provided by the Suburban Community College (SCC) Office of Academic Affairs.

role in the study, the available interactions, the students' ability to withdraw at any time, students' ability to decide their level of involvement in the study, and incentives to students for their participation and time in the study. The flyers were posted on bulletin boards in hallways of buildings across campus and disseminated through mathematics faculty email to discuss with their students in MAT-002 and MAT-003. As part of this solicitation, I also talked to my former young Black male DevRemMath students to encourage anyone they knew who identified as Black and male and would be enrolled in MAT-002 or MAT-003 in the Spring 2020 semester to inquire about the study. As a way to thank students for their time and bravery for telling their truths, I offered student participants \$5 for each weekly survey completed, \$5 for attending twice weekly affinity space sessions, and \$25 for two one-on-one interviews. The funds were paid in the form of VISA gift cards sent directly to the students' address. I also bought food and beverages for the research participants to enjoy during our affinity sessions.

#### **Student Participant Description**

The participants in this study are self-identified Black males who were currently enrolled in MAT-002 or MAT-003 at SCC in the Spring 2020 semester because Black males best informed the research questions and enhanced the understanding of the phenomenon under study (Creswell, 2014). This population included students who were taking the courses for the first time or are retaking the course for a second or third time. I included 4 total research participants for my study.

Four young Black men, who I called Dudley, Elbert, Walter and William (after the first four mathematics PhDs issued to Black men in the United States of America) agreed to be research participants in my study for the Spring 2020 semester. I provided portraits of each of these research participants in the first findings chapter, which is Chapter 4 of this study. The research participants' backgrounds varied in terms of: (a) the class in which they were enrolled for Spring 200, (b) age, (c) the number of times the student took a DevRemMath course at SCC, and (d) and other distinguishing qualities and characteristics presented in Chapter 4 – Findings – Part 1 and Chapter 5 – Findings – Part 2. Table 2 provides demographic data.

# Table 2:

Participan t	Age at the start of SP20	From	Family life	Personality	K–12 schooling experience	Learning disability (LD)
Dudley	20	Suburban town near SCC	Lives with mother and father	Verbose and thorough	Public school	N/A
Elbert	21	Suburban town near SCC	Lives with mother	Assertive and confident	Public school	N/A
Walter	21	Major metropolitan east coast city	Lives with mother	Reserved and laid back	Public school; alternative school; early graduation	Early diagnosis of LD in elementary school
William	18	City limits of major city but not in downtown area	Lives with mother and father	Shy and thorough	Private school (elementary; public school middle and high school	Early diagnosis of LD in elementary school

Participant Demographics

The decision was made to use these four young Black men because they agreed to take part in the study after I solicited all of the students in DevRemMath at SCC, and because the four young Black men captured representative data used in considering why the work of this study is important. For example, the number of times a young Black man takes a DevRemMath course at SCC informs us of the cost to these young Black men in terms of money and time it will take them to reach a goal of graduation from an accredited program at SCC or transfer with credit to another institution. See Table 3 for a more information regarding the four young Black men who were focus of my study.

# Table 3:

Participant	High School Math Subjects Taken	Years at SCC	Previous DevRemMath course(s) at SCC	Total DevRemMath Credits Paid	Credit-bearing Math Course Ready
Dudley	Algebra I Algebra II Geometry Study Island	1	MAT-001 (SP19) MAT-003 (FA19) MAT-003 (SP20)	15 credits	Yes
Elbert	Algebra I Algebra II Geometry I Geometry II	3	MAT-001 (FA17) MAT-002 (SP18) MAT-002 (SP20)	9 credits	No
Walter	Integrated Math (3 years)	2	MAT-001 (SP18) MAT-001 (SP19) MAT-003 (SP20)	12 credits	Yes
William	Algebra I Algebra II Geometry	1	MAT-003 (FA19) MAT-003 (SP20)	12 credits	No

Participants' Mathematics History

As previously mentioned, there were two DevRemMath courses offered at SCC during the Spring 2020 semester, MAT-002 and MAT-003, and the study goals were to explore the experiences of students in both of these courses. MAT-002 and MAT-003 were first offered the Fall 2019 semester. One of the goals in conducting this study was to ensure there was more than one student from each specific course because the structure of the study was phenomenological in nature, and the focus was on the different experiences in MAT-002 and MAT-003, courses with different structures. In both MAT-002 and MAT-003, there was some instructor autonomy in terms of how to present the material and what types of assignments instructors implement leading up to the exams; however, the exams administered were common exams. This meant that all instructors gave the same exam usually 1 to 3 days apart from each other and based on course meeting days and times. The final exam also adhered to this structure.

Prioritizing students' enrollment status aligned with the goals of the study which sought to understand what influenced young Black men's participatory patterns in DevRemMath at SCC. Analyzing what those students who retook these courses had to say about their experiences helped to better understand young Black men's resilience in DevRemMath spaces. I wanted to find out reasons a student would retake the course or decided to take the same or a different instructor. I also wanted to find out similarities and differences in students' experiences, and perhaps be able to say something about what worked for a student and what did not. Inevitably, the goal was to have a sample with students taking both MAT-002 and MAT-003 for the first time and students retaking the courses at different age levels, grade point average standing, and socioeconomic status. The diversity in the sample assumed not just a heterogeneity in demographics but also allows for a diversity in perspectives. This goal was accomplished with the young Black male student research participants in this study.

#### **Data Collection**

# **Data Sources**

My data collection was interrupted because of the restrictions placed on society due to the Novel Coronavirus, or COVID-19 in March of 2020. As such, I noted the data I was able to collect while highlighting what the intended data collection method would have been. The data sources that comprised my dissertation study were: (a) two one-on-one student interviews, (b) ongoing student surveys via an electronic messenger application (GroupMe), (c) field notes from affinity sessions, and (d) student supplied artifacts (e.g., assignments, emails, syllabi, etc.) that contained interactions with instructors. I was the sole point of interaction for this study for several reasons. That is, no other person(s) assisted in data collection. First, this was my dissertation, and I wanted the work produced to be my framing. Secondly, as a Black male student and instructor in mathematics and the researcher talking about race-related topics, I wanted to preserve the trustworthiness in responses of research participants as some studies have indicated cross-racial interviewing (Schaeffer, 1980; Schuman & Converse, 1971) and gender (Huddy et al., 1997; Matteson & Lincoln, 2009) could have an impact on the interviewing process and thus have the potential to disrupt such reliability. Also, as Patton (2002) suggested the interviewer must establish rapport with the research participants.

I interacted with students in multiple contexts throughout the research study. I believed by doing this, the students and I established a rapport that allowed for our interviews to feel more like casual conversations rather than sometimes rigid structured or semi-structured interviews. I also believed students, gauging that we had multiple perceived shared identities (i.e., Black, male, and in mathematics), viewed me as someone with whom they could express their authentic views without "role-playing" or acquiescing to or trying to "appear more docile and accommodating" (Davis, 1997; p. 320). I wanted to hear and try to understand these young Black men's unfiltered truths about their racialized and gendered experiences in mathematics. "From a purely fiscal perspective, being the sole point of interaction, I conserved available funds that were redirected to other areas of need in conducting the study including but not limited to additional research participant compensation as well as offering refreshments at our affinity space. Lastly, I wanted to hear the accounts of these young Black men in real-time, to experience the emotion, and also for the opportunity to probe further on ideas that arose during our interactions, that because of my gender-race identity, I knew to probe further. As I mentioned in the Chapter 1, sharing identities of Black and male with these Dudley, Elbert, Walter, and William benefited this study in that I was sensitive to particular information about experiences they shared with me and knew to probe further. For example, there were instances where these young men and I talked about their experiences in mathematics spaces before and during DevRemMath at SCC. When I recognized in these young Black men's descriptions language that suggested they were attempting to relate about an experience that was unique to being Black and male, I shared more of my story. This process of sharing unburdened our hearts and feelings about our conditions in mathematics and deepened our conversations. This process of sharing also spoke to one of the other aims of my study, to think more critically about my own journey through mathematics in schooling both and pre- and postsecondary. In the next sections, I will talk about the data collection methods in more detail.

**Student Interviews.** I conducted two one-on-one semi-structured interviews. These interviews were my primary means of data collection for this study because one-on-one interviews with research participants are one of the most comprehensive tools to get a firsthand perspective of a shared lived experience (Bogdan & Bilken, 1997; Morgan, 1996). The one-on-one interviews took approximately 45 to 60 minutes. The research participants had the option for us to conduct the interview in some place on campus or off campus. I offered them interviewing options because I wanted each student to feel comfortable responding and asking questions before, during, and after the interview.

The first interview was conducted towards the beginning of the Spring 2020 semester to establish rapport. During this interview, I provided the research participants with more information of what my study entailed and the role they would play. I explained that if they opted to be a part of the study, they had the option to participate in one or more portions of the study. I also explained their right to withdraw from the study at any time and that their participation had no negative impact to their grade. The options were intended to provide flexibility in participation in the event either of these young Black men felt comfortable participating in all parts of the study.

*First interview.* For the first, or initial, one-on-one semi-structured interview, I created an interview protocol (See Appendix A) that probed students for their perspectives on their mathematics experiences in schooling before and during their time in DevRemMath at SCC. I attempted to use a method of unstructured concept mapping similar to that of Wood and Turner (2010). My thinking was that I would ask students to illustrate for me in a drawing or sketch. The interviews progressed through three general phases: (a) introductions, (b) time in mathematics before DevRemMath at SCC, and (c) time in mathematics during current DevRemMath course at SCC. I paid particular attention to how these young Black men talked about participation and conditions that promoted or deterred their participation. I used these details to paint portraits of each student. I also used these details to answer my research questions.

*Second interview.* For the second semi-structured interview, I created an interview protocol that captured how these young Black men's thinking about their participation and what promoted or deterred their participation in learning and doing mathematics changed over time in DevRemMath at SCC. I also included questions about the impact of transition to the entirely online learning environment because of restrictions imposed due to COVID-19.

**Student Surveys.** The student survey (See Appendix B), collected during the Spring 2020 academic semester, provided an opportunity for students to reflect on their experiences in the classroom in real-time and on a regular basis. At the same time, this piece of data was intended to elicit responses to questions that aligned with study. Students were asked to state

what form of participation in learning and doing mathematics occurred for them. They were also asked to identify and explain what happened in class on a particular day that either encouraged or discouraged them from participating and why. I employed this method of data collection because I believed this encouraged these young Black men to regularly think about their existence and interactions in the DevRemMath space, and how potentially what an instructor did or did not do, how a student was made to feel as a result of an interaction with a student or instructor, what opportunities for learning and doing mathematics were available, etcetera moved the student toward or away from participating in learning and doing mathematics. The goal was that students provided me with a snapshot of what opportunities for participating in learning and doing mathematics students noticed while inside and/or outside of the mathematics classroom.

**Researcher Field Notes in Class and Affinity Space.** During my study, I also kept field notes similar to what (de Freitas, 2008) would have described as an autoethnographic approach to research. I focused documenting my own thinking and decision-making as it happened in real time. Although autoethnographic in theory, my notes took on more of a field notes structure for a few reasons. One, only one of the research participants was my student at the time I conducted the study. Additionally, because I did not want my research to interfere with my teaching quality and responsibilities, I found time mostly at the end of the class period, and sometimes after a couple classes, to document my thinking. My documenting became more like reflections on my behavior quite a bit of time after the actual real-time interaction with the research participant. I also took field notes during the affinity sessions we had together before and during the transition to the entirely online learning environment.

I considered the field notes I collected in this study to be especially important for contributing to how I intellectually engaged with the analysis of the data. I was able to think about my own experiences, in particular as a young Black male mathematics student interacting with Black male mathematics instructors. Some of these interactions with Black male faculty left a negative emotional impression. I used my collected documentation to further refine the critical race lens through which I was already looking to uncover what I could or could not have done that contributed to a continued perpetuation of oppression of young Black men in DevRemMath at SCC. My orientation to this work is further explained in Chapter 1 where I talked about my positionality and what brought me to the work of this dissertation study. Like how Freitas (2008) described, through my own narrative, I performed a "systematic sociological introspection" (Ellis & Bochner, 2000) that began with...memories of mathematics education, focusing on specific incidents that left a large emotional imprint" (p. 50). The events described in Chapter 1 contributed to how I think about the ways in which instructors operated or interacted with students who were Black and male like me.

### **Data Analysis**

As a phenomenological work, my dissertation was focused on shedding light on the shared lived experiences of a group of interest (e.g., four young Black men) as they navigated mathematics to better understand a phenomena (i.e., participation in learning and doing mathematics in DevRemMath at SCC. I used one-on-one interviews as a primary data source because of the richness and expansiveness with which young Black men are able to tell their stories about their experiences within DevRemMath while the short survey questions meant to corroborate or bolster the validity of these young Black men's narratives.

I used the initial interview significantly in my analysis phase to distinguish how these young Black men described what participation looked like for them and what conditions promoted and/ or deterred their participation. Because my work is a CRT oriented work, the participants' narratives were important for establishing what they thought and not what a dominant narrative said about what participation should look like for them. I wanted to show how these young Black men experienced, responded to, and adapted to pedagogical approaches and interactions with instructors in mathematics spaces as gendered and racialized beings, before and during their time in DevRemMath at SCC. It is through their narratives, I was able to paint a picture of how, through their consciousness of the operation of racism and their behaviors and habits of mind in response, these young Black men's experiences run counter to the master narratives of (a) current pedagogical approaches and interactions in DevRemMath as raceneutral, meritocratic, colorblind, and providing equal opportunity for all students to be successful, (b) young Black men as underachievers, and (c) young Black men lacking valuable narrative contributions about best ways to support their success in DevRemMath spaces at SCC. In this sense, these young Black men's accounts disrupted these dominant narratives in ways that helped to provide insight into how to better support young Black men in DevRemMath at SCC.

My data analysis included a discussion of each of the participants individually (Chapter 4) and collectively (Chapter 5). Chapter 4 was necessary to provide the depth of detail and context necessary to understand these participants sensemaking about the conditions that shaped their participation in postsecondary mathematics. I examined the research participants individually to paint of picture of their unique racialized experiences before coming to DevRemMath at SCC in Chapter 4. I then found those common themes across these young Black men's experiences in Chapter 5. My data analysis was both a content (thematic) analysis and narrative analysis in nature and happened in three overall stages. I will explain how I proceed through these stages in the following sections.

### Stage 1: Coding for Textural and Structural Data for Young Black Men

Researchers have made transparent their own experiences as Black males so interpretation of young Black men's narratives in their work would be less conflated with their own experiences (Jett, 2019; Milner, 2007; Warren, 2017). I used a similar approach when I read through the transcripts as part of my study. Once I acknowledged my own lived experience, or positionality (Creswell & Poth, 2016; Savin-Badin & Howell-Major, 2013) as a Black male in mathematics, I began my data analysis by reviewing students' initial interview transcripts. I read through students' transcripts initially to establish a coding scheme that identified what a student said was participation for them and what conditions encouraged the student to participate in learning and doing mathematics in DevRemMath at SCC and conversely, what discouraged that participation. I used students' entire statements or responses to my probes as my units of analyses. In the event a student responded to a statement that was what I considered to be too short for analysis (e.g. one or two words), I asked for some additional clarification. I took a similar approach as other scholars where I employed a more basic coding at first and then utilized a more interpretive approach to the coding. I will talk more specifically about this process of how I interpreted the ways these young Black men defined participation and then how I interpreted what these young men described as promoters and deterrents to their participation in learning and doing mathematics in DevRemMath at SCC.

**Defining Participation.** I used students' direct responses from their transcripts to construct a working definition for participation from the transcripts of the student research participants of the study. I first looked at one Dudley's entire transcript. I first look at his response to the direct question I posed about participation and also any places where I probed further (e.g. I sometimes asked the question, "Would you consider this participation? And why?
From the response, I simply noted the description of participation. I then went back through the list of statements to interpret what kinds of descriptions were included. Once I established for example that participation for Dudley seemed to be specific behaviors, I used this lens to review the other three transcripts. Along the way, I noted where there were differences in descriptions. I then began to create and refine a definition for participation based on what these young Black men, Dudley, Elbert, Walter, and William said. In Table 4: below, I will provide a glimpse into this process of refining what each student shared about what they considered to be participation.

#### Table 4:

#### Example of Coding

Coding of participant	Dudley's responses
Statement – unit of analysis	"Again with math I didn't know what was going on. I
	know I kept asking for help."
Interpretation of participation	Asking questions
(using key words or terms)	
Type of participation	Physical behavior (e.g. verbal)
Other characteristics of student- identified participation	<ul> <li>No mention of instructor initiation; interpreted as student-initiated</li> </ul>
	• Goal-oriented statement: to understand the material
	• "kept" – interpreted as consistent, regular, behavior

I interpreted Dudley's wording "asking for help" as a physical act or behavior of asking his instructor a question or questions. I then read the statement several more times to ascertain what other characteristics of the statement would help me to interpret more about Dudley's participation. From what is presented in Table 4, I was able to code this statement with the following descriptors: (a) asking the instructor questions, (b) student and instructor interaction, (c) physical behavior, (d) student-initiated, and (e) goal-oriented. These descriptions became codes for student statements across transcripts for all of the data sources including the initial interview, responses to survey data, statements made in the affinity space, and responses during the interview at the end of the semester. I continued to refine my coding over the course of the semester based on what students provided me through their survey data, which were snapshots of their participation in real time. I also used what I interpreted from statements they made in the affinity space and the data from their final one-on-one interview at the end of the semester.

I performed a similar coding and refining process to gain interpretations that allowed me to address the second research question of my study: What do these young Black men describe as conditions that either promote or deter their participation in learning and doing mathematics in this specific developmental and remedial mathematics context? Once the data were coded to where I was able to discuss with clarity what participation was, and the conditions that both promoted or deterred that participation, for these young men, began to construct portraits of each of the participants. I made the decision to include portraits of these young men in Chapter 4 so I could orient the reader to these young Black men's race and gender consciousnesses as they traversed K–12 mathematics. These racialized experiences, some assaultive, shaped how these young men inevitably made decisions about when, where and how to participate in learning and doing mathematics in DevRemMath at SCC. I also wanted the reader to understand each of these young men's experiences as unique yet sharing commonalities that could speak to what may be happening to some young Black men in general in DevRemMath at SCC.

## Stage 2: Painting the Portraits and Identifying Commonality of Experience of Young Black Men in DevRemMath

Milner (2007) explained "critical race theorists argue that narrative and counter-narrative should be captured by the researcher, experienced by the research participants, and told by people of color" (p. 391). Using counter storytelling as method, I was able to engage with tenets of CRT, as counter storytelling is central to beginning to analyze the narratives of students of

color. When I analyzed these young Black men's narratives, I did not just read through for mentions of race, but I attempted to understand the narrative characteristic of a counter narrative that may have talked about an experience of race in a liberating way. I looked for information from these young Black men that suggested that their experiences in DevRemMath at SCC served as disruptions to oppressive discourses of them as underachievers, for instance. Their liberating narratives carried with them validity as these narratives were told from their firstperson perspectives in real-time. These young Black men's contributions have the potential to contribute to the conversations around how to support Black male student brilliance in DevRemMath contexts and beyond.

Three overarching themes of participation emerged from their responses. Whenever these young Black men described their participation, they mostly described interactions between themselves and someone in an instructor capacity (e.g. the DevRemMath instructor or the embedded tutor discussed further in Chapter 5). Other times, they described moments of participation without any interpersonal interactions. I created the following codes to use for their statements: (a) student and instructor interaction, (b) student and student interaction, or (c) an instance of participation without any outside instructor or student (i.e., independent participation). With these emergent codes, I was able to illustrate the contexts in which these young Black men mostly participated in Chapter 5. Within these contexts then, I showed the forms of participation demonstrated by at least three out of the four participants.

This process of refining included a return to the literature. I was able to see some ideas in students' themes present in the literature. With these Black men's individual and composite stories, I painted a picture of what was happening in this specific DevRemMath context at SCC. I interpreted from a third person perspective what these students' experiences were like. I then

summarized how what these students expressed, in response to their sometimes racially assaultive experiences, served as forms of resistance to a dominant hegemonic discourse around student failure in DevRemMath contexts.

#### Stage 3: Using Other Data to Further Refine Interpretations

In this stage of the data collection, I examined (a) faculty surveys and (b) artifact data (syllabi, assignment data, or other course structure data). I performed a similar coding strategy as with students. That is, I compiled all the survey data to identify particular themes about what instructors perceive to be pedagogical approaches that support young Black men's participation in learning and doing, and thereby success, in mathematics. Any artifacts collected from faculty were coded and then used to explore alignment or not of perspectives of faculty and that of students. Again, faculty data sources in this study were important and served as additional insight on how to further interpret the perspectives of young Black men and the pedagogical approaches with which these young men must engage.

## **Member Checks**

I used the reliability technique of member checking (Creswell, 2014) as a way to gauge the extent to which I actually captured the perspectives of these young Black men in this particular DevRemMath context. To do this, I asked the research participants to respond to the ways interpreted certain passages from their initial interview, survey responses, and statements they made during our affinity sessions. More specifically, I asked students if my interpretation seemed to mostly capture their experience, if my interpretation could be changed, and what I could change to better capture what the student was telling us.

#### Trustworthiness

In Chapter 1, I talked about what brings me to this work. That is, I am a Black man in mathematics who has been impacted by more than just the content of mathematics. My identity positions me as a cultural insider (Lipka & Hogan, 2005). I share an identity with my research participants and this sharpens the interpretation of how young Black men experience DevRemMath spaces. As the sole researcher in my study, there may be details about the process to which I may be more sensitive than someone who is not Black and male, and who may not have the background and history in mathematics as I do. I also made my research intentions explicit to be cognizant of the research methods and analyses I use; and that these will not lead students to a particular outcome but provide space for students to reveal their truths and experiences. Additionally, I acknowledge my closeness to the research participants and the study as a strength of this study because of fundamental assumptions made, as detailed in past mathematical experiences and positionality in Chapter 1, that have led this study.

Understandably as a Black male who has experienced several negative interactions which led to less than desirable outcomes, I have my own theories of what could be happening in these spaces, and I highlighted the potential of this bias in my positionality in Chapter 1 and briefly as an earlier section of this chapter. This study is fully subjective, and I make no claims of objectivity and neutrality. But this subjectivity, being a Black man and cultural insider enables a deeply informed data collection process and precise analysis of the data (Bernal, 2013; Dillard, 2000). For example, there may be instances where young Black men may make references to a familiar racialized experience among Black men and not expand on this. In the data collection phase (e.g. in an interview), I could have probed further on this because of my shared familiarity with the experience and potential deflection of the occurrence as normal (Kanuha, 2000). Dillard (2000) referred to the research relationship as an "endarkened epistemology" (p. 663) to highlight the uniqueness of the experience as an African American female in a particular higher education context. I am similarly emphasizing the uniqueness of the Black male experience in DevRemMath as understood more truthfully from the perspective of a Black male. The use of the many different forms of data collection techniques gave rise to the overall trustworthiness in the interpretation of the results that allowed me to triangulate, or "use evidence from the multiple data sources to build a coherent justification for themes that emerge[d] from the data" (Creswell, 2014, p. 201).

#### My Reporting of the Findings

The method of counter storytelling, a methodological tool of CRT, the vehicle by which the results of my study will be presented, calls for the foregrounding of the "voice" of the oppressed (Black male student) as an important instrument to communicate such a lived experience not to mention the voice of Black students in this context serves as a valid and reliable source to understand more about their experiences in developmental mathematics spaces. Put another way, to begin to understand what existing, interacting, and inevitably learning in a developmental mathematics space is like for a young Black man, we must hear from young Black men. Otherwise we are not authentically interrogating what is happening or unveiling racial oppression, and the intersections of power and opportunities to learn and do mathematics. Counter storytelling is about clarifying the covert forces of racial oppression, not easily noticed without a revealing of marginalized people's experiential knowledge.

The use of counter storytelling with the centering of the Black male student voice also enhanced the trustworthiness of the study since my study was focused on understanding the shared and live experiences of Black male students in a mathematics classroom context. In addition, I considered my presence as a faculty member teaching one of the research participants in real-time and having been a former instructor of another research participant, I felt my understanding of my own thinking and decision-making as it happened in somewhat real time enhanced the trustworthiness in my interpretations of student's perceptions of instructor behaviors. I used an auto-ethnographic approach (Freitas, 2008) focused on recording and documenting my own thinking and decision-making as it happened in real time. This was accomplished in the same way other faculty member data were captured in the study.

Furthermore, I will present the results in Chapter 4 from the study in the form of short stories or portraits of the students' experiences before and during MAT 002/003 while shedding light on salient instances students described as events that either promoted or deterred their participation in the mathematics (Varelas et al., 2013). That is, I weaved the data collected from each research participant into a narrative method of counter storytelling (Berry et al., 2011; Solórzano & Yosso, 2002; Warren, 2017), that painted a picture of each student's experience over the course of the semester. Like Warren (2017), I relied on students' experiential knowledge to provide me with alternative perspectives in understanding how racism operated in this DevRemMath space.

#### CHAPTER FOUR – FINDINGS – PART ONE

In this chapter, I will use portraiture (Chapman, 2007) to offer robust descriptions of each young man's racialized experiences of mathematics in the years leading up to enrollment in at SCC. The four young Black men whose portraits I will feature in this chapter are Dudley, Elbert, Walter, and William. Each name is a pseudonym borrowed from the first four Black men who were issued doctorate of philosophy degrees in mathematics in the United States. Notwithstanding their shared racial group membership, the K–12 schooling experiences of each of these young Black men in this study were unique. It is my intention by sharing their portraits to avoid essentializing young Black men's experience of learning and doing mathematics, and to demonstrate more robustly where and how these young men's experiences of learning and doing mathematics converge and diverge in the years leading up to their enrollment at SCC.

The portraits in this first findings chapter offer important context necessary to better understand the perspectives, logics, and ideologies shaping each young man's conception of "participation" in DevRemMath to be explored further in Chapter 5. This chapter also in turn helps the reader better discern the factors that guide these young men's decision-making about how they chose to participate in DevRemMath at SCC. Chapter 5 picks up where Chapter 4 ends. Chapter 5 clarifies the conditions that determine the who, what, where, and how of these young men's learning and doing of mathematics in a community college remedial learning context, while the present chapter narrates these participants' experiences of race and racism in the years leading up to their enrollment in a DevRemMath course.

The portraits to follow are the substance of multiple data points. Each portrait includes direct quotes from the interview data notwithstanding minor changes in grammar and tense to clarify participants' own meaning during the data collection process. The initial one-on-one

interview, survey data via GroupMe, and final one-on-one interview data weave together a clear picture of the ways that race and racism separately shaped each of these four young Black men's learning and doing of mathematics before their time in DevRemMath at SCC.

Finally, there are three dimensions to each of the portraits to follow. First, each portrait centers the participant's voice. I wrote the portraits from the participant's first-person point of view of themselves. I did this to demonstrate their acute awareness and sensitivity, as Black boys transitioned into young men, to majoritarian, or stock stories about Black people and Black boys in society, and how this sensitivity could play a role in their learning of and doing mathematics. This in turn can lead to thoughts of young Black boys and men as inferior and incapable of achieving mathematically. The portrait is also constructed in a way to demonstrate these young men's own understanding of self in relationship to such stock stories. The portraits describe how they have gone about learning and doing mathematics in ways that directly counter perceptions of them as inferior and incapable of achieving mathematically. I did this to demonstrate these young men's agency. Lastly, in developing these portraits, I drew on my own lived experience as a Black male mathematician, and the journey to get to today in my own academic career.

This work aimed to depict these young Black men as viscerally aware of the ways they are perceived by society (i.e., majoritarian stock stories and dominant deficit/racist perspectives of Black men and boys) and instructors. These young men are also naming how they learned to perceive themselves in relationship to others', namely instructors', perspectives of them. Understanding how I was interpreting their participation through these young Black men's perspectives necessitated that I integrate my own experiences. In this way, I was able to identify with my participants the multiple layers of consciousness for the ways that others' perspectives of them mattered to the ways these young Black men learned to perceive themselves inside and outside of mathematics learning spaces. This in turn mattered to how these young Black men participated in math and their sensemaking about the conditions that urged or deterred their participation. To be clear, the portraits are of my participants, but their construction benefited from my insider experiential knowledge (Acker, 2000; Collins, 1986; Gutiérrez, 2013; Rose, 1997), considering I share the race and gender of my participants. There are participant profiles before each portrait, and I included a preceding statement from each research participant to set a tone for how I interpreted their experiences.

## Dudley's Story: "Being Black and not graduating, it's bad for me."

Dudley stated,

What can I say about my math experience before I enrolled at SCC? First of all, me being Black and not graduating, it's bad for me. My mom told me the same thing. That's also a responsibility I had to carry and take seriously.

I first encountered Dudley gently knocking on my open door asking several questions about this dissertation research project and what he would have to do. Once Dudley felt satisfied with the answers, and expressed that he was happy to help me out, he agreed to participate. Over the course of the project, Dudley was extremely talkative in our interviews and survey submissions via GroupMe. It became abundantly clear, based on the attention to school and personal details in Dudley's responses, how comfortable and transparent Dudley felt with me. In one instance, Dudley revealed his pre-SCC educational experiences affected him so much so he felt lost. Dudley mumbled,

"I didn't know what I was going to do [shrugging his shoulders as he lowered his head and softened his voice]. I was not going to go on and go to college anymore."

With so much history in such a short time, Dudley's interviews typically extended far beyond the slated times for them. I was also clear from our interactions how sensitive Dudley was to perceptions of himself as Black and male, given (a) his initial discussion of his Black maleness without my prompting, (b) the body-language (e.g., facial expressions and arm movements) he displayed when I prompted him about his Black maleness, and (c) his vivid descriptions of what he thought could be perceived about him as a young Black man from others, and the numerous instances in which Dudley worked to dispel any negative perceptions that potentially existed. Essentially, Dudley presented as mild-mannered, inquisitive, and altruistic; the kind of student in class I enjoyed, as a now seasoned community college mathematics instructor. These are students who I might expect to meticulously read through information, ask questions if details were not clear, and extend empathy for himself and his instructor.

There were three emergent trends from the data with respect to Dudley's sensemaking about the ways that race and racism shaped his mathematics education experience before DevRemMath at SCC. Dudley experienced teachers in K–12 that neglected his mathematics misunderstandings, inadequately communicated with Dudley about expectations for demonstrating his math understandings, and noticeably treated Dudley differently based on his race and gender. At Dudley's previous private suburban college, or PPSC, Dudley experienced individuals who improperly advised him on course placement, segregated him in his dormitory, and dismissed Dudley's testimony detailing how he was mistreated. The remainder of his portrait illuminates each of the aforementioned themes emerging from my data analysis.

#### **Miscommunication**

Dudley struggled in mathematics prior to SCC, in part, because of his perception that his teachers' were poor communicators about how he should learn K–12 mathematics concepts. For

example, in Study Island, a program in which Dudley was required to participate in as a result of failing a major high school mathematics assessment twice, Dudley struggled. He shared,

All math topics that I had to do I was struggling at first because I couldn't do it by myself. I didn't know what I was doing. They would teach me how to solve certain problems. Well, I didn't carry that same knowledge that they taught me to here right now [Said in a tone to suggest his teachers got it (the instruction: way to teach Dudley) wrong]. It's not like I chose not to. It's just that they just teach you within one day. I would understand it in one day. I'm not going to remember all that.

Data from interviews with Dudley suggest a pattern of neglect with respect to how his predominantly White K–12 teachers interpreted his understanding of key mathematics concepts and the types of learning settings that best suited how Dudley learns mathematics. The data further indicated that Dudley perceives himself, and other Black male classmates, to be treated differently than his White male and female counterparts because of a lack of understanding by teachers about the most productive, culturally responsive approaches to mathematics instruction.

On the one hand, Dudley suspected his teachers may have thought they spent sufficient time covering mathematical concepts. His teachers may have thought they explained content in a way that Dudley was able to access. More specifically, they may have thought they taught Dudley to retain information and to be able to demonstrate understanding of the math topics both during and after math class.

On the other hand, Dudley discussed in one of our interviews how he needed more time to learn in class and that his teachers tended to expect that most of the learning would happen through direct instruction. Dudley craved more intellectual interaction around key concepts, perhaps problem solving more often with his classmates. Likely, Dudley would achieve more in communal settings, as is the case with other Black children, whereas White children do better with individual learning scenarios without much interpersonal interaction (Tyler et al., 2006). In addition, Dudley's teachers' poor communication style, as perceived by Dudley, could be seen as ineffective. Howard (2002)'s study revealed what young African American students believe effective teaching practices involve clear communication.

Dudley also struggled in mathematics prior to enrolling in SCC, in part, because of his perception that his teachers' inconsistently communicated what was important for Dudley to focus on when completing his assignments--accuracy or completion. He stated,

In high school, I felt like the teachers just pushed me along. They didn't really spend a whole lot of time on subjects while we were going over them. It was just they didn't even check the answers. They just checked them off and said, "Oh, it's right." Then, when I went to a different math teacher, other teachers would look at the paper, be confused and say, "What is this?" You got five wrong.

It seemed that from Dudley's experience, his teachers failed to consistently communicate expectations to Dudley from one class to the next. The literature suggests that Black students' failure in mathematics centers on what the teachers do, and what their students fail to do (Fordham & Ogbu, 1986). For example, Dudley's insistence that mathematics teachers "pushed [him] along" in middle and high school, in particular, suggests that they likely believed they spent a sufficient amount of time on mathematics topics, and that there was not much more they could do for Dudley. The tone of our discussion also revealed that Dudley's mathematics teachers in the sense that Dudley, as a Black male, recognized differences between how his teachers interacted with him versus other non-Black male students. Dudley's teachers likely understood themselves

as clearly communicating expectations for solving mathematics problems. Dudley just did not ask the right follow up questions when he lacked understanding.

Dudley, on the one hand, could be thought of as a student who did not learn mathematics skills necessary from each of his previous math courses to be successful in the subsequent math courses he took in high school. He might also be read as a student who frequently answered questions incorrectly and lacked understanding about why such questions were answered incorrectly. Another way to think about Dudley's revelation is that he understood himself as a student unable to recognize the differences in expectations for completing assignments from one teacher to the next. He shared,

"I would say, 'Well, my teacher before said this was right. So, I don't understand? [expressed with a questioning tone in his voice]' That was a whole problem: miscommunication. And I felt like teachers were pushing me right along."

On the other hand, Dudley recognized inconsistent teacher expectations for completing work during his high school mathematics experience. As a result, he described his behavior as responsible, and he expected his teachers to clarify and be consistent about what he should do when he completed math work. Consequently, Dudley's K–12 teachers neglected his request for clarification.

My discussions with Dudley indicated that he perceived his teachers more often than not thought of themselves as being consistent in terms of expectations for answering questions for work completed in mathematics. They expected him to figure out on his own how to represent his answers and understanding in his math work. Dudley noticed a different approach his teachers took with non-Black students, specifically White males and females. As a result of

being neglected intellectually and treated differently, Dudley inevitably failed a major high school assessment twice and was tracked into a group consisting mainly of African Americans.

Consequently, Dudley's teachers socially promoted him and did not address his concerns, which reduced his confidence as a learner and doer of mathematics. Dudley would experience another miscommunication issue when he transitioned to his PPSC. He shared,

I jumped straight into audio engineering. I don't know how to play an instrument. An academic advisor told me that you don't need to play an instrument, when everyone [else] said that you have to play an instrument. I think I was actually the only Black male in that Audio Engineering class anyways. I ended up failing and that's part of my fault.

The data revealed Dudley was in the minority in his class. As a result, Dudley felt isolated as a young Black man in his class. Dudley was sensitive to external perceptions of himself as a young Black man and understood the importance of being prepared for class. In particular, Dudley emphasized his Black maleness to illustrate how his thinking around being unprepared was exacerbated when he realized he was the only Black male in the class. Dudley, thinking about his K–12 experiences, would have perceived expectations for his success and treatment in the class would look different for him than that of his non-Black counterparts.

Dudley viewed the actions of this academic advisor as careless. As a consequence of miscommunication, or more specifically a lack of communication, about what Dudley needed to be successful in his course, Dudley failed. Dudley accepted the responsibility for failing because he internalized a "bootstraps" mentality. That is, it was up to Dudley to figure out what he needed to be successful no matter in which circumstance he found himself in society.

When Dudley described the situation in his audio engineering class, his eyes tightened. He had a confused look on his face that begged the question of how he could be placed in a class that was so unfamiliar. Dudley highlighted that he not only did not play an instrument, but he also was the only Black male student in that class.

#### Differential Treatment

Dudley recognized that being Black and male in mathematics meant you received differential treatment and time from some teachers and administrators while participating in learning and doing mathematics in K–12 and postsecondary education. He stated,

Definitely, I would say at one part in geometry there was only me and my friend. We were the only Black males in that class. I mean, it was diverse but, it was the time that the teachers spent on each student that I noticed. Someone who is just male and white, he would have more time or different expectations or a different interaction with the teacher than Black students would have. I noticed that.

From the data, it can be assumed that Dudley suspected his teachers may have thought they treated all of the students in this diverse classroom the same, and the teachers did not recognize any noticeable differences in time spent with students, expectations for students, or interactions with students.

Dudley, on the other hand, noticed the differential treatment white male students received compared to the treatment Dudley and the one other Black male student received. This differential treatment included more time spent with White male students, a lack of "checkingin" on the wellbeing of the only two Black students in the geometry class, as well as a noticeably different, likely less enthusiastic, energy with the Black students. He shared,

The teacher would say, "Hey how you doing?", you know to the Black students and not saying what are you doing in the class? It's just like teachers didn't have the same energy with all the students; with each individual student if that makes any sense.

As Dudley described what happened in class in our interview, the tone and volume of his voice became lighter and lower respectively as if he was resigned to acquiesce to this kind of noticing. It was as if this behavior was something with which Dudley was all too frequently familiar. There was still more to Dudley's story in high school. Dudley felt he was treated differently again based on his race and gender when he was grouped after failing a major high school assessment. He stated.

Then, for my senior year, I failed this big test. I think it was not a placement test but it was a certain test that all high school students had to take for English and math. I forgot what the name of that was called. I failed the test twice so I had to do Study Island. They [administrators] put you in a small group, and it's usually African Americans mostly.

Findings from the data revealed that Dudley thought of himself as being punished, or placed in a group of the Study Island program that felt tracked based on Dudley's racialized identity of African American. Dudley's placement in Study Island would have been linked to Dudley's lack of preparedness as evidenced by low homework completion, participation in class, or performance on assessments and exams. Dudley's lack of preparedness would have then been justified by Dudley's laziness or lack of intellectual capacity to handle the academic rigor of high school mathematics or postsecondary mathematics, but Dudley pushes back against such characterizations.

Still, Dudley understood that he was being viewed by his teachers more often than not as just another mathematically un(der)prepared Black boy, and this would have highlighted the lack of preparedness of young Black men, in general. Essentially, Dudley, like his other Black counterparts, would have been blamed for their failure in high school and future mathematics.

Neglect

Dudley's PPSC was not prepared to meet, and was inattentive to, Dudley's basic educational and living needs. Dudley said that would have supported his success at PPSC. He stated.

At Previous Private Suburban College (PPSC), I was supposed to take a placement test...Because if I took a placement test I would have been placed in a certain math or certainly language or English class. The adviser said, "They would set up a placement test." I remember sitting with my academic advisor right in front of my face, and my parents were on my left side. Talking about classes like yeah, "You should take this and this and this." Never once did the adviser mention math or Language Arts. They just didn't mention it, period. They just mentioned sports journalism, or that I should take the science lab. But they never mentioned taking something like MAT 002 or 003 or English 101. They said, "Did you take a placement test?" I was like no I should take it.

In this case, the advisor likely thought they were ensuring Dudley was prepared to enter into this postsecondary learning space. The advisor may have perceived they provided Dudley with the space to talk about his interests. On one hand, Dudley's experience at PPSC was another example of an unprepared young Black male student failing out of college at the end of his first semester. Dudley's failure would have been linked to his inability to take the proper steps to transition into the college including a lack of academic preparedness from secondary schooling and poor choices in scheduling courses.

The data also suggest that this institution failed Dudley at the outset of one of the most important transitions of his life as a young Black man going to college. Dudley's transition involved access to information and resources to navigate societal structures, and the challenges

first-generation college students face, especially in trusting that people within the institution would take care of them. They did not. Taking the time to care for the whole student is not efficient for institutions. So, there are patterns for who is "successful" during these transitions; research shows young Black men fail out of college in the first year at alarming rates because of situations similar to that of Dudley (Johnson et al., 2019). Dudley's adviser neglected to follow through with scheduling Dudley for the appropriate placement exams. As a result of institutional negligence, Dudley was placed into courses for which he would have likely not been assigned had he taken placement exams.

When Dudley talked about the interaction between his family and this adviser, Dudley very joyfully described a day where he and his parents, who both worked, adjusted their schedules and solved a transportation issue to ensure Dudley arrived on campus prepared for the next step in Dudley's academic journey. Dudley highlighted the fact that the advisor focused on getting Dudley to sign up for courses like sports journalism, a course likely to be suggested to a young Black male because of the narrow perception of the Black male body as highly athletic (Hoberman, 1997; Rhoden, 2010). Dudley also mentioned the proximity and location of his parents during the meeting. Dudley included these details to highlight that his parents were witnesses to this adviser's neglectful act of placing Dudley into courses without properly ensuring Dudley should be registered for those courses; and that his parents could validate the veracity of his description of the events that occurred in that meeting; the actions of this adviser negatively impacted Dudley's future success in the courses and inevitably at the college.

Dudley's further acceptance of accountability for his inevitable failure in this situation illustrated Dudley had a profound trust in a system of schooling he perceived had his best interest at heart. Thus, Dudley trusted this adviser to make the kinds of choices that placed Dudley in a situation where Dudley could be successful. This trust was broken, as communicated by Dudley as he described the details of that day and what transpired at the institution.

As a result of this distrust, Dudley became even more sensitive to his surroundings and would inevitably pick up on other cues that professors operated through a racialized lens when interacting with Dudley. For example, Dudley noticed the language professors used when interacting with him.

There will always be the small stuff...professors...I have say or do. Like professors will say "you people" or some other stuff that I would notice. I mean I would not try to let that bug me, but it would just go through my head. Just what do you mean by "you people?" The data illustrated Dudley operated with an awareness of racism as endemic

(CRT tenet); normal. If Dudley got angry or responded to any of the microaggressions he faced, Dudley would be likely seen as the aggressor. This point was confirmed when Dudley followed the previous statement by stating, "But again I tried to not let that bug me. I thought this is a new fresh start. I got to do what I have to do."

Notwithstanding Dudley's acquiescence to a racist and neglectful postsecondary space, Dudley's plea to be heard was likely viewed as a young Black man's unwillingness to take responsibility for his role in failing. This private predominantly White postsecondary college would exercise a lack of responsibility for its neglectful behavior, of not scheduling Dudley for placement exams and placing Dudley into racially stereotypical classes, by ignoring it, thereby suggesting Dudley was to blame for his failure. But, Dudley was accountable.

It didn't end up being my way. I failed all my classes. I got suspended. Don't really know the reason why. I think it was just because I was failing all my classes. I'm

not sure. I had to write an appeal. They didn't approve it. So I didn't go back to PPSC.

Dudley emphasized "had" in his interview by raising his voice on this word in the sentence. The emotion in Dudley's voice suggested to me Dudley realized the gravity of failing in college his first semester and that it was his responsibility to try again at college. Elbert's story picks up here connecting their experiences through the immense pressure both young men felt as Black boys trying to become successful young Black men.

## Elbert's Story: "Being a Black male you feel more pressure."

Elbert shared,

Being a Black male, you feel more pressure. And you feel like you have to do everything to a higher standard. There's no room for error. And if you feel like you're making a mistake, it makes you not want to even compete. It makes me not even want to participate.

Elbert walked and talked with an air of confidence. His head and eyes were high, and his voice was steady and resolute. Elbert looked directly in your eyes as he spoke. Elbert was a man of few words yet expressed his ideas clearly. Our interviews would typically last exactly the time allotted or sometimes end earlier. Elbert and I had history. I was Elbert's MAT-001 instructor in the Fall 2017 semester. Outside of class, I often saw Elbert around campus engaged in conversation with crowds of students. Elbert was generally the one who talked and was the center of attention.

During the Spring 2020 semester, Elbert came to my office to inquire about the project with the research participant solicitation flyer in hand. I gave Elbert the details. Elbert only

enthusiastically confirmed his participation after he heard about the potential for the project to help other young Black men in DevRemMath. Over the course of the project, I got to know more intimately how Elbert felt about learning in school. On multiple occasions, Elbert highlighted how it was important for him to have a strong relationship with his professor; he valued relationships above all else. That relationship made the difference in whether Elbert did well in mathematics or not. Essentially, Elbert presented as a confident, concise, and communityoriented individual; the kind of student in class I would expect to speak up often, challenge the "wrongness" of classroom policies, and support (both student and teacher) in the overall functioning of the "goings on" in the classroom. He did those things in my MAT-001 class.

Elbert's story revealed the immense pressure and actions he felt he needed to take to be successful in mathematics. More specifically, Elbert felt targeted and was made to feel that he was the responsible party for the de-escalation of tense situations in mathematics. He experienced a learning environment where he was subjected to uncertainty about his success in mathematics. That is, Elbert felt his success was predicated on the perspective his teacher held about him. Additionally, Elbert's teachers would also ignore the type of learning approaches (strategies) that best suited how Elbert learned.

### Indeterminate Success in Mathematic

Well, before coming to SCC, when I was in high school, math was always 50/50 for me. I was strong at it in some areas, but other areas I wasn't as strong. So, depending on the teacher I had, that's how high the capability and capacity I could take.

A perspective that could be gleaned from the data is that Elbert is an inconsistent student. He received high marks sometimes and low marks at other times. Likely this inconsistency in understanding could have been linked to his lack of preparation from prior courses, a lack of work outside of the classroom, or a lack of understanding due to his genetically inferior race and gendered identity of being Black and male. This perspective could also say that Elbert was responsible for his own learning, and that it was his job to figure out how to focus himself enough to successfully participate in learning and doing mathematics. Additionally, Elbert should have been able to recognize and understand exactly what he needed to do in mathematics both inside and outside of the classroom. The perspective could be extended even further to add that likely teacher perception neither played a role in nor was linked to how Elbert progressed through mathematics. He shared,

So, if I had a professor or a teacher that was able to focus and get me to understand exactly what's going on, my grades were usually higher. If I had a teacher that just assumed that I'd flunk the class, I usually struggled. But math, for me, was always something that was kind of a toss-up.

Conversely, a different perspective gleaned from Elbert's excerpt could say that Elbert was a student who recognized his strengths and weaknesses in mathematics, and he determined what learning style worked best for him. He also understood the professor to be an important contextual variable with the capacity to create opportunities for successful outcomes for Elbert. Put differently, Elbert had to interpret what teachers perceived him as working hard enough or demonstrating precision in learning and doing mathematics because Elbert believed teacher perceptions were linked to his progress, and thereby success, in a particular class.

As Elbert spoke about his experience, sitting across the desk from me, he used his fingers to point to where the voice recorder was between us. Elbert accented the beginnings of sentences to emphasize the points he made. This behavior validated that he was passionate about what

contributed to his success in these K–12 spaces, and that a teacher's perception of him was paramount to his success.

Speaking from my own professional experience when I taught high school, my Black and Brown students often expressed they would not try from fear of failure or fear of perception if they were to get a question wrong because they must be perfect. They also shared that they felt most confident in their outcomes in my mathematics courses if they felt I wanted them to succeed. These students expressed that when I communicated my positive feelings about their success and that I would be there to continually support them, they felt empowered to try even if they felt they would likely struggle mathematically. They also expressed they tried because they felt I would be there for them on a personal level and that I would somehow understand if a personal struggle led to mathematics struggle.

Like my former students, Elbert seems to have felt an immense pressure to be perfect in mathematics classes. Having a teacher he felt did not think he would be successful would have likely affected his behavior and participation in class. That is, I would not expect Elbert to participate in learning and doing mathematics if Elbert felt his instructor was not professional and to some degree personally invested in his success in learning and doing mathematics.

### Neglect

Elbert's teachers taught in ways that did not adequately communicate the kinds of understanding Elbert needed to be prepared for subsequent mathematics courses. This inadequate communication would inevitably set the foundation for future misunderstandings in mathematics courses because of gaps in his learning. He shared,

The courses I took in high school were geometry and algebra. I had algebra 1B and algebra 2. I took all those, my four years. So I took algebra 1B and it was regular algebra.

Algebra 1B was a class you take if you didn't fully understand everything that had to do with algebra; it was like a sub. So, they didn't teach all the algebra. They taught the main things they thought you needed in order to be ready for Algebra. So it was kind of like a class before a class.

A viewpoint that could be derived from the data is that Elbert was required to take this class because he did not demonstrate the skills to suggest he understood algebra. It could be thought that Elbert did not properly prepare himself to be there, but Elbert did not want to feel like he was making a mistake. Elbert frequently fought against that feeling by publicly demonstrating his understanding of mathematical problems at the board. Elbert invited other students into his journey of understanding. Elbert asked other students questions. Elbert, in engaging in conversations with students without the teacher, attempted to create an environment where the teacher had the opportunity to see student understanding as an observer of learning.

On one hand, instructors may have thought they were breaking down the problem in ways Elbert could access. Instructors may have thought they were aligning their teaching with Elbert's learning style. Instructors may have felt that created space for multiple mediums for Elbert to access the material. On the other hand, Elbert saw incongruence in the ways instructors taught and how he learned mathematics. During one of "infinity space" sessions, Elbert mentioned that he did not have many experiences before SCC where he was able to demonstrate his learning more publicly (in front of the class), a point further discussed in the next chapter.

Elbert felt that he was not able to truly connect with his teacher's instructional practices or guidance because his teachers thought of themselves as ultimate holders of the mathematical knowledge and appropriate conveyors of that knowledge. He stated,

"Some professors feel like 'now you're taking my power. Their ego drives them, and their pride drives them."

What could be interpreted from this data is that Elbert wanted to demonstrate his learning but likely felt blocked because his teachers felt as if they would lose some semblance of authority in the classroom by allowing Elbert to show his work at the board (front of the class). He stated, "Because a student seeing it from a student's point of view is different than how a teacher would explain it."

## **Targeted**

Similarly, to Dudley, Elbert describes a pre-SCC experience where he was treated differently because of his racialized and gendered identity of being Black and male. For Elbert, he felt targeted. He shared,

But when you're a Black\_male, you understand when you're being targeted. So, if it's a room full of people and everybody in the class is doing the same thing, we're all on the same page, yet you're constantly getting called on in class. Your name is always being brought up or the teacher's always looking at you or the teachers always wondering what's going on your paper. Those are stand out things that I key in on being a Black man. Yeah, 100%.

From that data, one interpretation could be that Elbert's teachers may have thought they strived to treat each student equally in class; that they did not single-out Elbert. Those same teachers may have felt in order to accomplish the task of equality, they needed to ensure they brought attention to Elbert whenever possible; that providing Elbert with additional attention would help Elbert to not feel like the minoritized student in the classroom. This could have included calling on Elbert, spending time with him, and checking on him regularly. In essence, Elbert's teachers may have assumed their behavior indicated they held the same level of curiosity about the working behavior of each student in class.

On the contrary, the data suggest Elbert held a different perspective, one of a treatment versus understanding the agenda of the teacher. Elbert, who was keenly aware of the typical racial demographics of his classes, seemed to believe his teachers' behaviors suggest they were focused on more than his level of understanding of mathematics especially considering all of the students, notwithstanding race, were engaged in the same mathematical activity. For Elbert, likely overzealous teachers who may have thought they were doing good were actually treating him in ways that made Elbert feel targeted. This in turn may have been the opposite of what his teachers wanted for him. We know from the literature that educational practices and policies at all levels can sometimes have unintended consequences that do more harm than good to Black students (Lester, 2014).

Elbert further described how his teachers' behaviors did not stop with simply getting him to participate. His teachers seemed to find additional ways of hyper-focusing on this young Black boy. He stated,

I could be passing my classes, the work will be handed in on time, things of that nature. I'll be minding my own business, doing my work, or I might be sitting there, and my work is completed, and the teacher would just feel like they just want to call your name; It just puts you out. They say, "Elbert, did you get that?" Then I'll just be like, "You know I got it." I already handed it in." It's like you get a 24/7 babysitter when you're a Black male.

Elbert's feelings about being targeted seem to be exacerbated by his teacher's behaviors towards him. His teachers' behaviors seem to be based on the sheer fact that Elbert was Black and male. For example, his teachers seemed to direct inquiries of misunderstanding at Elbert even in instances where Elbert did not indicate he misunderstood. The severity to which Elbert felt profiled would affect not only his perception of how his teachers viewed him but his participation as well. These kinds of experiences would inevitably lead Elbert to feel he had to be perfect as he described in his opening statement. Walter's story is next.

# Walter's Story: "I have to overtly be nice...so I'm not seen as 'oh typical angry nigger." Walter stated,

Being Black and male is different. Well, a lot of times when you're Black, I feel like for me, I have to overtly be nice in certain situations, so I'm not seen as, 'oh, typical angry nigger.' So, there's situations where I'd have to, even in school, let certain things just roll off my back just so it's not perceived as that negative connotation.

During our interviews, Walter frequently looked down as he answered questions. Walter occasionally looked up at me when it seemed he sought confirmation that I was listening and understood his thoughts. Walter also seemed conscious of what he did with his body language. Walter was careful not to express himself frequently with his hands. Walter's hands were either in his lap or flat on the desk between us. I recalled quietly to myself during interviews a conversation I had with my own mother where she stated, "Speak with your words, not your hands son. The world doesn't look at you the same as other little boys." Walter and I understood the necessary care a young Black boy and man takes when presenting his thoughts, while simultaneously suppressing expressions of emotion physically he has about those thoughts. Walter also waited quietly and watched me while I set up the recorders for our interviews and always offered to help with the rare technical issues.

Essentially, Walter presented as a shy yet calculated and patient young man who scrutinized social situations; I observed Walter to be the kind of student in class I would expect to observe and assess the flow (energy) of class before participating, and one who would ask questions only when he saw the benefit to himself while simultaneously not detracting from the other students' learning. Walter is the kind of student who would rarely participate without having had the time to process his understanding and the environment, including other students, around him.

Following are prominent themes that arose from Walter's narrative. He was denied learning opportunities and experienced a lack of teacher support which should have focused on addressing his learning disability (LD). Walter was diagnosed in elementary school with Attention Deficit Disorder (ADD), which he talked about later. Studies show a pattern of disproportionate learning challenge diagnoses ascribed to young Black boys and their placement into special education compared to their White male and female counterparts (Artiles & Trent, 1994; Chinn & Hughes, 1987; Harry & Anderson, 1994; MacMillan & Reschly, 1998; Patton, 1998; Shifrer et al., 2011). Walter's narrative provides a window into what learning mathematics as a young Black boy in K–12 schooling and diagnosed with an LD at the early age of 7 was like.

## **Denied Learning Opportunities**

Walter stated,

Well, I was always super bad at math. And the only reason I was able to graduate high school a year early was because the math teacher gave me a B. So, I will forever be

thankful for her because she allowed me to graduate in 2015, which was a year early. She saw that I was really trying that entire year, and then I guess she felt like I deserved a B. I know for a fact I didn't get a B, but I feel like she felt like I deserved a B.

From the data, one perspective that can be gleaned from the data is that Walter's teacher used her better judgment, based on the hard work Walter put in to complete his mathematics work, to justify socially promoting Walter. This social promotion was further qualified by the fact that Walter was able to graduate a year early. Walter's teacher may have felt her act of providing Walter with a passing grade was in his best interest and would serve Walter well later in his mathematics learning journey.

On the other hand, the data also suggest that Walter's math teacher, by socially promoting him with a grade of B, set Walter on a path to fail in subsequent mathematics courses, as indicated by Walter who stated he knows he did not earn the grade. Jimerson et al. (2006) posited, based on a review of literature in their study, that "research indicates that neither grade retention nor social promotion is a successful strategy for improving educational success" and that there are "prevention and intervention strategies that are likely to promote the social or academic competence of students at risk of poor school performance" (p. 85). Then an assumption gleaned from this data could be that Walter's teacher perhaps unsuccessfully incorporated strategies that did not adequately address Walter's learning needs. Thus, Walter's early LD diagnosis and descriptions of his teacher-led classroom activities serve as evidence that Walter's learning environment was not supportive to Walter. Further, Walter's teacher's action of socially promoting him could be seen as an act of getting rid of another Black boy with issues. Consequently, Walter suffered mathematically, as evidenced in this study, possibly from long-term effects of social promotion (Mawhinney et al., 2016).

Walter's teacher's actions could also be interpreted as lacking care or neglecting to actually work to address his learning needs. He shared,

I would get kicked out of class every single day. I went to a school where they send you when you can't behave or for a credit recovery. The school was alright. I did really good in all my classes except for math. I was always just walking around in school doing what I wanted to do.

A perspective one could interpret from the data is that Walter was a disciplinary problem. He did not follow rules established in schooling. His teachers' primary recourse was to remove Walter from the learning environment. One could also infer that Walter was not successful in learning and doing mathematics because of his disciplinary problems. Further likely, Walter's behaviors were interpreted as disruptive to the learning environment. A solution to eliminating Walter as a disruption was to remove him altogether. This meant sending Walter to an alternative learning setting. Essentially, Walter was expected to perform poorly in math class and his performance and behavior was indicative of young Black boys.

On the other hand, the data suggest that Walter was likely subjected to excessive exclusionary disciplinary practices (Blake et al., 2011; Wesley & Ellis, 2017), occurrences young Black boys and girls regularly experience in K–12. The structural environment and policies of his math class possibly lacked culturally responsive content or was fundamentally disruptive to his learning process, considering Walter was diagnosed with an LD in elementary school. Studies point to the importance of considering these factors in understanding Black boys responses in schooling (Noguera, 2003). Walter's experience was likely not the same as his White male and female counterparts, and studies show Black boys are policed and profiled in schools at a far greater rate and receive far greater disciplinary punishments for similar infractions than their White male and female counterparts (Fenning & Rose, 2007; Mendez & Knoff, 2003; Skiba et al., 2002; Warde, 2008).

Even faced with feelings of hopelessness about his ability to be successful in mathematics, Walter always tried to participate in learning and doing mathematics. He shared,

Where math was concerned, I would still try, but I would never truly try; because I thought, I'm not going to get this. It was ever since elementary school, I always knew, I just always struggled with math. It would just be the teachers read going over it. But to my memory, that was the extent of it.

An interpretation one could assume from the data is perhaps Walter's teachers noticed he did not try to participate in math to his fullest potential and that this lack of effort contributed to Walter's struggles in math. Also, Walter's teachers likely thought they took the time to read over material and that this teacher-led form of instruction was the most supportive learning style for Walter.

Conversely, it could be assumed that the data illustrates Walter put in the effort to learn and do math. Likely, his teachers' limited style of presenting math content affected Walter's ability to focus, participate, and learn leading perhaps to frustration. Walter's frustration then possibly manifested in ways that were interpreted by his teachers as defiant. For example, in an earlier statement Walter expressed "walking around school doing what I wanted do" to indicate how he left class some days and did not come back because Walter did not want to be subjected to a learning environment that was unprepared to address his unique learning needs as a student with ADD.

Coupled with his learning disorder, Walter, like both Dudley and Elbert, also had to deal with perceptions of his racial and gendered identity of being Black and male. Walter knew the instruction did not meet his needs. And Walter was frustrated by this. Rather than be perceived as the what Walter described in his initial statement as a "typical angry nigger", Walter removed himself from an unsupportive learning milieu that neither valued his presence as a young Black boy diagnosed with an LD nor supported his participation in learning and doing mathematics. He shared,

Some administrators asked how I felt about going back to the credit recovery school since I was there in middle school for most of 7th and eighth grade. I knew it was going to be shorter days, but more work since half a year will equate to a full year in the regular schools. This was at the end of ninth grade, Public school was super distracting since I had all of my friends. And teachers really didn't have a strong grasp on the class in terms of class management.

On one hand, the data suggest administrators may have thought they were providing Walter with the support he needed to be successful and graduate from high school. Perhaps, when administrators realized Walter's behavioral issues posed a disruption to the learning environment, instituting an excessive exclusionary disciplinary action was the logical next step. It could also be perceived from the data that Walter's teachers likely thought they structured classes to minimize obstructions to Walter's learning. If Walter were not fully attentive, this was due to another reason beyond teacher designed tasks meant to address Walter's learning challenges and behavior.

Conversely, what could be suggested from the data is that Walter understood the structure of the alternative learning environment could provide him with a learning context that better supported his learning and doing of math. Walter was able to be in a space where teachers did more than read to say material was covered. The literature talks about the need for high quality mathematics instruction for Black boys in K–12 (Leonard & Martin, 2013). It can be assumed that Walter experienced public school classrooms filled with distractions and that Walter's teachers lacked classroom management skills to provide Walter with a learning environment where he could effectively participate in learning and doing mathematics.

## Mismatch of Teaching and Learning

Walter shared, "The math concepts never stuck with me, and I just never clicked with math. It was always really hard. But, everything else I was pretty much good in."

Walter's mainstream schooling experience, tasked with the legal responsibility to provide Walter with additional support to address his learning disability, was insufficient/inadequate. He stated,

Also, I had a resource room, which we would go over a lot of stuff there with whatever I would be struggling in. That was in elementary and middle. I have a learning disability, ADD. I was diagnosed by the school probably in second or third grade. Resource room would generally be for about an hour, like every two days. They would give us little questions to get our brains going. It would just be something super irrelevant, nothing on the topic. And then, they would be like, hey, anything you need to work on? If not, they would just give us some little foolishness to do. You would do math only if you asked to work on your math work. During this time there wasn't much participation at all from me since I have a lot of anxiety. So, it would be more of forcing me to participate.

One perspective gleaned from the data could be that Walter's teachers may have thought they provided him sufficient time weekly to do mathematics in the resource room. At the beginning of the sessions in the resource room, Walter was provided topics that stimulated his mind. Walter was provided opportunities to do mathematics work in the resource room. On the other hand, Walter had to force himself to participate in learning and doing mathematics. At the beginning of each resource room session, Walter was provided information that was not relevant to the overall learning he was expected to do. Unless Walter asked, he was not provided opportunities to learn and do mathematics. Walter's increased level of anxiety was likely exacerbated by the fact that his teachers lacked effective classroom management strategies and employed insufficient classroom resources to adequately support a young Black boy like Walter trying to learn with his diagnosed LD.

Unfortunately, Walter struggled in mathematics throughout his K–12 learning experience. In our conversations, he consistently voiced issues of anxiety over the course of all of his experiences with learning and doing mathematics. This suggests he would not have asked to do additional work in mathematics in the resource room and that the responsibility to provide Walter with various opportunities to learn mathematics was that of his resource room supporters. Walter would receive some mathematical relief however small. He stated,

In the alternative school, they were definitely better than the high school and middle schools, since there were really small classes. A majority of the class was supposed to be like a one-on-one, two on one, or at most a three on one. So, you really were able to get a lot of attention. The teachers were just more relaxed since they knew it was a smaller class. And class was also longer, so you had more time to, I guess, relax, in essence. We did not do much work. Basically, we had regular classes. We would do some lecture and work on little worksheets, and if you needed any help teachers would definitely assist you to the best of their ability.

The data suggest that the mainstream public school was not able to support Walter in his learning. Walter shared that his teachers did not offer many collaborative activities in his math

courses. Walter's teachers may have thought they were providing Walter with the most effective learning contexts. He stated, "One year I was supposed to go to summer school for more help] but they messed the paperwork up and I didn't go. My name wasn't on the list."

The data revealed Walter fell through the cracks in high school. The fact that Walter's name did not appear in the summer school paperwork illustrates institutional negligence. Walter was denied the opportunity to learn and regain the skills during the summer that he was not privy to during the regular academic year.

#### William's Story: "Black city kids are ruining our perfect schools."

William shared,

There was a huge fight that happened at the high school that went on the news, and that really didn't look good for the high school for being a good neighborhood and it didn't reflect good on the Black community that lives there because now it's oh, Black city kids are ruining the white community's perfect schools. These Black people are ruining our perfect schools.

I met William after I spoke to his class about my dissertation study. I heard back from William when I sent a follow-up email to which William responded. When he came to my office, I first noticed how shy William was and how apprehensive he seemed about the project. William did not look me in the eye when spoke and he spoke softly. At times, I would ask him to repeat what he said to make sure I understood what he said clearly. William asked several questions about the project. He was most concerned about whether his participation in the project was required and if his grade would be negatively impacted if he did not participate. When I assured him that anything he did on the project was optional, anonymous, and that he could withdraw at any moment, he seemed to feel better about participating. When I made note about the
compensation for students, he noted that he was not particularly concerned about the money. William expressed before and during his conversations with me that he always struggled in math and that he really wanted to provide information on what could help students in math class.

William, unlike the other three research participants, presented as a student I would not expect to verbally express his misalignments to the learning contexts but would rely on the administrative or teacher supports provided to him. On the other hand, and like other Dudley, William would be the kind of student who felt it was his responsibility to figure out what he was doing wrong. He deemed his teachers as the ones who were doing work to support him and knew what was best for him. If he was not successful, he was not working hard enough to be successful.

Of particular note, William seemed to talk less personally and more generally about his experiences and perceptions of race when I asked about him being Black and male. He does mention race however without my prompting specifically about race at the outset of his initial interview which is his opening statement. He followed this statement with:

So that really didn't go well and some of the students didn't reflect that either. You have some students that are trying their best, and you have some students that just don't care and just kind of reinforcing the whole stereotype on the schools since the majority of the school is Black.

From the data, one can assume the stereotype William is describing is related to the negative characteristics and behaviors sometimes ascribed to Black children. William's response, because it was given without my explicit probe for his thoughts around race, helped me to understand what may have influenced his decisions to rarely talk about race in our conversations. His response also helped me to think about how William may have likely thought more about

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other aspects of his identity, outside of being young, Black and male, because William did not want to engage or talk about negative stereotypes around Blackness or Black maleness. I used William's desire to focus on other aspects of his identity as a student who was putting forth the effort to navigate K–12 schooling to try and understand what William was saying about his math experiences leading up to SCC. At the same time, I thought about the work young Black boys and men have to do to hide parts of themselves considered characteristically Black and male, in order to survive mathematics (Berry, 2008; Stinson, 2011, 2013). What I learned in the remainder of William's portrait is that he experienced a mismatch of teaching to his learning and inadequate guidance and support in math before coming to SCC.

## Mismatch of Teaching and Learning

Like Walter, William was diagnosed in elementary school with a learning disability. Unfortunately, there seemed to be a pattern of inadequate communication, guidance and support in William's learning experiences in mathematics.

Before coming to SCC, my math skills were really not that strong. I had been in a lot of study halls and a lot of math support groups, but I've never really seemed to really click with me much. I usually stay away from math. I don't know what it is. It's just something that I just really don't prioritize much. I'd rather focus on other aspects I'm good at rather than math.

The data suggest William may have received inadequate learning resources and thus was not able to achieve the necessary math understanding to be able to not struggle in math. This would lead William to develop a mentality of avoiding math when he could and not prioritizing math. In the next chapter, we learn how this trend impacted William's participation. He shared, Well, the classes I took, they were good. But sometimes the teachers, they would just go on and talk and I'd sometimes just lose interest or zone out and I sometimes missed a large portion of what we were learning. So, by the next day or after class, literally feel like I learned nothing.

From the data, on the one hand, William's teachers may have thought their use of direct instruction was best for William to learn. On the other hand, an interpretation from the data could be that the teacher did not create the necessary learning context including appropriate learning supports to ensure William was engaged in order to participate in learning and doing mathematics.

Because William presented as shy, I would not have expected William to bring attention to or take issue with his teacher's instructional style. William, similar to like Dudley, likely thought that he was responsible for figuring out what he needed to do to be successful in learning and doing mathematics. He stated,

I know I put it on me most of the time because I think I could have done more to understand the topics but I always just think about how I could do better but anytime I try I find myself falling back to stage one and just me just not liking it and just leaving it behind. And I've been struggling because of that.

We can see from the data that, like Walter, William always tried to do things differently to help him in his understanding. William's behavior can be interpreted as he was operating with a particular meritocratic frame of working hard to reap the benefits of his labor. This mentality was likely fed to him by his teachers and administrators in his schooling experiences.

Essentially, success was up to William. If somehow William was not doing well in his class, he was the one to blame and he should work harder to stay on task. With a pattern of

neglect of understanding where William was in his understanding, William regularly struggled even with the work William tried to do on his own. He stated,

I sometimes took time out of my day to go on websites that helped me improve my math skills or tried to look over the work I was given but some of the stuff, we're so far ahead that by the time I tried to look over it by myself, I'm just sitting there staring at all these problems not knowing what to do. And just get so frustrated and just put it away.

The data illustrates that when it was time for William to take his math classes in high school, his teachers and administrators failed to adequately guide him on what courses he should take and the order in which he should take those courses. Consequently, William was unable to recall the content he covered in these courses and spoke regularly about the negative feelings he had when participating in mathematics in those courses.

## Misguided

William shared,

I really didn't know the importance of each math course you choose or what you learn. I just saw it as you just take a math class and just go on the rest of the day. I didn't really know that there was each level of Algebra or math, so when I was supposed to choose each math class, I was really confused. I did choose them, but I didn't know what order they were supposed to be in, so you take this class, this class. I was just like okay.

From the data, a perspective one can assume is that William took whatever math course was required for him to take in order to graduate. One can also assume by William's description that this trend endured throughout his high school experience. The confusion William experienced could play a role in William's perception and participation in mathematics. I will discuss that in the next chapter. He shared, I just got by just relying on a lot of teachers for help or just looking at notes or just the teacher or she just gives us special notes and stuff. Or just being in the educational support, because that's what I was put in since elementary school since they said I had a learning disability so yeah. I had a lot of help through high school because of that.

The data suggest William became reliant on his teacher for his understanding. This dependency would translate into William not being a self-driven learner. This type of learning structure for William suggested that he would not be able to learn or do mathematics without some form of support both inside and outside of the classroom. He stated,

So, each class I had, there was a co-teacher in the room that helps me. Specifically, she gives me notes during or before a test or after a test. She helped me with certain assignments I needed to get done or she helped me with small things like organization or helps me with notes and stuff like that. I'm pretty sure if it wasn't for that I probably wouldn't have made it that far in high school for math wise.

One perspective is that William's teachers provided him the support necessary to participate in learning and doing mathematics in the classroom. As a consequence, William completed certain assignments that indicated that his teachers were doing their part of supporting William, and William was learning mathematics.

An opposite perspective suggests that his teachers and co-teachers did not recognize William's Black boy brilliance (Leonard & Martin, 2013) and may have been overzealous in trying to make sure William completed, rather than learned, mathematics. Having a completion versus learning agenda may have created a situation where William relied too heavily on his teacher which in turn prevented William from successfully working on mathematics in his teacher's absence. Consequently, William would become a dependent versus independent mathematics learner who encountered problems participating in mathematics both inside and outside of the classroom. I will discuss this in further detail in Chapter 5.

### Summary

Across the narratives of these four young Black men, we see there are patterns of teacher behaviors that played a role in how these young men perceived their mathematics learning experiences before SCC. These young men described their teachers brought with them experiences that included teachers in K–12 who they perceived that poorly communicated with them. Communication, or the lack thereof played itself out in a few ways. First, from these young men's perspectives, teachers' expectations for them tended to be unclear, as demonstrated in their mathematics understanding.

Across each young man's story was the perception that mathematics teachers tended to overlook Dudley, Elbert, William, and Walter that neglected their mathematics misunderstandings, and then more often than not blame them for their failure, rather than their own practice as teachers. The findings also suggest that these young men had little access that provided limited instructional strategies that account for learning styles as young Black boys. They were to address preferable learning contexts that denied them learning opportunities. Instead, they were overexposed to by instituting excessive exclusionary disciplinary actions. Finally, the young men in this study described being treated noticeably different based on their race and gender; they felt that their race-gender devalued their identities as evidenced by the sheer absent presence in acknowledging their Black maleness.

These experiences notwithstanding, Walter, William, Elbert, and Dudley brought with them to school the love and support from their parents, drive and perseverance to graduate against all odds as young Black men in a United States context, and a heightened accountability for their actions both inside and outside the classroom. The data suggest young Black men's willingness to take responsibility for their learning and an awareness of what types of learning environments best supported their participation in learning and doing mathematics.

Their overall learning experiences before attending SCC illustrated how they thought about race, and how the operation of racism, whether intentional or unintentional, shaped how they thought and operated in these spaces. Feeling affected by their experiences and yet trying not to let their realities intellectually stifle them, the findings indicated that these young Black men adopted a "pull yourself up by the bootstraps" mentality. These young Black men would then use this meritocratic philosophy as part of their decision making on when and how they chose to participate in mathematics in DevRemMath. They felt acquiesced to the assumption they were responsible for doing whatever was necessary to survive learning mathematics while Black in DevRemMath. Instead of questioning the normality, or status quo, of their experiences, these four young Black men were fed ongoing messages meritocratic framings (e.g., from instructors) about how they should navigate their educational spaces that they would admit to internalizing. It was through their admission that they demonstrated awareness about broader dominant messaging about learning and doing math as Black boys and young Black men.

The next chapter picks up here and provides context of how their K–12 learning experiences influenced how they thought about and acted on their participation in learning and doing mathematics in DevRemMath at SCC. In this chapter, Dudley, Elbert, Walter, and William's portraits their sensemaking of mathematics and the contextual variables influencing how these young men saw themselves as actors in mathematics classrooms. From a CRT orientation, their portraits help to show these young Black men as agents and not objects being acted upon by race and racism, an endemic part of our society. More insight is gained about the conditions that likely enable Black male success in DevRemMath with minimal costs to their overall well-being through these young men's narratives that illuminate their acute awareness of how racism is operating and structuring their access to education and opportunity. From this, researchers and faculty are better equipped to understand the contextual variables that potentially reduce opportunity gaps and facilitate Black men's participation and achievement in DevRemMath.

### CHAPTER FIVE – FINDINGS – PART TWO

# Introduction

In Chapter 4, Dudley, Elbert, Walter, and William's portraits revealed their perceptions regarding the ways that race and racism influenced their learning and doing of mathematics during their K–12 schooling. In particular, the data suggest they understand themselves as raced and gendered in PreK–12 mathematics schooling spaces in ways that are significant for how these young men understand themselves with respect to their participation in DevRemMath at SCC. This chapter is focused on their learning and doing mathematics in DevRemMath at SCC, and more specifically there are two things I aim to accomplish in this chapter. I will describe what promotes these young men's participation and what deters it and in so doing, clearly define what participation means.

In particular, Chapter 5 highlights how, as a result of these young Black men's keen sensitivity to the operation or racism, they are negotiating engagements with institutions and various institutional actors. More pointedly, these young men are using their agency to make decisions about how to participate in learning and doing mathematics in DevRemMath at SCC. Viewing these young men as agentic, their shared vision to achieve conditions in DevRemMath at SCC is realized that benefit both their lived experiences in this space and the experiences of other young Black men. In addition, framing Dudley, Elbert, Walter, and William as aware of their power to affect their learning outcomes, and as actors, subjective beings actively engaged in producing the DevRemMath mathematical outcomes, counters master narratives about young Black boys and men in mathematics portrayed as, for example, lazy (Reynolds, 2010) or apathetic to schooling (Harper & Davis, 2012).

Ultimately, this chapter emphasizes key themes of participation and conditions these young Black men perceive as promoting or impeding their participation in learning and doing mathematics in DevRemMath at SCC. Showcasing these young Black men's shared perspectives of their participatory patterns, and the conditions affecting their participation in learning and doing mathematics in DevRemMath at SCC, provides further context to resist anti-Black rhetoric of Black boys as "deficit, underachievers, possessing inferior abilities" (Berry et al., 2011, p. 11). Dudley, Elbert, Walter, and William did not simply provide information on what they considered to be participation, or what promotes or impedes their participation, they also provided context to explore reasons they consider certain mental and physical habits as forms of participation, as well as reasons they consider certain conditions as promoting or impeding their participation.

### **Conditions that Promoted Participation**

This first section of this chapter describes how Dudley, Elbert, Walter, and William talked about conditions that invited their participation in learning and doing mathematics in DevRemMath at SCC. They referenced characteristics of their engagements with the instructor, the classroom, and understandings of themselves as factors that influence their participation in DevRemMath. For instance, when these young Black men talked about characteristics of their instructors as promoters of their participation, they seemed to describe the instructors' behaviors that indicated to the young men their instructors perceived them as having a capacity to be successful in learning and doing mathematics in DevRemMath at SCC. When Dudley, Elbert, Walter, and William described a class structure, for example, they preferred when the length of class allowed them opportunities to learn and take a break from learning and doing mathematics.

they detailed embodying a personal sense of responsibility, or obligation, to be successful in

school more generally, which they were aware was significantly dependent upon their success in

DevRemMath at SCC.

# Table 5:

Students' perception	Conditions
Of Instructor	Instructor perception of student intellect (capacity to learn) Instructor teaching/delivery alignment to student learning style Instructor availability inside and outside of the classroom Instructor attentiveness to student
Of Class	Shorter length of class time Engaging Energy level of the class Manageable class assignment structure Accommodating grading structure Class content is organized and easily accessible
Of Student (Themselves)	Student awareness of their positive understanding Student feelings associated with a pressure (i.e., from external forces such as family) to pass the class as a Black male Confidence in student's own ability

Conditions Promoting Participation

*Note:* Conditions related to their instructor, the classroom, and themselves students described as promoting participation. Conditions highlighted were identified by at least 3 out of the 4 participants in this study.

# The Instructor

Data from the participants' narratives revealed that their instructor's pedagogy, instructor perceptions of the student's capacity to be successful, and the instructor's personality traits mattered to these young Black men's participation in DevRemMath at SCC. For example, Dudley, Elbert, Walter, and William referenced their instructor's teaching style, display of an amiable disposition (e.g. physical habits, mannerisms, gestures), and relatability (e.g. the ability for the young Black man in this study to form a bond, or connection with the instructor) as the core for their own decisions about whether to pay attention in class or check out altogether. Walter shared, "My instructor really takes a lot of time to re-go over questions. They are more than helpful. A lot of classes, they reiterate office hours and even the embedded tutor's office hours." This data revealed Walter's instructor used a considerable amount of time to review mathematics concepts. Walter emphasized that the instructor and embedded tutor were available to students outside of the normal class time. Walter considered his instructor's actions as exceeding his expectations for what an instructor usually does in class, leading Walter to describe his instructor as "more than helpful." Walter, as a young Black boy, was frequently denied learning opportunities. Walter likely perceived his instructor in DevRemMath at SCC as someone who is providing him, as a young Black man, with more frequent opportunities to learn and do mathematics.

While Walter's participation is promoted by the frequency with which his instructor communicates mathematics content and instructor availability, Dudley and Elbert, as young Black men, feel compelled to participate in learning and doing mathematics in DevRemMath at SCC based on the way their instructor presents mathematics problems. Dudley stated, "She would also teach me in a different way and say, "if you don't understand this, there's another way to understand it."

Dudley, as a young Black boy, had issues in K–12 with teachers inconsistently communicating with him about how to demonstrate his understanding of mathematics concepts in written work. Data also revealed Dudley felt teachers did not spend a sufficient amount of time covering concepts but did treat his White male student counterparts differently providing them with additional time and attention. As a consequence, Dudley likely perceived his DevRemMath instructor's actions, explaining solutions in multiple ways, as effectively communicating to Dudley, now as a young Black man in DevRemMath at SCC, that sufficient time will be provided for him to learn and do mathematics. As such, Dudley feels compelled to participate. Elbert stated,

If my instructor is breaking down a problem the same way that I would do it in my own notebook, that's when it makes me want to participate because I feel like now you're drawing and bringing me in. And now I'm understanding.

Elbert revealed in his portrait in Chapter 4 that he felt his success was predicated on his teacher's perception of him as successful or not. Elbert feels compelled to participate when what the mathematics instructor does aligns with how Elbert thinks about demonstrating his learning and doing of mathematics. Elbert likely feels compelled to participate in these moments because his instructor's actions may indicate to Elbert his instructor perceives Elbert as possessing potential to be successful in learning and doing mathematics.

### William shared,

When my instructor gives us individual assignments, they will go around the class to help each student individually with the work. And I feel like because they go out of their way to help all of us, I pretty much don't mind the class.

Like Walter, William shared that his instructor performs actions that seem outside of an instructor's typical repertoire of teaching strategies. I emphasized in William's portrait that when I saw his behavior in his class and when I spoke with him in our face-to-face interview, how shy he presented. Taken together, the data suggest that William likely felt compelled to participate in learning and doing mathematics because of the nature of the interaction he had with his instructor. That is, engaging one-on-one with his instructor and noticing his instructor doing the same for fellow classmates, William may have felt less impeded by his shyness to participate in learning and doing mathematics. William stated, "Well, my instructor is a nice instructor. They are pretty lenient with some of the stuff like tests. If you don't do well, he'll give you extra time or he will have time to give you a break to work on stuff."

This data suggest that William thinks about his instructor's personality and assessment methods as promoters of his participation in learning and doing mathematics in DevRemMath at SCC. It is previously revealed in William's portrait in Chapter 4 that he relied heavily on his K– 12 teachers, yet he frequently struggled in mathematics. William likely views his DevRemMath instructor's actions, giving extra time, as providing William with an opportunity to not rely on his instructor for help but to depend on himself for learning and doing mathematics. Therefore, William may perceive this opportunity as a way to change his pattern of struggling in mathematics. William also described how his instructor uses time spent in an online learning management system (LMS) called Aleks as part of how his instructor assigns grades. William shared,

Well my instructor has these online assignment things that are required called ALEKS, and since they're part of the grade, my instructor encourages students to go online and practice what we learned in class for an hour or two and you'll be graded on the amount of time you spend on the website. So I think that they encourage students to do work outside of class if they want to get a good grade.

This data further support William's perspective of his DevRemMath instructor's assessment methods as a promoter of his participation in learning and doing mathematics in DevRemMath at SCC. Likely for William, having an opportunity to learn and do mathematics in an environment where part of the grade is based on the time you spend in Aleks lessons, takes

away some of the pressure and anxiety William often felt as a young Black boy doing mathematics in K–12. In other words, it is because William is able to be graded on his time spent in Aleks rather than on the number of answers he gets right, that William, as a young Black man, feels encouraged to participate in learning and doing mathematics in his particular DevRemMath course. Elbert stated, "It could be face to face, online, you know how the instructors are just checking in, "Hey, how are you doing in my class? How is it looking? How did you feel about this when I taught this?"

When I probed Elbert about what he perceived about his instructor that promoted his participation in learning and doing mathematics in DevRemMath at SCC, Elbert replied with the aforementioned statement. From this statement and additional context, revealed in his narratives, it seemed for Elbert that when an instructor inquired about his understanding of content and his feelings about a particular learning experience in class, this instructor somehow demonstrated empathy for Elbert. Having an instructor who shows concern for Elbert's understanding and feelings in DevRemMath likely suggests to Elbert that his instructor thinks about Elbert as a potentially successful young Black man in mathematics. Receiving inquiries from his instructor about his feelings about class over multiple mediums, face-to-face and online, may indicate to Elbert that his instructor intends to support him as a young Black man learning and doing mathematics in DevRemMath at SCC. In other words, Elbert likely believed he will neither be targeted nor neglected as was the case when he was a young Black boy in mathematics, but that he will be supported and cared for. Consequently, Elbert felt encouraged to participate in learning and doing mathematics in DevRemMath at SCC. Elbert stated.

If I develop a bond with a professor, that will make me fully engaged in whatever I'm learning, that...encourages me to be a better student. And I'll look for that in other

professors. That affects my whole overall college experience. Because if I can get one bond with one professor, I'm looking for that same interaction, or that same type of, 'they're helping me out', from another professor. It has a good effect.

The data illustrate Elbert's relationship with his DevRemMath instructor at SCC impacts his experience in his DevRemMath classes and in college in general. Elbert felt his success in DevRemMath was predicated on what his teachers thought of him as a young Black boy and man in mathematics. It seems for Elbert that having the opportunity to develop a bond with his DevRemMath instructor indicated to him his instructor was supportive. Likely, as a result, Elbert may think his instructor perceives him as having the potential to be a successful young Black man in DevRemMath. For Elbert, having a strong relationship with his instructor in turn encourages Elbert to be a better student. In other words, the data suggest Elbert's participation in learning and doing mathematics in DevRemMath at SCC is promoted when Elbert feels a strong connection with his instructor.

Walter shared,

I get the feeling that my instructor genuinely wants to be here, and that definitely does reflect on the class. I can tell my instructor genuinely does care. I can tell my instructor genuinely does care. My instructor really doesn't give attitudes when people ask for help like some teachers do. Well, some instructors do. And my instructor really does go out of their way to help someone.

Walter's portrait in Chapter 4 revealed that he, as a young Black boy, perceived his K–12 teachers as ineffective classroom managers, and were neglectful of Walter's learning needs based on his diagnosed learning disability. The data suggest that because Walter perceived his DevRemMath instructor in ways that indicated to Walter his instructor wanted to be in class, this

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had a positive effect on Walter. Likely, the DevRemMath instructor was able to provide effective classroom management unlike Walter's public K–12 teachers. For Walter, having effective classroom management may signal that he is in a safe learning environment where he is able to manage both his personally identified social anxiety and unique learning needs in mathematics. In this scenario, Walter is likely compelled to participate in learning and doing mathematics in DevRemMath at SCC.

Walter's portrait also revealed that he was regularly denied learning opportunities as a young Black boy in K–12 schooling, being subjected to excessive exclusionary disciplinary actions (e.g. Walter was sent to a credit recovery school in both middle and high school). For Walter, now as a young Black man in DevRemMath at SCC, having an instructor he perceived wanted to be in the class and exhibited behaviors (e.g. not giving attitudes), indicated to Walter his instructor authentically cares. Walter likely believed his instructor did not simply see him as a disciplinary problem but saw him as worthy of being in the space. Having an instructor that embodies these characteristics likely compels Walter to participate in learning and doing mathematics in DevRemMath at SCC. Additionally, Walter acknowledged how having a shared identity with his instructor served as a kind of reassurance of safety so that he could effectively learn and do mathematics. Walter shared,

I feel like my instructor holds us to a higher esteem. Just as Blacks, my instructor wants to see us succeed overall which I can tell. Last year when I didn't go to that first final, it disappointed my instructor.

Combined data points, including Walter's interviews, surveys, and MAT-002/003 affinity group statements revealed that Walter, as a young Black man, after observing his instructor's behaviors in their interactions, perceived his instructor as having high expectations for Walter's

success during and after successive attempts to pass his courses in DevRemMath at SCC. Walter took and failed MAT-001 twice and was currently enrolled in MAT-003 with the same instructor at SCC. The data suggest that Walter tried harder in each attempt at taking his DevRemMath courses with the same instructor because he felt that his performance affected his instructor. That is to say, Walter likely felt like his instructor cared about him as a young Black man in DevRemMath at SCC, and because his instructor cared about Walter's outcome, Walter felt each time he had an opportunity to be successful.

# The Student

Dudley, Elbert, Walter, and William also spoke about their participation in mathematics as determined by understanding their own race-gender identities in a community college learning environment not generally friendly to young Black men. When they talked about themselves, they talked about what they thought about their ability and understanding of mathematics, and about how they felt when they were in the class. Dudley shared, "I'm taking the strategies or doing the strategies that I didn't have now. I have a whole plan."

Dudley's portrait revealed that he experienced what could be described as trauma on his academic journey through K–12 and a postsecondary educational experience, to arrive in DevRemMath at SCC. For example, it was revealed in the data that Dudley, as a young Black boy, was neglected when he was placed into courses, for which he was not adequately prepared, at his PPSC. As a result, he failed out of college at the end of his first semester, and he was not allowed to return even after submitting an appeal. From the many traumatic experiences, Dudley mentioned, and the ones he probably experienced yet not mentioned in this study, Dudley likely developed coping strategies for navigating mathematics as a young Black boy that he then used as a young Black man in DevRemMath at SCC to compel himself to participate. In this way,

Dudley may have thought his actions of using these strategies prevented him from suffering the same fate that befell him at his PPSC. In other words, Dudley, as a young Black man, used academic strategies he acquired in response to his neglectful and oppressive treatment in pre-SCC educational spaces in real-time (i.e., in DevRemMath at SCC). As a consequence, Dudley as a young Black man felt compelled to participate in learning and doing mathematics in DevRemMath at SCC.

#### Elbert stated,

I feel like class participation depends on how well you feel in that class. And if you fully grasp the concept of the class you're in, you have no problem with helping others, or assisting the instructor and getting others to understand because you're also a student.

This data point illustrates that Elbert, as a young Black man, perceived that how he felt in class affected his desire to participate with other students and the instructor in or not in learning and doing mathematics DevRemMath at SCC. Elbert communicated frequently over the course of this dissertation study across the multiple data points that his understanding, and thereby success in class, was predicated on his instructor's perception of Elbert's potential success in class. Although distinct, this information suggests that Elbert's feelings about himself and his level of understanding, in relation to promoting his participation in learning and mathematics in DevRemMath at SCC, were tied to how he perceived his instructor. When Elbert understands material in class, this is likely due to his instructor perceiving Elbert as successful. It is under these conditions that Elbert felt compelled to participate. More specifically, it is his understanding of the material that Elbert emphasized as what promoted his participation in this particular context. Walter shared, "Sometimes I just force myself, like I got to do this. So even if I'm tired, I'll just sit up for about two hours and really try to grind some work out."

Walter shared with me through multiple data points (e.g. in interviews, survey data, and infinity space,) that he worked full time as in a management capacity at his job and he found it difficult at times to complete his math work. He also shared that he was putting forth whatever time he had to dedicate to his mathematics work. Walter also met with me during my office hour at 7:30 a.m. three days a week to review concepts for approximately 30–40 minutes. His class did not start until later in the day. On these days, Walter shared with me that he spent an additional hour before class reviewing material. This data suggests that Walter's desire to pass the class likely compelled him to participate frequently in learning and doing mathematics in DevRemMath at SCC.

# The Classroom

When these four young Black men talked about factors related to characteristics of the class that promoted their participation in mathematics, they talked about (a) size of the class, (b) timing of the class (length and frequency), (c) energy level of the class, and (d) overall organization of the class. Dudley stated, "I think it's just the energy. The energy and it's a nice fun class, a small group. I know that's not going to be a lot like that in other classes in the future."

It was revealed in his portrait that before DevRemMath at SCC, Dudley, as a young Black boy, experienced K–12 teachers that treated him differently from his White male counterparts and poorly communicated with him. The way Dudley was treated in interactions with his teachers likely made Dudley feel that the energy in the class was not welcoming and the class overall was not a fun place to learn mathematics as a young Black boy. Likely, Dudley views his DevRemMath teacher's treatment of him, and the class, in his interactions with his DevRemMath teacher in direct opposition to what he experienced in K–12. This data support this perspective by Dudley's mention of the energy level and size of the class as a promoter of his participation in learning and doing mathematics in DevRemMath at SCC.

Walter stated, "Our class is pretty small so we are able to go over a lot of questions. And the time is longer in this new class. And the time kinda goes by faster when we are in the computer lab." Walter revealed in his conversations with me that he, as a young Black boy, felt most successful learning and doing mathematics before DevRemMath at SCC when he was in his alternative public school setting he described as a credit recovery school. In this school, Walter described the classes as smaller, the class periods longer, and the teachers as providing him with a great deal of attention. The data suggest that Walter was in an environment that was similar to that which he experienced in K–12. Likely, Walter felt the same way as a young Black man in DevRemMath in SCC as he felt as a young Black boy in K–12 that he would be supported in his learning and that he will receive the kind of attention that will allow for him to be successful in this class. Walter perceived these conditions of his classroom as promoting his participation in learning and doing mathematics in DevRemMath at SCC.

Elbert stated,

So yeah, a lot of the teaching inside of the classroom, if it's done the correct way, that's going to have an influence on me wanting to do [mathematics]. So, if I feel like things are going well in class, I would have no problem doing the mathematics. If things are making sense and things are going how they're supposed to go, that encourages me and gives me the strength to want to actually do mathematics alone.

This data reveal that Elbert was encouraged to learn and do mathematics when he felt the classroom teaching was frequent, organized, and made sense. The data suggest that when Elbert referred to "things going how they're supposed to," Elbert likely desired his current DevRemMath experience to look differently than his K–12 experience. If Elbert, as a young Black man in DevRemMath at SCC, felt any of the feelings he felt as a young Black boy in K–12, he likely would not feel encouraged to learn or do mathematics. Elbert would experience frequent and clear teaching that aligns with the ways Elbert learns. Elbert would experience this teaching without feeling targeted as a young Black man in DevRemMath when he completes his work early. If Elbert has a question, his questions would be answered. Elbert communicated to me in our interviews the aforementioned conditions were present in his former MAT-001course, taken a few semesters earlier. Elbert expressed that these conditions were not present in his current MAT-002 course.

#### **Conditions that Deterred Participation**

This section of the chapter describes how the participants talked about conditions that discouraged their participation in DevRemMath at SCC. Again, these young men referenced characteristics of engagements their instructor, the classroom, and understandings of themselves as deterrents to their participation in DevRemMath. For example, when these young Black men talked about their instructors they described behaviors that communicated that their instructors perceived the young men as lacking capacity to be successful in DevRemMath at SCC. When the participants talked about the class structure, they described situations where the meeting times of the class shifted and where the level at which the content was presented did not align with where these young men were in their understanding. When the young men described characteristics of themselves as promoters of their participation, they detailed possessing a personal sense of responsibility, or obligation, to be successful in school, which they were aware was significantly dependent upon their success in DevRemMath at SCC. However, in this context, these young Black men painted a picture where the responsibility they felt seemed to negatively impact them. Essentially, these young men viewed the aforementioned characteristics, and other characteristics further highlighted in the succeeding sections, as evidence their mathematics learning milieu was welcoming to them as young Black men. Thus, the participants felt encouraged to participate in learning and doing mathematics in DevRemMath at SCC. Table 5 illustrates the conditions students identified as deterring participation and where their descriptions of what deters their participation in mathematics intersect.

## Table 6:

Students' perception	Conditions
Of Instructor	Instructor teaching & instructor content knowledge not aligned with student learning style Instructor behavior (e.g., body language) communicates negative messaging to student about student intellect Instructor personality illustrates instructor is unapproachable
Of Class	Longer class length of time Class assignment structure unclear Grading structure unaccommodating Class content intellectually inaccessible
Of Student (Themselves)	Student understanding (e.g., lack thereof; inability to transfer or access later) Student affect (e.g., pressure, fear or anxiety) with intersection of race Student mental/physical fatigue (e.g., lack of energy or motivation from working on math)

Conditions Deterring Participation

*Note:* Conditions related to their instructor, the classroom, and themselves students described as deterring participation. Conditions highlighted were identified by at least 3 out of the 4 participants in this study.

## The Instructor

When these young Black men talked about aspects of their instructors that deterred their participation in mathematics, they tended to talk about instructor teaching style and behavior (e.g., body language).

# Dudley shared,

Found my second math and the reason why I failed out one is because I didn't know how to study for tests. I would go to her and ask how to study for tests. She would tell me, she said "Well just do it every day." I was like yeah. I mean I do it every day. She said, "The time." Sorry.

In the preceding data, Dudley described a learning scenario where he interacted with his instructor in a former MAT-002 course at SCC. Dudley sought his instructor's guidance on how he should prepare for tests. Much like the experiences he had with his White K–12 mathematics teachers, Dudley's requests for assistance to set himself up for success in the course were neglected.

Elbert shared,

An instructor not even fully grasping the concept that they're teaching. They're going straight through the textbook. So they're forcing you to go to the textbook also, because they can't show you the right way, and they don't encourage you to go and seek other help. They just kind of let it be in there. That's not supportive.

In the preceding data, Elbert described a learning scenario where he interacted with his instructor in his current MAT-002 course at SCC. In data collected during the affinity space and through the GroupMe survey messages, Elbert communicated that he regularly perceived that his instructor appeared to have weak content knowledge which Elbert believed influenced how his

instructor delivered instruction. It can be assumed that Elbert likely felt that his instructor in SCC behaved in ways that were similar to the behaviors of Elbert's K–12 teachers that neglected his preferences for learning mathematics.

Elbert was the kind of student in my class who asked if he could see examples that were not in the textbook and that were not easy so that he could see if he really understood the concepts. Having an instructor who taught rigidly from the required textbook for the course may have indicated to Elbert, as was indicated to him in his mathematics experiences prior to SCC, that his MAT-002 instructor neglected his learning potential.

Elbert further attributed this kind of negative interaction to an instructor's lack of knowledge of the degree of student understanding, or student content knowledge, when he followed with the statement, "You have to know the context and you have to understand where the student's coming from." Prior data illustrated that Elbert felt K-12 teachers neglected his preferential learning needs while simultaneously targeting him for learning mathematics while being Black and male. This data here suggest that Elbert perceived his current MAT-002 instructor as engaging in similar behaviors as his K-12 teachers. Likely, and more specifically, Elbert perceived his current instructor as lacking knowledge about his prior experiences, both racialized and not, in mathematics. Elbert's instructor possibly taught in ways that were absent of strategies or pedagogies that sought to highlight the cultural sensitivities, individualized learning strengths, background knowledge, and unique experiences of minoritized students, and especially young Black men, in class. Elbert, who experienced being neglected as a young Black boy in mathematics, possibly felt that his racialized and gendered identity were ignored in this learning milieu. This may suggest to Elbert that his instructor may not be concerned with whether he, as a young Black man, has the potential to be successful, a perspective Elbert

emphasized as an important determinant of his success in a mathematics course. Elbert stated, "A couple of my questions got pushed off during class because of the timing. So I would have to wait or send private emails. In the emails, my questions were answered, but not to the extent that I needed them."

The data suggest that perhaps Elbert's instructor thought they answered Elbert's questions sufficiently enough for Elbert to continue learning and doing mathematics in MAT-002. Elbert, on the hand, perceived that his instructors' responses to his questions were inadequate in supporting his learning. Inferring from what we already know about Elbert's experiences, he most likely interpreted his instructor's scant responses as lacking care and thus neglecting him. Thus, Elbert, as young Black men, most likely interprets his instructor's perceived apathy and neglect, like he did with his K–12 mathematics instructors, as a deterrent to participating in learning and doing mathematics in DevRemMath at SCC.

In the preceding data, Walter shared a scenario where he emphasized the extent to which an instructor's body language affected his desire to participate in learning and doing mathematics in DevRemMath at SCC. Walter insisted, "Yeah. Body language is also a big one too. Because generally, you can tell when you're bothering someone just by their reaction, whether it's verbal or not, and that could really deter a student." As Walter described in this scenario, his own body language changed. His face tightened, his eyes became more piercing as he looked at me. I felt as if Walter was trying to ascertain whether I understood him when he proclaimed, "You can tell when you're bothering someone." When I probed further, Walter more specifically talked about an interaction he had with the embedded tutor in his MAT-003 DevRemMath class and how his interpretation of the embedded tutor's body language affected Walter's desire to want to ask the

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embedded tutor for help with a particular concept with which Walter was having trouble. Walter shared,

Like I said to you before, I feel like the embedded tutor's help comes off as pretentious. They're a student here, just like us. They will do a lot [of facial expressions, gestures, etc.]... And I can just see when I ask them for help, they just have that look like, 'this is really easy, how are you not getting this?

Walter's experiences prior to DevRemMath at SCC involved him, as a young Black boy, consistently trying to assuage his White teachers and administrators desire to remove him as a disruption to the learning environment. Walter agreed to attend a learning setting that mostly managed him through a disciplinary problem lens. As a result, it can be assumed that Walter learned to adopt a mentality that he will not be a problem for the White people he would encounter in K–12 as well as postsecondary education. Walter's mentality is illustrated in his opening quote of his portrait when he stated,

Being Black and male is different. Well, a lot of times when you're Black, I feel like for me, I have to overtly be nice in certain situations, so I'm not seen as, 'oh, typical angry nigger.' So, there's situations where I'd have to, even in school, let certain things just roll off my back just so it's not perceived as that negative connotation.

For example, when Walter talked about the experience with the embedded tutor, he appeared, based on his body language, visually and viscerally upset almost as if he relived the interaction with the embedded tutor. This data suggest that, for Walter, as a young Black man, an instructor's body language is a significant deterrent to his participation in learning and doing mathematics in DevRemMath at SCC. William stated, "Well my teacher is great but sometimes my teacher goes on these long lectures and I zone out but I take more notes." William relied heavily on his K–12 teachers. Part of what William shared with me during our conversations was his challenges with staying focused in class, a side effect of his diagnosed learning disability. This was something William continued to experience even in DevRemMath at SCC. The data above suggest that William's White DevRemMath instructor may not have consistently and carefully thought about how the structure and sequence of learning activities in class could impact William, a young Black man with a learning disability. More specifically, William mentioned that much of the class time involved direct instruction with little to no collaboration.

### William stated,

Yeah, basically introduce ourselves on the first day and nobody talked to each other the next. There's really no unison between me and any other classmates. There are some opportunities where we can work together, but I usually don't take them because I've become so used to not talking for the majority of the time that it just feels impossible.

The data suggest that the times that William's instructor creates opportunities for students in class to collaborate, the infrequency of the opportunities coupled with William's social anxiety, and create a feeling of hopelessness to participate in the mathematical activity for William. The data further indicate that perhaps William's instructor regularly structured the class in ways that did not allow William to recognize moments where he could participate, or enter into the practice of learning and doing mathematics. William's descriptions of his instructor's instructional delivery and student guidance suggest that, like his K–12 teachers, William's DevRemMath instructor did not provide him with adequate forms of instruction that would address multiple learning styles let alone his unique learning needs. The next section is important to understanding the effects these students' pre-SCC experiences likely had on students' conceptions of themselves as young Black men navigating DevRemMath at SCC.

## The Student

When these young Black men talked about aspects of themselves that deterred their participation in mathematics, they talked about (a) the degree of their understanding, (e.g. lack thereof or inability to transfer or access knowledge later), (b), how they felt emotionally (e.g. pressure, fear or anxiety participating in learning and doing mathematics), and (c) how they felt mentally or physically (e.g. fatigue).

Elbert stated, "If you aren't doing well, you aren't able to fully explain exactly what's going on. You generally won't participate." We learned in Elbert's portrait that he was placed into a particular algebra course in high school because, as he perceived, his teachers assumed that "he didn't fully understand everything that had to do with algebra." Elbert's position is that his understanding is predicated on what the teacher perceives. The data suggest Elbert may not fully understand what is happening in his current MAT-002 course. Elbert's MAT-002 instructor possibly does not demonstrate behavior to indicate to Elbert that his instructor believed Elbert will be successful in learning and doing mathematics. Elbert's instructor's inability to convince Elbert that his instructor has high expectations for Elbert may contribute to Elbert's misunderstanding. In other words, if Elbert found himself not fully understanding a particular topic, he may not participate in learning and doing mathematics because he may believe that his efforts will be in vain.

At the same time, Elbert, as a young Black man, is plagued by the pressure to be error-free in MAT-002 at SCC. Elbert stated,

Being a Black male, you feel more pressure and you feel more like you have to do everything to a higher standard. There's no room for error and if you feel like you're making a mistake, it makes you not want to even compete. It makes me not even want to participate. It makes you not encouraged to do anything. It creates a lapse, and that could have a negative effect on other things that have nothing to do with math.

This data suggest that Elbert, as a young Black, may experience the kind of instruction in his MAT-002 class that suggested to him that he must prize competition over collaboration, and he should perhaps prefer receiving higher grades over deeper understanding. Elbert knew when his K–12 teachers were targeting him for being a Black boy. The data above suggest that Elbert perhaps became even more acutely aware of racism as he got older, and that he possibly internalized racism (Brown et al., 2017; Harper, 2007; Kim & Hargrove, 2013), and accepted, or adopted, a dominant lens that he, as a young Black man, must be error-free in mathematics. Now as a young Black man in DevRemMath at SCC, Elbert may feel symptoms related to contending with racial microaggressions (Burt et al., 2020; McCabe, 2009; Nadal et al., 2014; Smith et al., 2016; Watkins et al., 2010) that could lead to what has been named in the literature as racial battle fatigue (Smith et al., 2007; Smith et al., 2011; Smith et al., 2016). One such cumulative effect of dealing with the pervasiveness of racism is Elbert's desire to not compete which translates into a deterrent to Elbert's participation in learning and doing mathematics in DevRemMath at SCC.

Both conclusions that can draw from these data suggest that Elbert's decisions to participate or not in learning and doing mathematics are precipitated by thoughts of his instructor's feelings about Elbert's potential success and pressure Elbert felt he has to place on himself as a young Black man navigating DevRemMath at SCC. Consequently, these thoughts are secondary to Elbert's feelings about his degree of understanding, or lack thereof, which inevitably deter his participation in learning and doing mathematics in DeRem at SCC.

Walter also shared in his portrait how being Black and male shaped how he thought about himself in relationship to navigating educational spaces. Walter shared,

Well, a lot of times when you're Black, I feel like for me, I have to overtly be nice in certain situations, so it's not like, oh, typical angry nigger. So, there's situations where I'd have to, even in school, let certain things just roll off my back just so it's not perceived as that negative connotation.

This data can be interpreted to include, as is the case with Elbert, how fear, pressure, and anxiety shapes how he makes decisions about whether or not to participate in learning and doing mathematics in DevRemMath at SCC. In other ways, Walter may also be so exhausted from contending with both overt and covert forms of racism against him that he may also contend with symptoms of racial battle fatigue which then act to deter his participation in learning and doing mathematics in DevRemMath at SCC.

William stated,

A lot of times I didn't participate out of fear, because what if I get this wrong or, yeah. I'm scared I might get it wrong and the instructor might say something. I mean, I know everything just goes over-exaggerated in my head, I know that an instructor wouldn't do that but for some reason I just hold myself back.

This data suggest that William's White DevRemMath instructor somehow did not create an environment where William felt open to participate in learning and doing mathematics in DevRemMath at SCC without scrutiny of his answers to mathematics problems. William revealed in his portrait that he battled intensely with anxiety which was likely exacerbated with William contended with his diagnosed learning disability we learned about in the previous chapter. When William shared in his statement, "I know that an instructor wouldn't do that." William's tone is different; the intonation changes. William raised the key of his voice as if he asked a question rather than making a statement. This data suggest that likely William felt uncertain as to whether or not his DevRemMath instructor would say something if his answer was wrong.

William also recounted in his portrait that he remembered a huge fight that occurred at his high school, and he felt the media coverage portrayed the Black students attending the high school as "ruining the white community's schools." He expressed that after that situation, he felt even more pressure to not be seen as simply a Black kid destroying the sanctity of these precious schools White people provided to these Black kids in their community.

Yeah, so I was usually down, just very down and not saying anything and I only participated if they required it. If they asked for participation, then I'd probably do something, otherwise I'd just keep to myself.

All the data collected in William's interviews and surveys, suggest that William was sensitive to perceptions about him, as a young Black boy now a young Black man still contending with a learning disability. The data further suggest William felt that he needed to erase his Blackness when he arrived at school spaces. Consequently, and likely, William adopted a mentality, through a form in internalized racism, that he, as a young Black man, must minimize his existence as a Black male, or Black maleness (Martin, 2019), in mathematics classrooms as much as possible. Minimizing his Black maleness, just like in Walter's case, William will not be perceived by his White DevRemMath instruction as "the young Black man" who is a disruption to the learning environment. Even further, because of his evidenced internalized racism, William felt he was to only participate if he was required to and likely, much like in Elbert's situation, if he had the right answer. Inevitably, the data suggest that William described a fear, most likely racially motivated and left unchecked by his instructors, that is acting as a deterrence to William participating in learning and doing mathematics in DevRemMath at SCC.

# The Classroom

When participants talked about conditions related to characteristics of the classroom that deterred their participation in mathematics, they described the (a) content, (b), assignment and grading structure, (c) general structure of class (e.g. the length of time of the class each meeting and the frequency of those meetings). Dudley experienced issues with the timing of his class both before and during institutional restrictions due to the COVID-19 pandemic.

Dudley stated,

It's Monday, Wednesday, Friday for two hours, taking six hours a week of math. I would sit there and understand it but my brain shuts off after an hour. It gives us so much of things that you're going over and so much information. I understand the hour and 30 minutes but, after that, it's just I'm lost.

Dudley described the frequency of his course, and the number of hours he spent participating in learning and doing mathematics as contributing to his "brains shuts off after an hour." In other words, it can be interpreted from the data that Dudley felt that after an hour of participating in learning and doing mathematics in DevRemMath at SCC, he was not able to retain any additional understanding of mathematics concepts and skills. Dudley stated,

Now it's like you have to put more time and effort into doing math when it comes to online. We meet now on Saturdays, instead of Mondays, Wednesdays and Fridays. So, yeah, I was hoping it was the same schedule. That would have kind of lightened my load as a student so I would know what I would have to do. Plus, I also work. I actually got to stay home longer because I have to put in more studying time. It's like a different way of learning for everyone. I can't speak for everyone, but for me it's different because I'd rather be in class.

The data revealed Dudley experienced difficulties balancing work and school with the abrupt shift in the time of class when the courses at SCC transitioned from face-to-face to entirely online with some synchronous meeting. What the data also suggest was that Dudley's instructor may provide a kind of instruction that does not stimulate Dudley mentally after a certain period of time, namely the hour that Dudley mentioned. What can be gleaned from this data, as well as from prior data that were included in Dudley's portrait in Chapter 4 (e.g. Dudley perceived teachers did not spend sufficient time to teach him to learn and do mathematics outside of class) that Dudley likely prefers a method of instruction that addresses his style of learning in shorter class periods, and that can be delivered in regular intervals (e.g. Mondays, Wednesdays, and Fridays). In other words, Dudley likely preferred a class meeting time that allowed him to get to understanding while not exhausting him to the point he did not feel he wanted to participate.

#### Dudley shared,

My instructor was moving along a little fast. [But I get it, my instructor has kids at home and you hear them screaming and stuff like that. I don't get it as a parent, but distractions and stuff since we switched to online.] Yeah, I just wish the sessions were actually just a little bit longer because I can't understand something under five minutes on each section.

Consequently, it is the structure of the timing of the class, having very short extending beyond one and half hours, that Dudley felt contributed to deterring his participation in learning and doing mathematics in DevRemMath at SCC. Dudley also talked about the structure of the online learning management system (LMS), Aleks, created barriers to his progress. Dudley stated,

When I am setting up the equation first and then solving it. And then getting that practice in. You don't need to get negative one point and go back well this is the correct answer. Then the next answer you got right. You know how it has those bars on the top right? You're three bars in. I got this. I just need one more bar and I'm good. Then you get the wrong answer and then [the program] just take[s] a point away.

It can be interpreted from the data that Dudley felt that a feature of Aleks, the LMS, was disruptive to his style of learning and doing mathematics outside of the classroom. We learned earlier in this study that Dudley, as a young Black boy, perceived his White K–12 teachers as consistently miscommunicating with him about how he should demonstrate his understanding when completing and submitting mathematics work (e.g. completion versus precision). We gleaned from this earlier data that when Dudley shared his concerns, it seemed his consistent requests for clarity about submitting his work went unanswered. As a result, Dudley may have felt that a request for a change in perhaps the structure of how the assignments were to be completed, would have been ignored by his instructor in DevRemMath at SCC. It is not surprising then that, given his past experiences where he was made to feel that he needed to figure out when it was appropriate to complete assignments for accuracy versus completion, Dudley suspects there is nothing he can do now to influence how the grading penalties are structured in Aleks.

Once the COVID-19 disruption occurred, Dudley further encountered issues with technology as well as communication with his instructor. Dudley stated, "I was frustrated with

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the computer stuff. I had to print online tests out and then take pictures. Last time I tried to take an online test on a computer, the computer crashed on me and I decided not to do it." Not only did Dudley encounter the technological issues on his computer but the data illustrates Dudley seemed to encounter some communication issues with his DevRemMath instructor as well. Dudley stated, "Some of the Zoom meetings weren't happening. I noticed that, but again, it could have been just me not finding where these Zoom meetings are."

Not only did Dudley encounter the technological issues on his computer but the data illustrates Dudley seemed to encounter some communication issues with his DevRemMath instructor.

Elbert stated,

In my other instructor's class, I would usually go to the board and take the problem that we were doing and then I would say, "Well this is how I did it." Or I'd ask the class, "How did you guys do it? In this class, we do not get to do this."

The data illustrate how Elbert perceived his class was structured in ways that prevented him from demonstrating his understanding in a more social setting (Matthews, 1991), which was Elbert's preferred method of learning. Elbert described how his ability to act in a guiding, or instructional, capacity with interaction with other students, and the instructor contributed to his understanding of mathematics concepts. Seemingly, Elbert's MAT-002 instructor privileged a more direct-instruction, or instructor-led, based style of teaching and rarely opted for student-led instruction or peer-to-peer interactions. It can be inferred that Elbert, as a young Black man, would likely not have participated in learning and doing mathematics in DevRemMath at SCC because he, as a young Black boy, did not participate in K–12 when he was subjected to predominantly instructor-led mathematics learning environments.
Elbert further shared in one our affinity (weekly meeting) his MAT-002 instructor did not vary instruction. Elbert shared,

In the virtual meetings, my instructor stuck to the book. So class kept the same structure. So it wasn't even like my instructor did anything out of the ordinary. It was just going over what you should be doing that's out of the textbook. So my instructor started the same regimen, which is why so many people were lost in the first place, because you just going in the textbook and saying, if you don't understand it, just go through the textbook. And then, I still don't understand it, even though they're solving it in the textbook, I'm still lost.

Elbert expressed how he felt disconnected from his instructor and class which made him feel he did not want to be present, let alone participate in learning and doing mathematics, in class before and during the restriction to virtual classrooms due to the COVID-19 disruption.

Elbert stated, "There was never a sense my instructor was available to try to help you figure out problems. It was more of giving other resources other than themselves." What can be interpreted from this data is that Elbert again felt neglected. He experienced neglect from his White K–12 teachers and is now perceives he is experiencing neglect from his non-Black DevRemMath instructor at SCC. Inevitably, the structure of the class, being entirely instructor-led, did not align with Elbert's learning style. For him, this served as a deterrent to him participating in learning and doing mathematics in DevRemMath at SCC.

Walter stated,

A lot of the times it's the little things, like I said earlier, the banging the calculator, people asking for pens and paper. Like, how are you here and you don't have this? I feel like a

lot of the time they will laugh and they over-exaggerate it, and that really irritates me. But that doesn't really stop me from participating, it just hinders it because then I get in a mood, and yeah.

Walter was familiar with learning environments in his K–12 classrooms where there were distractions. Walter in thinking about how he was treated as the distraction may have thought that he did not want to further contribute to the distractions by addressing the issue with his instructor. Walter appeared visually annoyed when he made reference to the distractions in the classroom.

Though Walter expressed he felt very comfortable communicating with me; Walter may still carry feelings of being perceived by his instructor as the "typical angry nigger" should he decide to respond. This interpretation is realized based on conversations with Walter in which he described his instructor as "knowing how to play the game." Walter stated, "You seem like you know the game. I feel like you know when to act and how to act."

Walter's use of the word "game" is an indication of his acute awareness the ideology of White supremacy. My interpretation rose out of my own experience with Walter and thinking about my own lived experiences. I have, for as long as I can remember, been described consistently as embodying what some would consider characteristics of acting White (Stinson, 2011) (e.g. in my mannerisms, speech, dress, and chosen profession). I felt that I had to operate in the world in the ways I did because older Black men and women regularly told me I would not reach certain levels of success if I did not. Though well intentioned, in some ways, I myself internalized my own form of racism through these messages.

Consequently, I was not surprised by Walter's words. His statement suggested to me that he felt I may consider his response to distractions in class through a lens of internalized racism. Said differently, if Walter were to respond to the distractions in the classroom based on his changed mood, Walter may feel I will perceive him in those moments as a "typical angry nigger." This added pressure of feeling helpless to address an issue he believed is hindering him from fully focusing inevitably contributes to deterring his participation in learning and doing mathematics in DevRemMath at SCC. It was not simply what happened in the traditional face-to-face class settings. Walter's participation was hindered in other ways when his course transitioned to an online environment. Walter stated,

Because you were actually there. I'll be able to be like, "Hey, I'm not getting this," or I'll be able to ask a classmate, "Were you able to do this? Or can we work on this?" Whereas, the virtual it's like you're there with whatever resources that are left. I absolutely could have asked you for help, but I felt like it would've just been way significantly more.

As a Black man teaching mathematics, I thought about how Walter's prior racialized and gendered background played into how Walter showed up in DevRemMath at SCC; however, I may not have carefully considered how the structure of my course could have been ineffective. For instance, Walter is a young Black man who was previously denied learning opportunities in K–12 mathematics that left him unprepared for success in a postsecondary mathematics setting. Likely, transitioning to a completely virtual environment, Walter may have felt that, as a young Black man, he was once again denied the possibility to learn in an environment he believed aligned with his learning needs. In addition, Walter further shared with me during one of our affinity sessions that he felt like he, after failing the course two prior times, was finally on the right track, attending all the classes and completing all the work. Walter stated,

Well, definitely I think being Black and male in math plays a role in how you see yourself or how your instructor sees you. I felt that from the first time I saw you, I felt relieved. I thought "Oh, a Black guy. That's nice." I didn't really per se think anything would happen differently. But when I started to see who you were as an instructor, I was like, oh, this is a really nice guy and he's definitely here for the students.

This data suggest that Walter perceived me as sharing the identity of Black and male with him. What can be understood from the data is that simply sharing a perceived identity of Black and male with Walter did not signify to him I was someone he could trust. There was something more. That is, I held the same position as those in his past who treated him like a disciplinary problem, and not a student whose learning needs were not effectively being addressed. These were people Walter likely did not trust. I only earned Walter's trust over time. Consequently, it was my inability to initially structure and continually restructure the online version of MAT-003 in ways that would effectively address Walter's learning needs (e.g., make the directions more clear and course content more accessible) that inevitably contributed to promoting his participation in learning and doing mathematics in DevRemMath at SCC.

#### Summary

The preceding sections of this chapter provide a window into the racialized experiences, in real-time, of the four young Black men, Dudley, Elbert, Walter, and William, who were the focus of this study. Through the details and descriptions of their experiences in DevRemMath at SCC, it is understood what participation is for these young men. Evidence provided in their narratives suggest that these young Black men's race-gender identities are primarily guiding how they choose to participate in DevRemMath at SCC. Put differently, these young Black men are keenly aware of the ways that their race and gender shape interactions with the instructor, the instructors' interactions with them, and the overall organization of the mathematics learning experience. They also have long histories of interactions with racist teaching and learning in mathematics spaces. These histories are undoubtedly shading how they see themselves specific to their capacities to learn and do mathematics in higher education.

Factors outside of themselves (e.g., instructor and classroom) either confirm or oppose expectations they have for the experience they are to have in DevRemMath. As I queried these young men about what participating in learning and doing mathematics in DevRemMath at SCC was to them, overwhelmingly their comments centered on the nature of their social relationships or their interpersonal interactions with their instructor, other students, other adults, or actors of SCC. Participation for them then seemed to be defined in two ways. In one sense, participation for them involved physical behaviors that these young men demonstrated (e.g. to their instructor) to indicate their desire to take part in learning and doing mathematics that is happening in DevRemMath at SCC. In another sense, participation in learning and doing mathematics involves mental habits (e.g. paying attention to the instructor) that may not necessarily involve direct interactions with the instructor or actors of the institution but may be more indirect.

From the data these young men provided, I am interpreted that what happened to these young men inside the classroom space governs what they do outside of that space. Inevitably, I was able to categorize these young Black men's participation in learning and doing mathematics in DevRemMath at SCC into three categories of interactions: (a) student and instructor, (b) student and student, and (c) student with self.

For student and instructor interactions, this is where these young men talked about the range of ways they have dialogue or physically involve themselves (e.g. meet) with their instructor. Similarly, for student and student interactions, these young men talked about the range of ways they have dialogue or physically involve themselves with other students. For the category of student with self, the participants talked about how they made sense in their head,

through the thoughts (e.g. Young Black men should be error-free in mathematics) or conversations they have with themselves about how, as young Black men, they are supposed to behave or act when participating in learning and doing mathematics in DevRemMath at SCC.

Consequently, for these young men, the instructor holds considerable influence. Based on those interactions, these young men made decisions about who they study with, or whether or not they actually did the homework. They understood how the learning environment is set up based on the instructor notwithstanding absent representations of themselves in an a historical or racist curriculum. What can be gleaned from their narratives is that if these young Black men do not see a connection with their instructor, all of this (characteristics of the instructor, the classroom, and themselves) matters to them. Conversely, if these young Black men feel a connection to the instructor, likely only some or none of this matters.

#### CHAPTER SIX - CONCLUSION

## Introduction

This dissertation study adds to the growing body of literature in mathematics education that seeks to expose the indifference to the Black male experience in mathematics, and in particular, non-credit bearing developmental and remedial mathematics (DevRemMath) programs in community college spaces. CRT was essential as a methodological approach for this study because it offered a "race-conscious approach to understanding educational inequality and structural racism to find solutions that lead to greater justice" (Price, 2016, para. 1). More specifically, CRT, allowed me to interrogate how postsecondary mathematics spaces are stewarded to uphold white supremacy. In this study, I demonstrate the ease with which one predominantly white institution persistently fails to adequately address the sociocultural and interpersonal dimensions of mathematics learning that fundamentally shapes academic outcomes for one of its most vulnerable minoritized student populations, young Black men.

As such, I examined the intersectional raced and gendered experiences of four young Black men, Dudley, Elbert, Walter, and William, who were the focus of this study, on the road to completion of their respective DevRemMath courses. I conducted the study in a specific DevRemMath context at SCC and answered the following research questions: 1) What do these young Black men describe as participation, or the learning and doing of mathematics, in this specific developmental and remedial mathematics context? and 2) What do these young Black men describe as conditions that either promote or deter their participation, or the learning and doing of mathematics, in this specific developmental and remedial mathematics context?

The research participants had the capacity to do math and were eager and interested in doing so. These young Black men's racialized experiences in math were absolutely informed by who they are as men, and how they understood themselves in terms of gender was absolutely informed by who they are as Black men. Viewing this phenomenon in a mathematics learning context, specifically in DevRemMath at SCC, these young Black men's participation, or the learning and doing of mathematics, was informed by both their race and gender consciousnesses.

Typically, mathematics spaces have historically tended to privilege men, and more often white men. For example, conversations about who the great contributors of mathematical gains tend to be attributed to white men in history (Bell, 2012, 2014; Muir,1996). Dudley, Elbert, Walter, and William's Black maleness positions them in terms of ability very differently than if they were white men. These young Black men were viscerally aware that the color of their skin, as a visual marker, communicated to their instructors that they will likely not be successful in DevRemMath. The research participants also knew they had to do the work to disrupt the deficit frames that exist around them being Black and male (Howard, 2013). Their Blackness communicated to DevRemMath instructors the purported claims that have historically positioned Black boys and men throughout history in education as "at-risk" (Brown & Donnor, 2011; Noguera, 2003, 2009), requiring discipline over education (Howard, 2013; Howard et al., 2012; Ladson-Billings, 2011), and consistently unsuccessful in mathematics (Adelman, 2004; Attewell et al., 2006; Bahr, 2010; Hagedorn et al., 1999; Reyes & Stanic, 1988; Secada, 1992; Tate, 1997).

Further, STEM is collectively male-dominated space, where men tend to be overrepresented as smart and capable. The young Black men in this study recognized that their Blackness, as a racial construct perceived by their instructors, invalidated their ability or their capacity to learn and do math. These participants knew that their DevRemMath instructors may conclude that they will likely have issues in their respective DevRemMath courses and adopt thinking that young Black men may not have the same academic prowess to learn and do mathematics as their White students. Faculty validation (Bauer, 2014) or the lack thereof plays an integral role in young Black men's participation in DevRemMath.

Consequences of invalidating these young Black men's capacities led to decreased student desire to participate in mathematics; fostered negative student feelings about their instructors' desire to support the student; contributed to a perception of mathematics as reserved exclusively for white students and dismissive of minoritized populations, and especially Black males. Instances of invalidation tended to be communicated *during their interactions* with instructors. This is key because it is during such interactions that these young Black men came to recognize how being Black in the DevRemMath space minimized their opportunities to learn. For example, young Black men's learning needs centering around community-oriented learning could easily be disregarded in favor of more competitive and individualistic learning styles that privilege white DevRemMath students.

Conversely, when a Black man excels in STEM, he is often positioned as exceptional, which can be alienating to his peers. For instance, positioning the Black male body as exceptional, because he is good at math, can put distance between him and his Black male peers (Fries-Britt & White-Lewis, 2020; Warren, 2017). When young Black men are exceptional in mathematics, they tend to be isolated (Berry et al., 2011) from their other Black male peers. They usually find they are the only one or one of very few members in their higher-level mathematics, or mathematics-related courses (Strayhorn, 2015). Further, this distance lessens their possibility to build strong relationships with their Black peers. From my own anecdotal observations as an instructor, of the Black male students in my DevRemMath courses, higher achieving young Black men tend to talk less in class while the Black males in class who were not as high

achieving rarely interacted with the higher achieving Black men. This was a concerning observation because strong social relationships among high-achieving Black males and other Black males (high-achievers or not), as well as a sense of belonging (Strayhorn, 2015), are linked to increased performance outcomes for Black males (Brooms & Davis, 2017; Ellington & Frederick, 2010; Strayhorn, 2012; Wood & Williams, 2013).

In addition, this study reveals another important consequence of being read as "exceptional" that my participants allude to in their commentary about participation in DevRemMath. When young Black men are socially depicted as exceptional, they are likely not viewed as manly or masculine (Ferguson, 2020; Whiting, 2006; Whiting, 2009). For Black men, an emasculating view of their Black bodies (e.g., because they are good at math), becomes another pressure with which Black males must contend in order to prove their maleness in learning mathematics while Black and male. Frank Rudy Cooper (2005) similarly concedes that Black men are constantly fighting against being seen as a "bad Black man" (e.g., criminal or deviant), and in doing so flee towards being perceived as a "good Black man" (e.g., heterosexual and high achieving), with many Black men caught somewhere in the middle struggling to have their humanity properly recognized in formal education spaces (Brown, 2011; Woodson & Pabon, 2016). Now these young Black men must fight against two conflicting and polarizing stereotypes: one where they are positioned as lazy and incapable, and one where they are positioned exceptional and effeminate. Neither of which serve them well academically or personally. This internal intellectual battle emerges as Dudley, Elbert, Walter, and William pondered the conditions of their participation in DevRemMath.

#### Race, Racism, and Participation in These Young Black Men's Mathematics Education

I employed CRT in this study to actively push back against racially biased caricatures of young Black men as anti-intellectual and incapable mathematics learners. More pointedly, I used CRT to explicitly examine these four young Black men's academic success or failure in DevRemMath through participation, otherwise understood as the decisions they make to engage in the learning and/or doing of mathematics. These decisions manifested into either physical behaviors (e.g. raising their hand, answering questions asked) or mental habits (e.g. paying attention to the work being presented). This dissertation project meaningfully shifts the conversation away from blaming these young Black men for their failures to naming how the institutional contexts, K-12 and postsecondary, constrict or expand their capacities to meaningfully participate in mathematics, and thereby achieve some degree of academic success in DevRemMath. For instance, the study reveals that these young Black men were heavily influenced by the what the instructor did or did not when interacting with them or structuring and managing the classroom. The conditions of the classrooms, as set up by a predominantly white faculty, either promoted or deterred these young Black men's participation in mathematics. The condition, or quality, of the instructor-student interaction, as guided by a predominantly white faculty, either promoted or deterred these young Black men's participation in mathematics. The direct attention to race and racism as operating to constrain or restrict these young Black men's participation in mathematics either promoted or deterred these young Black men's participation in mathematics

The study further highlights the significance of understanding and giving an explicit focus to the needs of young Black men in faculty planning, design, and implementation of noncredit bearing DevRemMath courses. The present study also further demonstrates how failures to understand the unique experience of Black maleness in DevRemMath can result in missed opportunities to better engage young Black men in learning and doing mathematics, which in turn may dramatically increase Black male failure rates. For example, knowing how these young Black men perceived their instructors could have how contributed to the success of all four of these young Black in their respective courses. I will elaborate later in the chapter what this research project may teach us about how to advance racial justice in postsecondary mathematics, and more specifically, the ways that postsecondary institutions of higher learning can be more humanizing places for young Black men in particular.

#### Understanding Young Black Men's Participation: DevRemMath

There are important insights gleaned from this study about Black men's participation in mathematics, both in DevRemMath specifically and in post-secondary mathematics in general, that can help the field of mathematics education better respond to the needs of young Black men (i.e., improving conditions that invite and compel them to participate). First, to be in such a course, one with which the student receives no credit and explicitly known as remedial, is to suggest to the student that they are already at a deficit in terms of their mathematical competence. This can negatively impact any student's academic self-concept (Awad, 2007; Cokley, 2000; Evans et al., 2011). DevRemMath instructors have the power to support or discourage a young Black man's negative self-concept through their behaviors in interactions with young Black men. Certain instructor behaviors signal to Black males how the instructor feels about the students' capacities to learn and do mathematics. Young Black men's recognition of their instructor's desire to position them or not as capable learners significantly affects their participation in DevRemMath at SCC. For example, if DevRemMath instructors send signals they have high expectations for their Black students (Ellington & Frederick, 2010; Terry &

McGee, 2013), young Black men are more likely to participate in mathematics. Additionally, DevRemMath instructors can "support Black male students by displaying concern, not only for their academic success, but also for their welfare" (Palmer & Young, 2009, p. 473). Thus, it is important for instructors to be self-aware (e.g., of their own bodies) and monitor what they say and do when interacting with young Black men in DevRemMath. Conversely, young Black men may hesitate to participate in mathematics if an instructor demonstrates that their beliefs align with negative stereotypes of Black male incompetence in mathematics (Brown & Josephs, 1999).

The extent to which an instructor's course content delivery aligns, or not, with young Black men's learning styles also affects their participation in DevRemMath at SCC (Anderson, 1995). Without adequate alignment, young Black men are not able to effectively (comfortably, articulately, or successfully) demonstrate their understanding of concepts through their learning and doing of mathematics in DevRemMath. When an instructor uses a course content delivery style where content is accessible academically, the instructor scaffolds (gradually increases difficulty with support), young Black men are more likely to participate in mathematics in DevRemMath. At the same time, the instructor provides students with opportunities to participate in accessible mathematics by answering students' questions despite the effect that had on time and coverage of several examples. On the contrary, an instructor that presents several examples in the interest of coverage of concepts without a thorough examination of the concepts that answer their questions communicates to Black males that the way they learn best is not privileged in the DevRemMath space. Thus, Black males will likely decide not to take advantage of opportunities to participate in math via questioning the instructor or answering instructor questions.

Young Black men's recognition of clearly identified paths that encourage students to access course resources to support their learning affects their participation in DevRemMath at SCC. Young Black men are not able to efficiently access support information and resources when and where they need them. For example, students receive an overabundance of information at the beginning of academic semesters and instructors expect students to remember where resources in their courses are located. Many higher education mathematics programs are now utilizing some form of a learning management (LMS) system (e.g., BlackBoard or Canvas). In some cases, a LMS may prove to support learning of young Black males (Corey & Bower, 2005); however, other young Black males, as was the case in this dissertation study, may be overwhelmed by the sheer nature of some LMS platforms with the involvement of accessing multiple entry points to the mathematics content. If interfaces through which young Black men access curricular resources are not set up to support students at various points in their experience with technology, this hinders Black males from fully demonstrating their understanding (Salvo et al., 2019). White K–12 students may have received a different (e.g., additional support or more caring support) level of support than young Black male students. Differential treatment forms of support lead to different outcomes in student performance when accessing resources in a LMS. Instructors may not send reminders about where to access this material. Thus, young Black males are discouraged from engaging in learning or doing mathematics in DevRemMath. Paths for accessing material must be clearly defined and communicated regularly to young Black men to increase their participation in mathematics in DevRemMath.

## Understanding Young Black Men's Participation: Postsecondary Mathematics

This dissertation's findings yield insights of use to improve the participation of young Black men's learning and doing of mathematics in higher education more broadly. First, understanding how to build strong relationships between young Black men and their instructors is paramount to improving their participation in postsecondary mathematics. When young Black men are able to build strong relationships with faculty, they feel a sense of worth in the relationship (Fries-Britt & White-Lewis, 2020) and this leads Black males to feel as if their instructors care about them academically and personally (Hunter & Stinson, 2019; Jett et al., 2015). The Black male student and instructor relationship dynamic can foster less emotionally, spiritually, and intellectually oppressive feelings of pressure (e.g., the Black male student must self-regulate his Black body) felt by young Black men and created by covert racism (Adamian & Jayakumar, 2018). Feeling less overwhelmed and potentially disruptive, young Black are more receptive to engage in learning and doing mathematics in DevRemMath.

Furthermore, explicitly acknowledging post-secondary mathematics spaces as historically oppressive (e.g., privileges White men and exclusionary to minoritized populations) can create environments that make young Black men feel safe to participate more in their mathematics coursework. Naming mathematics spaces as oppressive creates an inviting space for Black men (e.g., space is inherently anti-Black) and redirects blame of poor performance of Black males away from instructors and students and onto a system of learning created and sustained by White supremacist ideology (Bell, 1991). An explicit naming communicates to young Black men that instructors are aware that there is something that is preventing them from demonstrating their full intellectual capacities. Knowing that instructors are aware of young Black men can see their instructors as comrades in combating systemic racism and oppression. Instructors who are cognizant of such histories and plan their coursework with such histories in mind create mathematics learning experiences where young Black men likely feel more inclined to

participate even when they encounter various social pressures and insecurities (e.g., their answers are wrong and validates assumption they are intellectually inferior or do not belong there). In other words, Black males feel intellectually safe and in knowing they have an instructor who is an ally and supports them, and Young Black men tend to less anxious and more apt to participate in learning and doing mathematics when they feel safe (Tobias, 1993).

Finally, creating mathematics spaces that support privileged learning through multiple modes, within a community-oriented classroom environment (Matthews, 1991), allows for young Black men to engage in the content with their peers and feel they have ample opportunities to demonstrate their understanding and find mathematics academic success (Berry et al., 2011; Matthews, 1991). DevRemMath spaces could include opportunities like student-led pedagogical approaches (e.g., cooperative learning or groupwork or student presentations) which could align with what mathematics education literature tells us about Black males as social/ applied, verbal and visual learners (Matthews, 1991). Learning through preferred mediums, while participating in mathematics in motivates young Black males (Jackson-Allen & Christenberry, 1994).

# Making Structural Change in Postsecondary Mathematics Spaces: Exploring DevRemMath Learning at SCC

The critical race examination of Dudley, Elbert, Walter, and William's participation in DevRemMath at SCC revealed important insights for the ways that race and racism structure opportunities for young Black men to learn in postsecondary mathematics spaces. First, this study revealed that faculty and administration, responsible for designing the DevRemMath learning environment at SCC, tended to assume a liberal perspective in addressing the needs of young Black men in the space (Gillborn & Ladson-Billings, 2010). The young Black men in this study for example provided descriptions of classroom assessment tools that are typical of ideological frames that center merit as justifiable and equitable because it can be measured (e.g., through outcomes of common assessments). At the same time, their descriptions painted a picture that their instructors treated all students equally as if the instructors did not see students' skin color. Operating with color-blind ideologies in DevRemMath communicates to young Black men a dismissal of the validity of their racialized oppression as Black men in DevRemMath as a consequence of racism, a symptom of White supremacy. This further communicates to young Black men that they should hold themselves fully responsible for their low performance if they are not able to successfully participate in mathematics in DevRemMath. Added pressure, manifesting as a form of stereotype threat (Aronson, 2002; Beasley & Fischer, 2012; Larnell et al., 2014) where students are fearful of demonstrating academic inferiority (Wood, 2014), to participate in mathematics will neither promote Black male participation nor increase Black male performance in mathematics in DevRemMath.

Next, the institution placed more importance on ideologies around *instructor's* limitations over and above the opportunities found in understanding the benefits the participants' Black maleness afforded them to strengthen their learning and doing of mathematics. Conversations about what instructors cannot do to change what happens to young Black men outside of DevRemMath classrooms easily allows White instructors to comfortably retreat back into their Whiteness (Harris, 1993). White instructors have the power to effect change on social (e.g., interactions with students), curricular (e.g., accessibly and culturally conscious curricular materials) and emotional (e.g., "checking-in" with students on what has affected them in the space). Finally, I will elaborate on trends in my data that indicate White students were the greatest beneficiaries of the system of DevRemMath at SCC. There were significant differences

in the performance outcomes of Black male students and all other students, especially their White male and female student counterparts.

#### Critique of Liberalism: Addressing the Needs of Young Black Men in DevRemMath

This study suggested race-neutral practices and discourses that frame public school spaces, in this case SCC, as operating with colorblind ideologies. For example, over the years, I have often heard the phrase, "I do not see color when I am teaching". There is an inherent danger in operating under these guises. Bonilla-Silva (2006) writes "shielded by color blindness, whites can express resentment toward minorities; criticize their morality, values, and work ethic; and even claim to be victims of "reverse racism" (p. 4). Faculty and administration communicated several concerns during the conceptual phase of the DevRemMath course sequence restructuring, including a desire to address poor performance outcomes for minoritized populations at SCC. Black males, in particular, were the largest proportion of students who failed DevRemMath courses at SCC. An embedded tutor support model was employed as a strategy to support students in the classroom. Aleks, an online learning management system (LMS), was also incorporated as a more efficient medium through which students could assess their learning. Inadequate planning led to a few unintended outcomes with the incorporation of an embedded tutor model and the Aleks LMS. The role of the embedded tutor in the DevRemMath space was not fully defined. Training for faculty to work with the embedded tutor and training for the embedded tutor to work in the DevRemMath space was not officially offered. No clearly identified time was set aside in the course structure for the embedded tutor and faculty member to meet.

This led to the following unintended outcomes. Embedded tutors were supposed to work closely with instructors inside and outside of the regularly scheduled class time. Some instructors

communicated that they were not clear about when (e.g. at the beginning or end of class) and to what extent (e.g. as tutors or potentially supplemental instructors) to include the embedded tutor in supporting DevRemMath students inside the classroom. Embedded tutors communicated they were sometimes included in the lesson planning process while at other times, they were completely excluded. The embedded tutor showed up to class and waited for instructions on what they should do for the class period. Embedded tutors did not engage in a training about responsibilities to the DevRemMath classroom at SCC. Embedded tutors were not required to participate in learning that could focus their awareness of the uniqueness of experience some students, especially young Black men, bring with them to the DevRemMath classroom. Embedded tutors were not involved, in an intentional way, in unlearning a purported ideology of 'mathematics spaces as neutral because mathematics content is neutral'. Mathematics content cannot be neutral because the instructors who are engaged in delivering the content and the students who are engaged in learning and doing the content are not neutral. Incomplete preparation and an unexposed racial reality of the space likely led to some of the negative interactions felt by the young Black men in this study.

Dudley, Elbert, Walter, and William were affected by conditions surrounding the uncertainty of the utility of the embedded tutor and the learning curve for students to master the features of Aleks. Walter specifically spoke about the negative experience he had with the embedded tutor in his classroom which led him to disengage from the learning experience and with any opportunities to participate in further learning. Walter inevitably left class after his interaction with the embedded tutor. Walter provided valuable information on his interaction with a white embedded tutor inside the classroom that indicated the tutor displayed specific behaviors Walter perceived as positioning him as an incapable mathematics learner. This was the

same kind of interaction Walter experienced time and again from his past white instructors in mathematics. This kind of interaction was not surprising because of taken for granted assumptions like DevRemMath spaces are race-neutral and there is no need to, for example, understand what kinds of behaviors from instructors can foster negative feelings about young Black male capacity to learn and do mathematics. Being vulnerable to raced and gendered assaults did not stop inside the walls of the classroom. These young Black men were vulnerable to attacks outside the DevRemMath math classroom as well that affected how they participated in mathematics outside the classroom.

Walter, for example, shared an interaction outside of the classroom where he felt profiled by a security guard at SCC. The security guard, also a member of a minoritized population, positioned Walter as a threat to a group of "vulnerable" young white women on the campus who happened to be his fellow classmates engaged in friendly conversation with Walter. This occurrence left Walter feeling that the campus was inherently racist and he would have to pay even more attention to how he behaved while he moved about the campus. Walter expressed "they (white people) are always watching" in one of our affinity space sessions which prompted me to question him further. What was uncovered was that Walter made the choice to do most of his outside of classroom mathematics work off campus to avoid a possible resurgence of racism against him suggesting he would lose valuable time to perhaps engage with mathematics more recently after learning it.

Dudley, Elbert, Walter, and William were overwhelmed by the structural changes to the course (e.g., meeting days and times). Race and gendered assaults had profound negative effects on how these young Black males negotiated how to participate, or not, in the learning and doing of mathematics during class. In other words, because of the race and gendered assaults, they

found it difficult to engage in learning and doing mathematics inside and outside of the DevRemMath classroom. Despite what these young Black men experienced, administrators and DevRemMath instructors can work to change the space for the better.

#### Moving Past Liberalism

A thoughtful and deliberate plan (e.g., one that includes embedded tutors in DevRemMath classrooms) to create spaces conducive to Black male participation in mathematics includes an understanding of instructor behaviors that can positively and negatively impact young Black men's perspectives of their white instructors. This could inform how instructors and embedded tutors approach interacting with young Black men engaged in the learning and doing of mathematics in DevRemMath at SCC. This plan must also include acknowledging that faculty and administration "see" their Black students and see their black maleness, not as something to be reformed, but as a strength in helping to support young Black men. DevRemMath instructors at SCC, or any postsecondary institution, claiming to not see color, do not see the uniqueness their young Black men bring to their learning and doing of mathematics. Further, operating on colorblind ideologies, institutions, including the actors of the institution, may be more likely to inflict harm, whether intentional or not, rather than do good, on vulnerable populations of students, and especially young Black men.

Inevitably, a structural change in the DevRemMath course sequence at SCC was incorporated and lacked sufficient consideration of the Black male experience in the space. This neglect led to poor performance outcomes for a large proportion of young Black men in the semester of implementation and demonstrates how this initiative illustrates a liberal approach of addressing a systemic issue of young Black men lacking support in a predominantly white occupied space. Dudley, Elbert, Walter, and William were left to fend for themselves in understanding how and when it was safe to enter into learning and doing mathematics in DevRemMath at SCC. A plan (e.g., structural or programmatic change at an institution) that is implemented without proper foundational considerations to increase the likelihood of favorable outcomes for the intended minoritized population, Black males, suggests the plan is liberal in nature and superficial at best. The plan implemented in this context was liberal in that the changes made (an embedded tutor support model and LMS incorporation) were minimal, approached through an incrementalistic lens, and lacked deep consideration for outcomes of young Black males. Even further, inadequate pre-planning and implementation suggest the plan was liberal, something done to illustrate an attempt, albeit deficient, was made at addressing low outcome performance measures for Black males, considering what was at stake (continued Black male failure). A more diversified approach that included for example multiple opportunities for young Black men to participate in mathematics, both inside and outside of the classroom, alternative means of assessment, and training at the outset would have expressed a sense of urgency to address poor performance outcomes for young Black men. The plan was superficial because the changes were adopted based on thinking that privileged "the best possible outcomes for all students", which historically tends to create less than desirable outcomes for young Black men in mathematics in general and DevRemMath specifically. By using a "math for all"-like leaning, is akin to using a colorblind position to planning and implementation, delivery and instruction. In this model, Black males are once again ignored. To continue operating as a program with race-neutral characteristics suggests Black males are the problem with their low performance and they need to fix it. Acknowledging their racialized and gendered identities privileges a conversation where DevRemMath spaces identifies an issue that is affecting young Black's ability to perform well in DevRemMath. DevRemMath, faculty, administration, and

young Black men, can work collaboratively and collectively to authentically address concerns of Black male performance.

## Whiteness as Property: Curriculum in DevRemMath at SCC

Through a critical race lens, this study illustrates that Dudley, Elbert, Walter, and William, are viscerally aware of how race and the operation of racism play a role in the ways their race and gendered identities undergo specific forms of assault as they move through the educational pipeline to graduation. These young Black men provided detailed descriptions of their pre-SCC mathematics experiences and their SCC mathematics experiences including how the curriculum, what was essential for the teaching and learning of mathematics, reflected presented content and instructional practices characterized as benefit those who already benefit: white students. These young Black men were acutely aware of race and racism as operating to shape their opportunities to learn and do mathematics in DevRemMath at SCC. As young Black men, they are not passive, but active subjects in DevRemMath at SCC however, the curriculum served to further challenged these young Black men beyond academics.

Dudley, Elbert, Walter, and William contended with a DevRemMath curriculum where instructors refused to relinquish power over what content was presented, how the content was presented, and how young Black men were assessed on their understanding of the content. This is what Ladson-Billings and Tate (2006) described as an "intellectual property" issue. In particular the DevRemMath space described by these young Black men seemed to suggest faculty resisted curricular or structural (course) change perceived to have an effect on DevRemMath instructors' classroom teaching styles and white students' performance outcomes. For example, these young Black men participated in mathematics classrooms that indicated faculty preferred traditional (e.g., faculty member at the front of the room while students listened) instructional techniques and strategies that were prescriptive of favorable white student performance outcomes over that strategies (community-oriented learning) that favors minoritized student outcomes, and especially Black males. These young Black described mathematics content as inaccessible and irrelevant. And these young Black men described assessments that seemed to foster math anxiety rather than bolster intellectual attainment for Black males. When these young men talked about what promoted their participation in DevRemMath at SCC, they most frequently talked about how what their predominantly white instructors did, or did not do, influenced their decisions to participate or not in the learning and doing of mathematics in DevRemMath at SCC. These young men learned in their pre-SCC schooling experiences that there was inherent value placed on their white student counterparts evinced by their differential treatment. The same can be said for the lack of value placed on these young men's Black bodies as they arrived in DevRemMath at SCC. These conditions hurt young Black males because they are not able to see the value of their race and gendered identities in the curriculum and are therefore resistant to engage in learning and doing mathematics in DevRemMath at SCC.

Further, white faculty provide justifications for their actions based on unsubstantiated logics. DevRemMath instructors claim they do not have the power to affect what happens to any of their students, grouping all students together through a colorblind lens, as a way to assume impunity for what happens to young Black men. DevRemMath faculty do not assume responsibility for failing to do the work necessary to understand the specific needs of young Black men in DevRemMath at SCC. This behavior can be viewed through a CRT lens as privileging whiteness as property (Harris, 1993). In other words, DevRemMath faculty, a predominantly white faculty, are able to safely assume the position of "whiteness" in mathematics, a concept that historically frames the mathematics space as race-neutral (because

of the assumed inherent nature of mathematics to be about numbers and not people), and ignore ideas that race impacts the ways students show up and participate in DevRemMath. Metaphorically, the heavy intellectual, spiritual, and emotional lifting is left for young Black men to bear which inevitably positions young Black men in the viscous and hopeless cycle of never breaking free from the accountability placed on them to assume the position of "whiteness" or else face the negative consequences associated with their Blackmaleness. More plainly stated, why young Black men fail has more to do with what these young Black men did or did not do and less to do with what their white instructors did or did not do to support young Black men. White instructors can rest easy because they are protected by assumed wisdom of the predominantly white instructors who occupy the space. But faculty at DevRemMath in SCC have an opportunity to combat racism by attacking the very institution of white supremacy that set up white intellectual thought as the bar to which all others must rise.

#### Engaging with Impacts of Whiteness as Property

Faculty, as pointed out by Hiraldo (2010), "have the autonomy of designing courses according to their own understanding of their philosophy of knowledge, which can work against students of color" (p. 55). We must consider how faculty's unaddressed perceptions (of the young Black men who will enter their DevRemMath courses) have the power to affect the mathematics learning environment to which these young Black men will be subjected. For example, exploring mathematics in relevant contexts (Nicoi & Crespo, 2010) and exploring what makes mathematics real for these young Black men will likely increase their participation in mathematics in DevRemMath. Despite evidence the space was characterized by a normalization of whiteness, a consequence of racism, these young men adapted.

Accepting that racism is endemic and using this to fuel a kind of rigid determination to succeed despite seemingly impossible odds, these young Black men, to a degree, internalized racism they experienced prior to DevRemMath and this manifested in the ways they participated as Black male learners and doers of mathematics. Accepting that racism exists, and that it affects young Black males, is generative and productive to advancing justice in DevRemMath because it opens a conversation around pointing out racist blind spots in DevRemMath (e.g., spaces that perpetuate the continued low performance outcomes of Black males in DevRemMath). Acceptance also allows faculty and administration to develop strategies to support young Black males by addressing the overwhelming pressure felt by young Black men to, for example, adopt an "overly nice demeanor so as not to be seen as a 'typical angry nigger'". Furthermore, understanding the immense pressure felt from racism and the consequences of it, can be important for conversations about how to build institutional structures that enable advising and peer-mentoring for young Black men. Such spaces might emphasize collective well-being/efficacy.

My own learning experiences demonstrate the importance that young Black men understand Bell's (1991) racial realism thesis to create and nurture approaches to: curtail dominant white supremacist ideologies of competition all too common in STEM academic spaces. Young Black men should be invited to avoid striving for mathematical perfection (Ernest, 2004) in an individualistic way, but instead, find ways to lift one another up and encourage high achievement in mathematics. Adopting a spirit that learning and doing mathematics must be accomplished at a higher standard than the ineptitude about Black students; and to a higher standard than the brilliance assumed about white student counterparts. In this study, Elbert should not have felt obligated to live with the incessant pressure to achieve

mathematical perfection as a young Black man in an imperfectly racist space. The DevRemMath space should have been set up such that Elbert received messages that it was safe for him as a young Black male to participate in mathematics. Dismissing or essentially ignoring Black maleness because of the uncomfortable feelings that sometimes arise with the sheer mention of race is dangerous for young Black men. This suggests that this population, of young Black men, is not worthy of intellectual protection, similar to the ways that the rest of society has basically said young Black boys and men are not worthy of physical protection.

#### Structural Determinism: From 001 and 002 to MAT-003. Who Benefited?

Continued student failure, especially Black male student failure, in MAT-001 and MAT-002 prompted SCC to address the concern through a restructuring initiative (described in Chapter 3) of the DevRemMath course sequence. The project entailed focusing on lessening the number of developmental mathematics courses from two courses to one course with added goals of shortening the length of time of students to graduation and saving students money. Essentially faculty and administration felt this restructuring initiative would be a fix that could level the academic playing field for all DevRemMath students. Unfortunately, in Fall 2019, the college saw its lowest Black male DevRemMath pass rate at 30%. This was not what faculty and administration expected however the structure of the DevRemMath space characterized by all of the blindspots mentioned above and the ones yet to be uncovered, determined that white students would be the greatest beneficiaries of a DevRemMath course restructuring. Despite this unintended consequence, administration and DevRemMath faculty at SCC have a chance to strengthen their courses and offer Black males increased educational opportunities to participate in mathematics.

#### Moving Past Structural Determinism: Who can Benefit?

There were several opportunities to better support the young Black males in this study however the administration and DevRemMath faculty were not able to capitalize these opportunities. Seemingly absent present conversations around race did not allow for faculty to focus on young the specific needs of young Black men in DevRemMath. Faculty and administration neglected to probe young Black men for information (e.g., what conditions encourage/discourage you to participate in doing mathematics) that could have been used in the implementation of the redesigned developmental mathematics course offered in DevRemMath at SCC. As a consequence, Dudley, Elbert, Walter, and William described situations where, because of the structure of the course and other conditions as described throughout this study, they were not able to operate at their full learning potential. Notwithstanding the absent present focus on Black males, there were ways the administration and DevRemMath faculty could have addressed the burdens unduly and unjustly placed on these young Black men.

#### Address Young Black male accountability

This dissertation study serves to neither blame young Black men in DevRemMath nor target their DevRemMath instructors. My goal was similar to Terry and McGee (2013) who aimed to "encourage dialogue on how mathematics educators, DevRemMath instructors, can build systems of support for Black students' agency, resilience, and persistence in mathematics classrooms" (p. 75). Building systems of support that can foster supportive spaces for young Black men by focusing on how young Black men think about their role in their academic performance in DevRemMath. This may be especially important considering the extent to which the young Black men in this study held themselves accountable. The participants frequently communicated that their success in DevRemMath inevitably rested solely on their shoulders. No matter what condition was present in the classroom context (e.g., misalignment of instruction to their learning style), these young Black men felt they had to hold themselves accountable to figure out how to show up and be successful. The participants felt they were responsible for proving to their DevRemMath instructors they were not the caricatures of Black men society purported (e.g., they were not a threat to the learning environment or the people in that learning environment). The participants felt they were responsible for proving to their DevRemMath instructors they were capable and smart, and they felt responsible for proving to their DevRemMath instructors they deserved respectful treatment from them.

#### Faculty and Student Shared Accountability

The amount of energy focused on creating a space for "not college-ready" students needs to shift to a model where higher education mathematics holds both students accountable for learning about what makes them successful college-level mathematics students and faculty accountable for creating spaces for students to be successful. Put differently, the focus needs to shift to shared accountability. A "college-ready" student and "faculty-ready" DevRemMath context suggests that both students and faculty have a role play in working together to support student learning and doing of mathematics. This seems a more productive and cost-effective use of university student dollars as opposed to a status quo model involving generally wide-spread assessment of students' skill. A model that employs the use of student assessments at the end of semesters alone as a basis to restructure, redesign, and implement large-scale initiatives in developmental and remedial mathematics is not sustainable. To be clear, I am not suggesting that faculty, and especially not young Black male students, be evaluated on the extent to which they hold themselves accountable for decreasing low performance of Black males in DevRemMath. The use of formal evaluations, in the context in which this dissertation study is written, suggests there is not someone to blame when in fact white supremacy is the culprit. In addition, evaluations can be counterproductive to advancing conversations around eliminating racially, socially and culturally oppressive blind spots to Black male participation in DevRemMath.

#### Renewed Focus on Instructors' Perceptions of Young Black Men in DevRemMath

As mentioned earlier in this chapter, the instructors in DevRemMath at SCC, played an integral role in how the participants, as young Black men, negotiated how and when to participate in learning and doing mathematics in DevRemMath. When they spoke about their instructors in both K–12 and in DevRemMath at SCC, they talked about how they were able to determine their success based on how they felt the instructor perceived their potential success in a course. If the instructor perceived these young Black men as being successful, they had a higher probability of success. This finding is not particularly surprising considering the findings from this study further illustrate that these young Black men, who navigated PreK–12 mathematics and DevRemMath at SCC, behaved in ways that pushed back against negative stereotypes commonly associated with young Black men in mathematics.

Researchers have shown over the past five decades, White instructors have held low expectations of Black students (Gottlieb, 1964; Irvine, 1990; Rubovits & Maehr, 1973). Rong (1996) showed that "instructors' perceptions of student social behaviors are a result of complex interactions of students' and instructors' race and gender" (p. 261). In particular, the results from Rong (1996)'s study showed that "White female instructors perceived White male students more positively than Black male students" (p. 261). The instructors who believed the young men would be successful would create opportunities for the young men to learn both inside and outside of the classroom and create assignments that would speak to students' interests and provide a space for these young men to demonstrate their understanding of mathematics concepts using the assets and cultural capital they bring with them to the classroom, For example, these young men frequently expressed the desire to be able to demonstrate their learning in a more communal and public way, perhaps going to the board or working in effective and focused collaborative settings that also offered collaborative assessments. Unfortunately, this was rarely a situation these young men experienced in DevRemMath at SCC.

Conversely, the instructor who does not believe they will succeed sets up a classroom where the student is left little room to demonstrate their understanding of mathematics concepts using the assets and cultural capital they bring with them to the classroom. These young men spoke about the use of the LMS, such as Aleks, where they participated in learning and doing mathematics. These young men all expressed they learned and did mathematics as much as they could; however, the structure of learning felt as if the included tasks and assignments were more focused on note skills than on understanding. In some cases, these young men felt there were times when they understood the material yet were forced to continue doing more mathematics at the detriment of focus on their other studies or personal responsibilities at home (e.g., work and family. This is especially true when it comes to establishing the conditions that invite young Black men's sustained participation in DevRemMath, especially since students in DevRemMath likely lack confidence in their learning and doing of mathematics. DevRemMath at SCC has to invest in opportunities for instructors to engage in the work of understanding their Black male students from Black males' first-person narratives and not by the stories told about Black men.

## Renewed Focus on Teachers' Perceptions of themselves as teachers of young Black men

Teachers of Black men in DevRemMath have a responsibility to take a critical look at themselves. They must relinquish assumptions that students, and especially young Black male students, who may have received inadequate preparation before coming to DevRemMath at SCC, or at any institution, are academically equipped to adjust to the teaching style and class structure of their DevRemMath milieu; that young Black men in your class feel comfortable participating in learning and doing mathematics in your classroom because you think treating all students equally suggests you are not mistreating the young Black men in your class; that the Black men in your class will simply come to your office for additional help because you post your office hours on a syllabus; that the young Black men in your class will think of you, perhaps because you appear nice, as someone they feel safe talking to. The reality is that many young Black men will encounter teachers who look like the very people, predominantly white, who fostered the kinds of environments that have led these young Black men to develop intellectual armor to combat covert racism, such as racial microaggressions, they have experienced most of their young lives. DevRemMath faculty must challenge themselves to reflect on their role in low performance of Black male student performance if the goal is to increase Black male student performance.

## Advancing Race-Gender Justice in Postsecondary Mathematics for Young Black Men: Re (imagining) Developmental/ Remedial Mathematics for Black Male Success

In this section, I aim to be constructive. In other words, I want to go beyond mere recommendations to paint a picture for how DevRemMath spaces for Black collegians can be a humanizing space full of dignity. This happens, primarily in faculty instructional styles and other personal and professional experiences that influence how we structure our courses and engage intellectually and personally with students. Re-imagining what DevRemMath classrooms look like for both young Black men and instructors of young Black men involves creatively thinking about how to support students to be successful in mathematics. With respect to this study, a vision for a re-imagined DevRemMath space should have a focus on supporting faculty and young Black men by centering discussions and actions around what conditions promote young Black male participation and what conditions can be changed to decrease impediments to Black male participation.

A crisis within dialogues of faculty, staff, and administration in higher education mathematics course design and planning persists. When considering what developmental and remedial mathematics spaces should look like for students and instructors, student voice is essential. No longer can faculty hold on to the notion that they can only control what happens inside their classrooms. The happenings of the world and U.S. society undoubtedly shape how faculty understand instruction and the quality of learning experiences brought to bear in the DevRemMath classroom. In the same ways that school spaces have the power to shape Black maleness and masculinity, school spaces, in particular DevRemMath spaces have the power to redefine perceptions of Black males and their performance identities. For so many years, whites have used white supremacy as an ideology, to position Blacks in society as partially human (Brown, 2018). A re-imagined DevRemMath course structure should involve using a variety of strategies to address Black male performance by creating the conditions to that empower Black men and humanize them. Let me explain.

## Accessible and Real-Time Communication Space

Administration and DevRemMath faculty should provide space and opportunity for Black males to communicate on an ongoing basis what conditions create the greatest opportunities for their participation in mathematics. In this study, I chose to use a technological medium (GroupMe<sup>6</sup>) to find out how my students were experiencing their space. DevRemMath faculty and administration should use a similar medium such as their recently created SCC-like social media network page. DevRemMath faculty should create a group that is specifically designed to offer young Black men a private forum to anonymously discuss their experiences. Based on what was learned from this study (e.g., these young Black men experience racial and gendered assaults), and considering my own similar experiences having a shared race and gendered identity (i.e., Black and male) with the young men in this study, choosing an anonymous information sharing structure seems conducive to a relaxed atmosphere for Black males. As a group, faculty should review this page as a part of their regular mathematics departmental meetings to get a robust picture of what is happening to young Black men in DevRemMath in real-time. An added benefit is that non-DevRemMath faculty are able to get an understanding of the Black male experience to think critically about their current Black male students' experiences and what the experiences of Black males will be like once they arrive in their credit bearing mathematics courses.

## **Pre-course Student Learning Styles Inventories**

Pre-course student learning styles inventories should be used to understand the intellectual needs of young Black men before the course begins (McDougal, 2009). These inventories should be administered at the time young Black males register for DevRemMath courses. The inventory should be purposeful in that it should seek to find out information about

<sup>&</sup>lt;sup>6</sup> GroupMe (http://www.groupme.com) is an electronic messaging app that allows users to send direct messages and group messages from their mobile devices without message limits or fees.

what type of mathematics learner the student identifies themself as. DevRemMath should meet to discuss the findings from these inventories to get a sense of the type of students who will be arriving in the incoming cohort of students. A benefit to these inventories is that each DevRemMath faculty member should be able to see similarities and differences in their specific group students and the larger population of Black males. Faculty could use their specific information to structure their classrooms to create conditions that have the potential to increase Black male participation in mathematics.

#### Scheduled In-depth Check-Ins

Informal interviews with young Black men, chosen from the incoming cohort of DevRemMath students and perhaps based on purposive sampling (Creswell, 2014) to achieve a representative sample, could add to conversations faculty should have around what they could do to build strong relationships with young Black men. Informal interviews theoretically allow for the interviewee to share information that may not be captured for instance in a pre-course inventory or survey. These interviews should occur at the beginning of the semester, at midterm, and at the end of the semester. In the interviews, young Black men could share their racialized and gendered experiences before and during their time in DevRemMath at SCC, and this information obtained could contribute to assessing how young Black men are feeling in the DevRemMath space. These check-ins need to be authentic and structured in ways that young men share what they want to say and not what they think DevRemMath faculty want them to say. Because of what is known about characteristics of interviews, administration and faculty should work to ensure young Black men are interviewed by Black men or Black women. The goal is to eliminate the "white supremacist filter" (i.e., eliminating the need for young Black men to feel as if they must say how the feel in ways that will be less abrasive to whites or in ways that seeks to

appease white fragility) so administration and faculty receive how young Black men experience DevRemMath spaces in their voice--not the voice of the oppressor.

#### Weekly Check-Ins

DevRemMath faculty should conduct weekly check-ins, perhaps in the form of surveys to provide real-time information to administration and faculty about what is working and what is not working for young Black men. Faculty could then adjust their instructional styles, classroom tasks, or assessments to mitigate potential failure of young Black men and be more responsive to promoting mathematics learning and understanding (Fennema & Romberg, 1999).

#### Mix of Traditional and Non-traditional classrooms

A re-imagined DevRemMath space at SCC should involve structuring classrooms with a mix of traditional and community-oriented mathematics learning models that could address the various learning modalities (reference) preferred by young Black males from varied backgrounds. Together, weekly surveys and restructuring classrooms could foster conversations around modifying DevRemMath curriculum. A re-imagined DevRemMath space should involve making more explicit that administration and faculty share multiple perspectives on teaching and learning related to assessment (Boaler, 2000). This should be reflected in a curriculum that includes the use of traditional and non-traditional (group presentations, oral exams) assessments (to measure student outcomes. Various assessment models offer young Black men additional opportunities to demonstrate how they best communicate their understanding of mathematics (Fenna & Romberg, 1999).

## Black Male Math Mentoring Component and Affinity Space

Finally, a re-imagined DevRemMath program should establish a Black male math mentoring (BMMM, or BM<sup>3</sup>) component, or network, that pairs young Black males in
DevRemMath at SCC with young Black males who are in credit-bearing mathematics courses at SCC, or at other colleges/universities perhaps in the area. A benefit to this program is that it helps young Black men develop bonds with their peers. Strong peer-relationships among young Black males in mathematics is linked to increased performance outcomes for young Black men. This network should involve an added component of an affinity space (Gates et al., 1999) where young Black men should have a safe physical space on the campus to meet, network, discuss mathematics topics, and use their unfiltered voice to communicate their needs to navigate the DevRemMath environment at SCC.

#### Conclusion

This work was a Critical Race oriented project which included understanding Black people, more specifically young Black men, and people of color as active participants in their learning, and not as objects being acted upon by race and racism. To better understand how to interpret these young Black men's participation through their lenses, it was important for me to weave into this work some of my own experiences of racialized assaults and mistreatment in mathematics. I was able to therefore understand that these four young Black men recognized that there was racism operating in their Prek-12 and postsecondary mathematics learning experiences. They were aware of race and racism as structuring their access to educational opportunities. As a result, they used their agency to make the decisions about how to engage with the institution, SCC, and actors in that institution. These young Black men used their agency to decide how to participate in the learning and doing of mathematics in DevRemMath at SCC.

This study demonstrates that educating young Black men collegians requires care. Young Black men need to know that faculty and administration care about what happens to them in DevRemMath at the same time they are navigating DevRemMath spaces. Educating Black male collegians involves faculty and administration developing strong relationships and strengthening communication with young Black men. This involves listening and demonstrating to young Black men that their voices are heard. This involves adjusting pedagogy and curriculum to complement what young Black men say frequently works for them. Providing young Black male collegians with the space to feel free to err because humans are perfectly imperfect.

Consequently, by not addressing the unique learner needs of young Black men assumes that we in DevRemMath at SCC do not care about the learner needs of young Black men and are thus complicit in the continued de-valuing of young Black men's presence and thereby success in DevRemMath at SCC. If students' mathematical and non-mathematical experiences before and during their time in their respective DevRemMath courses shaped how they interacted in their respective DevRemMath course, likely students' experiences in DevRemMath courses play a significant role in shaping their interactions, and thereby participation, in future mathematics courses--not to mention other non-mathematics courses. Thus, it is ever important that we focus on their experiences now to mitigate present and future negative effects such as low academic self-concepts.

The effects of white supremacy have created conditions today where Blacks find themselves in a space and time still fighting to prove their full humanity. This is true of Blacks in the current media. This is true of Black males in DevRemMath. Black men in DevRemMath see racism; Black men in DevRemMath feel racism; Black men in DevRemMath understand how those who wield power can use the protection overt and covert racism provides to justify oppressing Black males. Young Black men in DevRemMath refuse to accept perceptions of them as lazy and intellectually inferior. Black men in DevRemMath do not comply with false narratives of them as sexualized and aggressive bodies in intellectual spaces. Young Black males' existence and practices in DevRemMath counter narratives that position them as solely the ones to blame when they do not perform well on assessment markers (e.g., grades in DevRemMath courses). Young Black men in DevRemMath are fully human and deserve to have an opportunity to participate and thereby successfully demonstrate fully their understanding of mathematics. Administration and faculty should let them do that. APPENDICES

## APPENDIX A: SEMI-STRUCTURED INTERVIEW ONE PROTOCOL

## Introduction & Prior Experiences in Mathematics –10 mins

- 1. Describe your mathematics experiences in school before coming to Suburban Community College
- 2. Public High School? Private School? Home School? Other?
- 3. What mathematics courses did you take?
- 4. When you think about participation, what do you think about?
  - a. For example, can you create something for me that illustrates what participation in mathematics looks and/or sounds like?

# What is participation? - 10 mins

- 1. In your K-12 mathematics experiences in school, tell me about your participation.
- 2. When you took your prior mathematics class, how often would you say you participated in those classes?
- 3. How did you typically participate?
  - a. Orally: Raise your hand? Call Out?
  - b. Written: Take notes?
  - c. Some other means? Follow along on your paper?
- 4. What about now in your current math class? How do you participate?

## Factors that Encourage or Improve Participation in Mathematics - 10 mins

- 1. What about your prior math classes made you want to participate?
- 2. What about your DevRemMath courses makes you want to participate in math?
- 3. Is there something an instructor did/does to make you want to participate?
- 4. How do you feel these things your instructor does/did encourage(d) you to participate in mathematics?
- 5. How often would you participate?
  - a. Why do you think you participate(d) at this rate?
- 6. What did/does your participation look like outside of the classroom? What needs to happen or be in place then?

# **Factors that Discourage Participation in Mathematics - 10 mins**

- 1. What about your prior math classes made you not want to participate in math?
- 2. What about your DevRemMath courses makes you not want to participate in math?
- 3. Is there something an instructor did/does to make you not want to participate?
- 4. How do you feel these things your instructor did/does discourage(d) you from participating in mathematics?
- 5. How often would you say these discouraging instances happened?
  - a. What do you think caused these things to happen?

6. What happened that discouraged your participation in math outside of the classroom?

## **Race & Gendered Participation in Mathematics – 5 mins**

- 1. How is being male something that shapes your participation in mathematics?
- 2. How is being Black and male something that shapes your participation in mathematics?
- 3. How do you think being Black and male impacted or impacts (if at all) your participation in mathematics?
  - a. Do you think it plays a role in how you see yourself or how your instructor sees you in class?
- 4. In what way do you think your instructor thinks about you as a Black male and your participation in class?
  - a. For example, do you think your instructor thinks you will participate? Not participate?
  - b. Why do you think this? What contributes to this thinking?

### **Additional Information – 5 mins**

- 1. Is there anything else you would like to add about either your prior or current experiences in mathematics that may speak to your participation in mathematics?
- 2. Is there anything else you would like to me to know about you in general as a mathematics learner?

## APPENDIX B: SEMI-STRUCTURED INTERVIEW TWO PROTOCOL

#### **Before Entirely Online/Virtual Learning Environment – 5 - 7 mins**

- 1. In the initial interview, we discussed what participation looks like, sounds like, and essentially is for you. Some of the things you mentioned were (include those here).
  - a. How do you feel about your ideas around participation now?
  - b. Do you still agree with your ideas?
  - c. Is there anything you would like to add, change or not include?

### **During Entirely Online/Virtual Learning Environment – 20 – 25 mins**

#### **Course Structure – 5 mins**

- 1. How was the course structured?
  - a. For example, was there a lecture component of the course?
  - b. How were those lectures provided?
  - c. Were lectures pre-recorded videos of mathematical concepts or demonstrations of problems?
  - d. Were lectures synchronous meaning the lectures happened at a specific time just as a face-to-face lecture would happen?
  - e. How did you access these?
  - f. Were there notes, PowerPoints, or other resources available to you?
  - g. How did you access these?

#### **Participation in Mathematics – 5 mins**

- 1. How would you describe your participation in the online environment? That is, what did your participation look like for you?
  - a. How did you participate?
  - b. What did you do?
  - c. How often would you participate?
  - d. For example, if there were synchronous/asynchronous virtual classes, what did you do in those classes?

#### **Factors Affecting Participation in Mathematics – 5 mins**

- 1. If you had to compare your participation in the face-to-face portion with that of the virtual portion, what would you say?
  - a. Was the participation the same? different?
  - b. Why do you think?
- 2. What was it about the virtual environment that made you participate?
  - a. For example, was there something about the a) course structure, b) instructor, or c) something else that encouraged, promoted, or supported your participation.
- 3. What was it about the virtual environment that made you not want to participate?

- a. For example, was there something about the a) course structure, b) instructor, or c) something else that discouraged, prevented, or hindered your participation.
- 4. Is there something that could have added or changed that may have further encouraged your participation?
  - a. Is there a resource? Technology? Some other structure of the course?
  - b. Is there something the instructor could have done?

c.

## **Performance & Outcome in the Course based on Participation – 5 mins**

- 1. How do you think your participation affected your understanding of mathematical concepts in the course?
  - a. Do you think your participation helped your understanding, hurt your understanding, or didn't really change your understanding either way?
  - b. What makes you think this?
- 2. How do you think your participation affected how you did (or your overall outcome) in the course?
  - a. (For example) Do you think your participation contributed the grade you got?
  - b. Why do you think that?
- 3. What does your grade in the class say (or not say) about your participation in the course?
  - a. For example, do you think your grade says you participated frequently, somewhat, or not much at all.

## Additional Information – 5 mins

- 1. Is there anything else you would like to add about your experience in the online learning environment or your prior mathematics experiences that may speak to your participation in mathematics?
- 2. Is there anything else you would like me to know about you in general as a mathematics learner?

## APPENDIX C: STUDENT SURVEY PROTOCOL

**Directions:** Please complete the following survey below at the end of each class period by answering the following questions.

- 1. How did you participate in class today?
- 2. What happened in class today that encouraged you to participate?
- 3. What happened in class today that discouraged you from participating?
- Any additional information that may have impacted your participation in class today? Explain. (Please include examples of assignments, tasks, etc. if needed to support your explanation.)

REFERENCES

#### REFERENCES

- Acker, S. (2000). In/out/side: Positioning the researcher in feminist qualitative research. *Resources for Feminist Research*, 28(1-2), 189–210. https://go.gale.com/ps/anonymous?id=GALE%7CA80881203&sid=googleScholar&v=2. 1&it=r&linkaccess=abs&issn=07078412&p=LitRC&sw=w
- Adamian, A. S., & Jayakumar, U. M. (2018, July). Mutual engagement in spaces of tension: Moving from dialogue toward action across multiple contexts. In *The educational forum* (Vol. 82, No. 3, pp. 335–350). Routledge.
- Adelman, C. (2004). Principal indicators of student academic histories in postsecondary education, 1972-2000. Washington, DC.
- Allen, W. (1992). The color of success: African-American college student outcomes at predominantly White and historically Black public colleges and universities. *Harvard Educational Review*, 62(1), 26-45.
- Anderson, J. A. (1995). Toward a framework for matching teaching and learning styles for diverse populations. *The importance of learning styles: Understanding the implications for learning, course design, and education*, 69-78.
- Artiles, A. J., & Trent, S. C. (1994). Overrepresentation of minority students in special education: A continuing debate. *The Journal of Special Education*, 27(4), 410–437. https://doi.org/10.1177/002246699402700404
- Ascher, C., & Branch-Smith, E. (2005). Precarious Space: Majority Black Suburbs and Their Public Schools. Teachers College Record, 107(9), 1956-1973.
- Attewell, P. a., Lavin, D. E., Domina, T., & Levey, T. (2006). New Evidence on College Remediation. *The Journal of Higher Education*, 77(5), 886–924. https://doi.org/10.1353/jhe.2006.0037
- Awad, G. H. (2007). The role of racial identity, academic self-concept, and self-esteem in the prediction of academic outcomes for African American students. *Journal of Black Psychology*, *33*(2), 188–207. https://doi.org/10.1177/0095798407299513
- Bahr, P. R. (2010). Preparing the underprepared: An analysis of racial disparities in postsecondary mathematics remediation. *The Journal of Higher Education*, 81(2), 209-237.
- Bailey, T., Jeong, D. W., & Cho, S. (2010). Referral, enrollment, and completion in developmental education sequences in community colleges. Economics of Education Review, 29(2), 255-270. doi:10.1016/j.econedurev.2009.09.002

- Bauer, K. (2014). Black male community college students and faculty-student engagement: Differences in faculty validation and time status. *Journal of Progressive Policy & Practice*, 2(2), 157-164.
- Beasley, M. A., & Fischer, M. J. (2012). Why they leave: The impact of stereotype threat on the attrition of women and minorities from science, math and engineering majors. *Social Psychology of Education*, 15(4), 427–448. https://doi.org/10.1007/s11218-012-9185-3
- Bell, D. (1991). Racial realism. *Connecticut Law Review*, 24, 363. https://heinonline.org/HOL/P?h=hein.journals/conlr24&i=383
- Bell, D. A. (1992). Faces at the bottom of the well: The permanence of racism. Basic Books.
- Bell, E. T. (2012). The development of mathematics. Courier Corporation.
- Bell, E. T. (2014). Men of mathematics. Simon and Schuster.
- Bernal, D. D. (2013). Critical Race Theory, Latino Critical Theory, and Critical Raced-Gendered Epistemologies. *Education feminism: Classic and contemporary readings*, 389.
- Berry, R. Q. (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://doi.org/10.1007/s12111-005-1003-y
- Berry, III, R. Q. (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://doi.org/10.5951/jresematheduc.39.5.0464
- Berry, III, R. Q., Thunder, K., & McClain, O. L. (2011). Counter narratives: Examining the mathematics and racial identities of Black boys who are successful with school mathematics. *Journal of African American Males in Education (JAAME)*, 2(1), 10–23. http://bma.issuelab.org/resources/22930/22930.pdf
- Blake, J. J., Butler, B. R., Lewis, C. W., & Darensbourg, A. (2011). Unmasking the inequitable discipline experiences of urban Black girls: Implications for urban educational stakeholders. *The Urban Review*, 43(1), 90–106. https://doi.org/10.1007/s11256-009-0148-8
- Boaler, J. (Ed.). (2000). *Multiple perspectives on mathematics teaching and learning* (Vol. 1). Greenwood Publishing Group.
- Boggs, S., Shore, M., & Shore, J. (2004). Using e-learning platforms for mastery learning in developmental mathematics courses. *Mathematics and Computer Education*, *38*(2), 213.
- Bogdan, R., & Biklen, S. K. (1997). Qualitative research for education. Boston, MA: Allyn & Bacon.

- Bonham, B. S., & Boylan, H. R. (2011). Developmental mathematics: Challenges, promising practices, and recent initiatives. *Journal of Developmental Education*, *34*(3), 2.
- Bonilla-Silva, E. (2006). *Racism without racists: color-blind racism and the persistence of racial inequality in the United States*. Rowman & Littlefield Publishers.
- Bowles, T. J., McCoy, A. C., & Bates, S. C. (2008). The effect of supplemental instruction on timely graduation. College Student Journal, 42(30), 853.
- Brooms, D. R. (2016). Being Black, being male on campus: Understanding and confronting Black male collegiate experiences. SUNY Press.
- Brooms, D. R., & Davis, A. R. (2017). Staying focused on the goal: Peer bonding and faculty mentors supporting Black males' persistence in college. *Journal of Black Studies*, 48(3), 305–326. https://doi.org/10.1177/0021934717692520
- Brown, A. L. (2011). Same old stories": The Black male in social science and educational literature, 1930s to the present. *Teachers College Record*, *113*(9), 2047–2079. https://www.researchgate.net/profile/Anthony-Brown-18/publication/260086300\_Brown\_A\_L\_2011\_Same\_old\_stories\_The\_Black\_Male\_in\_S ocial\_Science\_and\_Educational\_Literature\_1930s\_to\_the\_present\_Teachers\_College\_Re cord\_113\_9\_2047-2079/links/59e2704ba6fdcc7154d8
- Brown, D. L., Rosnick, C. B., & Segrist, D. J. (2017). Internalized racial oppression and higher education values: The mediational role of academic locus of control among college African American men and women. *Journal of Black Psychology*, 43(4), 358–380. https://doi.org/10.1177/0095798416641865
- Brown, R. P., & Josephs, R. A. (1999). A burden of proof: Stereotype relevance and gender differences in math performance. *Journal of Personality and Social Psychology*, 76(2), 246. https://doi.org/10.1037/0022-3514.76.2.246
- Bryan, N., & Milton Williams, T. (2017). We need more than just male bodies in classrooms: Recruiting and retaining culturally relevant Black male teachers in early childhood education. *Journal of Early Childhood Teacher Education*, *38*(3), 209-222.
- Bullock, E. C. (2012). Conducting "good" equity research in mathematics education: A question of methodology. *Journal of Mathematics Education at Teachers College*, *3*(2).
- Burt, B., McKen, A., Burkhart, J., Hormell, J., & Knight, A. (2020). Black men in engineering graduate education: Experiencing racial microaggressions within the advisor–advisee relationship. *The Journal of Negro Education*, 88(4), 493–508. https://doi.org/10.7709/jnegroeducation.88.4.0493
- Bush, E. C., & Bush, L. V. (2010). Calling Out the Elephant: An Examination of African American Male Achievement in Community Colleges. Journal of African American Males in Education, 1(1).

- Chapman, T. K. (2007). Interrogating Classroom Relationships and Events: Using Portraiture and Critical Race Theory in Education Research. Educational Researcher, 36(3), 156-162. doi:10.3102/0013189x07301437
- Chinn, P. C., & Hughes, S. (1987). Representation of minority students in special education classes. *Remedial and Special Education*, 8(4), 41– 46. https://doi.org/10.1177/074193258700800406
- Cobb, P., & Bowers, J. (1999). Cognitive and situated learning perspectives in theory and practice. Educational researcher, 28(2), 4-15. https://doi.org/10.3102/0013189X028002004
- Cokley, K. (2000). An investigation of academic self-concept and its relationship to academic achievement in African American college students. *Journal of Black Psychology*, 26(2), 148–164. https://doi.org/10.1177/0095798400026002002
- Collins, P. H. (1986). Learning from the outsider within: The sociological significance of Black feminist thought. *Social Problems*, *33*(6), 14–32. https://doi.org/10.1525/sp.1986.33.6.03a00020
- Cooper, F. R. (2005). Against bipolar black masculinity: Intersectionality, assimilation, identity performance, and hierarchy. *University of California Davis Law Review*, *39*, 853–906. https://lawreview.law.ucdavis.edu/issues/39/3/race-sex-working-identities/DavisVol39No3\_COOPER.pdf
- Corey, D. L., & Bower, B. L. (2005). The experiences of an African American male learning mathematics in the traditional and the online classroom--A case study. *The Journal of Negro Education*, 321–331. http://www.jstor.org/stable/40026732
- Creswell, J. W. (2014). *Research design: qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE.
- Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches.* Sage publications.
- Dancy, T. E., Edwards, K. T., & Earl Davis, J. (2018). Historically White universities and plantation politics: Anti-Blackness and higher education in the Black lives matter era. Urban Education, 53(2), 176–195. https://doi.org/10.1177/0042085918754328
- Davis, D. W. (1997). The direction of race of interviewer effects among African-Americans: Donning the black mask. *American Journal of Political Science*, 309-322. https://doi.org/10.2307/2111718
- Davis, J., Frank, T. J., & Clark, L. M. (2013). The case of a Black male mathematics teacher teaching in a unique urban context: Implications for recruiting Black male mathematics teachers. In *Black male teachers*. Emerald Group Publishing Limited. https://doi.org/10.1108/S2051-2317(2013)0000001010

- DeCuir, J. T., & Dixson, A. D. (2004). "So when it comes out, they aren't that surprised that it is there": Using critical race theory as a tool of analysis of race and racism in education. *Educational researcher*, *33*(5), 26-31. https://doi.org/10.3102/0013189X033005026
- de Freitas, E. (2008). Troubling teacher identity: Preparing mathematics teachers to teach for diversity. Teaching Education, 19(1), 43-55. https://doi.org/10.1080/10476210701860024
- Delgado, R., & Stefancic, J. (2012). *Critical race theory: An introduction*. New York: New York University Press.
- Dillard, C. B. (2000). The substance of things hoped for, the evidence of things not seen: Examining an endarkened feminist epistemology in educational research and leadership. International Journal of Qualitative Studies in Education, 13(6), 661-681. https://doi.org/10.1080/09518390050211565
- Donovan, W. J., & Wheland, E. R. (2008). Placement Tools for Developmental Mathematics and Intermediate Algebra. Journal of Developmental Education, 32(2), 2.
- Dumas, M. J. (2016). Against the dark: AntiBlackness in education policy and discourse. *Theory Into Practice*, 55(1), 11–19. https://doi.org/10.1080/00405841.2016.1116852
- Ellington, R. M., & Frederick, R. (2010). Black high achieving undergraduate mathematics majors discuss success and persistence in mathematics. *Negro Educational Review*, 61(1–4), 61.
  https://search.proquest.com/openview/ab18acc334c8c36ec64b75a72ccb7bca/1?pq-origsite=gscholar&cbl=46710
- Ellis, C., & Bochner, A. (2000). Autoethnography, personal narrative, reflexivity: Researcher as subject.
- Ernest, P. (2004). Image of mathematics, values and gender. In B. Allen & S. Johnston-Wilder, *Mathematics education exploring the culture of learning*, (pp. 11–25). Routledge.
- Evans, A. B., Copping, K. E., Rowley, S. J., & Kurtz-Costes, B. (2011). Academic self-concept in Black adolescents: Do race and gender stereotypes matter?. *Self and Identity*, *10*(2), 263–277. https://doi.org/10.1080/15298868.2010.485358
- Farley, R., Richards, T., & Wurdock, C. (1980). School desegregation and white flight: An investigation of competing models and their discrepant findings. *Sociology of Education*, 53(3), 123–139. https://doi.org/10.2307/2112408
- Fennema, E., & Romberg, T. A. (Eds.). (1999). *Mathematics classrooms that promote understanding*. Routledge.
- Fenning, P., & Rose, J. (2007). Overrepresentation of African American students in exclusionary discipline the role of school policy. *Urban Education*, 42(6), 536–559. https://doi.org/10.1177/0042085907305039

- Ferguson, A. A. (2020). *Bad boys: Public schools in the making of black masculinity*. University of Michigan Press.
- Ferguson, R. F. (2003). Teachers' perceptions and expectations and the Black-White test score gap. Urban education, 38(4), 460-507. https://doi.org/10.1177/0042085903038004006
- Flowers, L. A. (2006). Effects of attending a 2-year institution on African American males' academic and social integration in the first year of college. *Teachers college record*, *108*(2), 267.
- Fordham, S., & Ogbu, J. U. (1986). Black students' school success: Coping with the "burden of 'acting white". *The urban review*, *18*(3), 176-206.
- Francis, D. V., & Darity, W. A. (2021). Separate and unequal under one roof: How the legacy of racialized tracking perpetuates within-school segregation. *RSF: The Russell Sage Foundation Journal of the Social Sciences*, 7(1), 187–202. https://doi.org/10.7758/rsf.2021.7.1.11
- Fries-Britt, S., & White-Lewis, D. (2020). In pursuit of meaningful relationships: How black males perceive faculty interactions in STEM. *The Urban Review*, 1–20. https://doi.org/10.1007/s11256-020-00559-x
- Gates, A. Q., Teller, P. J., Bernat, A., Delgado, N., & Della-Piana, C. K. (1999). Expanding participation in undergraduate research using the affinity group model. *Journal of Engineering Education*, 88(4), 409-414. https://doi.org/10.1002/j.2168-9830.1999.tb00467.x
- Gillborn, D., & Ladson-Billings, G. (2010). Education and critical race theory. In *The routledge international handbook of the sociology of education*, (pp. 37–47). Routledge.
- Glenn, F. S. (2003). The retention of Black male students in Texas public community colleges. *Journal of College Student Retention: Research, Theory & Practice*, 5(2), 115-133. https://doi.org/10.2190/GYEU-WWER-N8W7-XTBK
- Goings, R. B. (2016). (re)defining the narrative: High-achieving nontraditional black male undergraduates at a historically black college and university. Adult Education Quarterly, 66(3), 237-253. doi:10.1177/0741713616644776
- Gottlieb, D. (1964). Teaching and students: The views of Negro and white teachers. *Sociology of Education*, 345-353. https://doi.org/10.2307/2112117
- Gutiérrez, R. (2008). Research Commentary: A Gap-Gazing Fetish in Mathematics Education? Problematizing Research on the Achievement Gap. *Journal for Research in Mathematics Education, 39*(4), 357-364. https://doi.org/10.5951/jresematheduc.39.4.0357
- Gutiérrez, R. (2013). The sociopolitical turn in mathematics education. *Journal for Research in Mathematics Education*, 44(1), 37–68. https://doi.org/10.5951/jresematheduc.44.1.0037

- Hagedorn, L. S., Siadat, M. V., Fogel, S. F., Nora, A., & Pascarella, E. T. (1999). Success in college mathematics: Comparisons between remedial and nonremedial first-year college students. Research in Higher Education, 40(3), 261-284.
- Hagedorn, L. S., Maxwell, W., & Hampton, P. (2001). Correlates of retention for African-American males in community colleges. Journal of college student retention: Research, theory & practice, 3(3), 243-263. https://doi.org/10.2190/MJ6A-TFAC-MRPG-XDKL
- Harper, S. R. (2007). Peer support for African American male college achievement: Beyond internalized racism and the burden of "acting White". *The Journal of Men's Studies*, 14(3), 337–358. https://doi.org/10.3149/jms.1403.337
- Harper, S. R., & Davis III, C. H. (2012). They (Don't) Care about Education: A Counternarrative on Black Male Students' Responses to Inequitable Schooling. Educational Foundations, 26, 103-120. https://files.eric.ed.gov/fulltext/EJ968820.pdf
- Harris, C. I. (1993). Whiteness as property. *Harvard Law Review*, *106*(8), 1707–1791. https://doi.org/10.2307/1341787
- Harry, B., & Anderson, M. G. (1994). The disproportionate placement of African American males in special education programs: A critique of the process. *The Journal of Negro Education*, 63(4), 602–619. https://doi.org/10.2307/2967298
- Hensen, K.A., & Shelley, M.C. (2003). The Impact of Supplemental Instruction: Results From a Large, Public, Midwestern University. *Journal of College Student Development* 44(2), 250-259. doi:10.1353/csd.2003.0015
- Hiraldo, P. (2010). The role of critical race theory in higher education. *The Vermont Connection*, *31*(1), 7. https://scholarworks.uvm.edu/tvc/vol31/iss1/7
- Hoberman, J. M. (1997). *Darwin's athletes: How sport has damaged Black America and preserved the myth of race*. Houghton Mifflin Harcourt.
- Howard, T. C. (2002). Hearing footsteps in the dark: African American students' descriptions of effective teachers. *Journal of Education for Students Placed at Risk*, 7(4), 425–444. https://doi.org/10.1207/S15327671ESPR0704\_4
- Howard, T. C. (2008). Who really cares? The disenfranchisement of African American males in preK-12 schools: A critical race theory perspective. Teachers College Record, 110(5), 954-985.
- Howard, T. C. (2013). How does it feel to be a problem? Black male students, schools, and learning in enhancing the knowledge base to disrupt deficit frameworks. *Review of Research in Education*, 37(1), 54–86. https://doi.org/10.3102/0091732X12462985
- Howard, T. C., Flennaugh, T. K., & Terry, Sr, C. L. (2012). Black males, social imagery, and the disruption of pathological identities: Implications for research and teaching. *Educational Foundations*, 26, 85–102. https://files.eric.ed.gov/fulltext/EJ968819.pdf

- Huddy, L., Billig, J., Bracciodieta, J., Hoeffler, L., Moynihan, P. J., & Pugliani, P. (1997). The effect of interviewer gender on the survey response. Political Behavior, 19(3), 197-220.
- Hunter, J. G., & Stinson, D. W. (2019). A mathematics classroom of caring among a black male teacher and black male students. In F. Allaire, J. Pecore., & C. Haeussler Bohan, *Curriculum and teaching dialogue*, Vol. 21, No. 1 and 2, (pp. 21–34). Information Age Publishing.
- Irvine, J. J. (1990). *Black students and school failure. Policies, practices, and prescriptions*. Greenwood Press, Inc., 88 Post Road West, Box 5007, Westport, CT 06881.
- Jackson-Allen, J., & Christenberry, N. J. (1994). Learning Style Preferences of Low-and High-Achieving Young African-American Males. https://files.eric.ed.gov/fulltext/ED387758.pdf
- James, C. L. (2006). ACCUPLACER (TM) OnLine: Accurate Placement Tool for Developmental Programs?. *Journal of Developmental Education*, 30(2), 2.
- James, M., & Lewis, C. W. (2014). Villains or virtuosos: An inquiry into Blackmaleness. *Journal of African American Males in Education (JAAME)*, 5(2), 105– 110. https://jaamejournal.scholasticahq.com/article/18449-villains-or-virtuosos-aninquiry-into-Blackmaleness
- James, M. C., Butterfield, V., Jones, K. L., & Mokuria, V. G. (2017). Opportunity for all: An analysis of equality and equity in advanced placement programming in a US high school. *International Journal of Innovation and Research in Educational Sciences*, 4(1), 15–21. http://www.ijires.org/administrator/components/com\_jresearch/files/publications/IJIRES \_748\_FINAL.pdf
- Jencks, C., & Phillips, M. (1998). The Black-White test score gap. Brookings Inst Press.
- Jett, C. C. (2011). "I once was lost, but now am found" The mathematics journey of an African American male mathematics doctoral student. *Journal of Black Studies*, 42(7), 1125–1147. https://doi.org/10.1177/0021934711404236
- Jett, C. C. (2019). Mathematical persistence among four African American male graduate students: A critical race analysis of their experiences. *Journal for Research in Mathematics Education*, 50(3), 311-340. https://doi.org/10.5951/jresematheduc.50.3.0311
- Jett, C. C., Stinson, D. W., & Williams, B. A. (2015). Communities for and with Black male students. *The Mathematics Teacher*, 109(4), 284–289. https://doi.org/10.5951/mathteacher.109.4.0284
- Jimerson, S. R., Pletcher, S. M., Graydon, K., Schnurr, B. L., Nickerson, A. B., & Kundert, D. K. (2006). Beyond grade retention and social promotion: Promoting the social and academic competence of students. *Psychology in the Schools*, 43(1), 85–97. https://doi.org/10.1002/pits.20132

- Johnson-Ahorlu, R. N. (2013). "Our biggest challenge is stereotypes": Understanding stereotype threat and the academic experiences of African American undergraduates. The Journal of Negro Education, 82(4), 382-392. https://www.jstor.org/stable/10.7709/jnegroeducation.82.4.0382
- Johnson, R. M., Strayhorn, T. L., & Travers, C. S. (2019). Examining the academic advising experiences of Black males at an urban university: An exploratory case study. *Urban Education*, 0042085919894048. https://doi.org/10.1177/0042085919894048
- Joseph, N. M., & Jordan-Taylor, D. (2016). The value of a triangle: Mathematics education in industrial and classical schools in the segregated south. The Journal of Negro Education, 85(4), 444-461. https://www.jstor.org/stable/10.7709/jnegroeducation.85.4.0444
- Kanuha, V. K. (2000). "Being" native versus "going native": Conducting social work research as an insider. Social work, 45(5), 439-447. https://doi.org/10.1093/sw/45.5.439
- Kasper, H. T. (2003). The changing role of community college. Occupational Outlook Quarterly, 46(4), 14-21. https://www.johnbippus.com/wp-content/uploads/2012/09/The-Changing-Roles-of-Community-Colleges.pdf
- Kim, E., & Hargrove, D. T. (2013). Deficient or resilient: A critical review of Black male academic success and persistence in higher education. *The Journal of Negro Education*, 82(3), 300–311. https://doi.org/10.7709/jnegroeducation.82.3.0300
- Knaus, C. B. (2009). Shut up and listen: Applied critical race theory in the classroom. Race Ethnicity and Education, 12(2), 133-154. https://doi.org/10.1080/13613320902995426
- Kowski, L. E. (2013). Does High School Performance Predict College Math Placement?. Community College Journal of Research and Practice, 37(7), 514-527. https://doi.org/10.1080/10668926.2012.754730
- Kunjufu, J. (2009). Black boys and special education—change is needed. In K. Vaughn & W. Spielberg, Psychology of Black boys and adolescents (pp. 159-162). ABC-CLIO.
- Ladson-Billings, G. (2011). Boyz to men? Teaching to restore Black boys' childhood. *Race Ethnicity and Education*, 14(1), 7–15. https://doi.org/10.1080/13613324.2011.531977
- Ladson-Billings, G., & Tate, W. F. (1995). Toward a critical race theory of education. *Teachers college record*, 97(1), 47.
- Ladson-Billings, G., & Tate, W. F. (2006). Toward a critical race theory of education. Critical race theory in education: All God's children got a song, 11, 30.
- Larnell, G. V., Boston, D., & Bragelman, J. (2014). The stuff of stereotypes: Toward unpacking identity threats amid African American students' learning experiences. *Journal of Education*, 194(1), 49–57. https://doi.org/10.1177/002205741419400107

- Leonard, J., & Martin, D. B. (Eds.). (2013). *The brilliance of Black children in mathematics*. Information Age Publishing. https://www.infoagepub.com/products/The-Brilliance-of-Black-Children-in-Mathematics
- Leonardo, Z. (2013). *Race frameworks: A multidimensional theory of racism and education*. Teachers College Press. https://www.tcpress.com/race-frameworks-9780807754627
- Lester, J. (2014). The completion agenda: The unintended consequences for equity in community colleges. In *Higher education: handbook of theory and research* (pp. 423–466). Springer, Dordrecht. https://link.springer.com/chapter/10.1007/978-94-017-8005-6\_10
- Lipka, J., Hogan, M. P., Webster, J. P., Yanez, E., Adams, B., Clark, S., & Lacy, D. (2005). Math in a cultural context: Two case studies of a successful culturally based math project. Anthropology & Education Quarterly, 36(4), 367-385. https://doi.org/10.1525/aeq.2005.36.4.367
- Lyons, E. M., Simms, N., Begolli, K. N., & Richland, L. E. (2018). Stereotype threat effects on learning from a cognitively demanding mathematics lesson. *Cognitive Science*, 42(2), 678–690. https://doi.org/10.1111/cogs.12558
- MacMillan, D. L., & Reschly, D. J. (1998). Overrepresentation of minority students: The case for greater specificity or reconsideration of the variables examined. *The Journal of Special Education*, 32(1), 15–24. https://doi.org/10.1177/002246699803200103
- Martin, D. B. (2000). Mathematics success and failure among African-American youth: the roles of sociohistorical context, community forces, school influence, and individual agency.
   Routledge. https://www.routledge.com/Mathematics-Success-and-Failure-Among-African-American-Youth-The-Roles/Martin/p/book/9780805861426
- Martin, D. B. (2012). Learning mathematics while Black. *Educational Foundations*, 26, 47-66. https://files.eric.ed.gov/fulltext/EJ968817.pdf
- Martin, D. B. (2019). Equity, inclusion, and antiBlackness in mathematics education. *Race Ethnicity and Education*, 22(4), 459–478. https://doi.org/10.1080/13613324.2019.1592833
- Martin, D. B., & Gholson, M. (2012). On becoming and being a critical Black scholar in mathematics education. In Opening the Cage (pp. 203-222). Sense Publishers, Rotterdam. https://link.springer.com/chapter/10.1007/978-94-6091-808-7\_10
- Mason, H. P. (1998). A persistence model for African American male urban community college students. Community College Journal of Research and Practice, 22(8), 751-760. https://doi.org/10.1080/1066892980220804
- Mattern, K. D., & Packman, S. (2009). Predictive Validity of ACCUPLACER® Scores for Course Placement: A Meta-Analysis. Research Report No. 2009-2. *College Board*. https://eric.ed.gov/?id=ED561046

- Matteson, S. M., & Lincoln, Y. S. (2009). Using multiple interviewers in qualitative research studies: The influence of ethic of care behaviors in research interview settings. Qualitative Inquiry, 15(4), 659-674. https://doi.org/10.1177/1077800408330233
- Matthews, D. B. (1991). The effects of learning style on grades of first-year college students. *Research in Higher Education*, *32*(3), 253–268. https://doi.org/10.1007/BF00992891
- Mawhinney, L., Irby, D. J., & Roberts, E. S. (2016). Passed along: Black women reflect on the long-term effects of social promotion and retention in schools. *International Journal of Educational Reform*, 25(2), 154–169. https://doi.org/10.1177/105678791602500203.
- McCabe, J. (2009). Racial and gender microaggressions on a predominantly-White campus: Experiences of Black, Latina/o and White undergraduates. *Race, Gender & Class*, 133–151. http://www.jstor.org/stable/41658864
- McDougal III, S. (2009). "Break It Down": One of the Cultural and Stylist Instructional Preferences of Black Males. *The Journal of Negro Education*, 432-440. https://www.jstor.org/stable/25676097
- McGee, E., & Martin, D. B. (2011a). From the hood to being hooded: A case study of a Black male PhD. *Journal of African American Males in Education (JAAME)*, 2(1), 46–65. https://jaamejournal.scholasticahq.com/article/18412
- McGee, E., & Martin, D. (2011b). "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). Risk and protective factors in mathematically talented Black male students: Snapshots from kindergarten through eighth grade. *Urban Education, 49*(4), 363–393. https://doi.org/10.1177/0042085914525791
- Medhanie, A. G., Dupuis, D. N., LeBeau, B., Harwell, M. R., & Post, T. R. (2012). The role of the ACCUPLACER mathematics placement test on a student's first college mathematics course. Educational and Psychological Measurement, 72(2), 332-351. https://doi.org/10.1177/0013164411417620
- Mendez, L. M. R., & Knoff, H. M. (2003). Who gets suspended from school and why: A demographic analysis of schools and disciplinary infractions in a large school district. *Education and Treatment of Children*, 30–51. http://www.jstor.org/stable/42900535
- Merisotis, J. P., & Phipps, R. A. (2000). Remedial education in colleges and universities: What's really going on?. *The Review of Higher Education*, 24(1), 67-85. 10.1353/rhe.2000.0023
- Milner, IV, H. R. (2007). Race, culture, and researcher positionality: Working through dangers seen, unseen, and unforeseen. *Educational Researcher*, 36(7), 388–400. https://doi.org/10.3102/0013189X07309471

- Milner IV, H. R., & Howard, T. C. (2013). Counter-narrative as method: Race, policy and research for teacher education. *Race Ethnicity and Education*, *16*(4), 536-561. http://dx.doi.org/10.1080/13613324.2013.817772
- Milner, H. R., Pabon, A., Woodson, A., & McGee, E. (2013). Teacher education and Black male students in the United States. *Multidisciplinary Journal of Educational Research*, 3(3), 235–265.
  https://www.hipatiapress.com/hpjournals/index.php/remie/article/view/remie.2013.15/pdf
- Monroe, C. R. (2005). Why are" bad boys" always Black?: Causes of disproportionality in school discipline and recommendations for change. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas, 79*(1), 45–50. https://doi.org/10.3200/TCHS.79.1.45-50
- Monroe, C. R. (2006). African American boys and the discipline gap: Balancing educators' uneven hand. *Educational Horizons*, 84(2), 102–111. http://www.jstor.org/stable/42927152
- Morgan, D. L. (1996). Focus groups as qualitative research. (Vol. 16). Thousand Oaks, CA: Sage. https://dx.doi.org/10.4135/9781412984287
- Muir, J. (1996). *Of men and numbers: the story of the great mathematicians*. Courier Corporation.
- Mustaffa, J. B. (2017). Mapping violence, naming life: A history of anti-Black oppression in the higher education system. *International Journal of Qualitative Studies in Education*, *30*(8), 711–727. https://doi.org/10.1080/09518398.2017.1350299
- Nadal, K. L., Wong, Y., Griffin, K. E., Davidoff, K., & Sriken, J. (2014). The adverse impact of racial microaggressions on college students' self-esteem. *Journal of College Student Development*, 55(5), 461–474. https://doi.org/10.1353/csd.2014.0051
- National Student Clearinghouse Research Center. (2018, December 1). Term enrollment estimates. Retrieved from https://nscresearchcenter.org/wpcontent/uploads/CurrentTermEnrollmentReport-Fall-2018-3.pdf
- Ngo, F., & Kwon, W. W. (2015). Using multiple measures to make math placement decisions: Implications for access and success in community colleges. *Research in Higher Education*, 56(5), 442-470. https://link.springer.com/article/10.1007/s11162-014-9352-9
- Noguera, P. A. (2009). *The trouble with Black boys:... And other reflections on race, equity, and the future of public education.* John Wiley & Sons.
- Noguera, P. A. (2003). The trouble with Black boys: The role and influence of environmental and cultural factors on the academic performance of African American males. *Urban Education*, *38*(4), 431–459. https://doi.org/10.1177/0042085903038004005

- O'Connor, C., & Fernandez, S. D. (2006). Race, class, and disproportionality: Reevaluating the relationship between poverty and special education placement. *Educational Researcher*, *35*(6), 6–11. https://doi.org/10.3102/0013189X035006006
- Ogden, P., Thompson, D., Russell, A., & Simons, C. (2003). Supplemental instruction: Short-and long-term impact. *Journal of Developmental Education*, 26(3), 2. https://search.proquest.com/scholarly-journals/supplemental-instruction-short-long-termimpact/docview/228482547/se-2?accountid=201395
- Palmer, R. T., & Young, E. M. (2009). Determined to succeed: Salient factors that foster academic success for academically unprepared Black males at a Black college. *Journal of College Student Retention: Research, Theory & Practice*, 10(4), 465–482. https://doi.org/10.2190/CS.10.4.d
- Patton, J. M. (1998). The disproportionate representation of African Americans in special education: Looking behind the curtain for understanding and solutions. *The Journal of Special Education*, *32*(1), 25–31. https://doi.org/10.1177/002246699803200104
- Patton, M. (2002). Qualitative research & evaluation methods. 3rd ed. Thousand Oaks, CA: Sage. https://doi.org/10.1177/1473325002001003636
- Peller, G. (1990). Race consciousness. *Duke Law Journal*, 758–847. https://core.ac.uk/download/pdf/62549598.pdf
- Phipps, R. (1998). College Remediation: What It Is, What It Costs, What's At Stake.
- Plucker, J. A., Burroughs, N., & Song, R. (2010). Mind the (other) gap! The growing excellence gap in K–12 education. *Center for Evaluation and Education Policy, Indiana University*. https://files.eric.ed.gov/fulltext/ED531840.pdf
- Price, P. G. (2016). Critical race theory. In Oxford research encyclopedia of education. https://doi.org/10.1093/acrefore/9780190264093.013.1
- Ramirez, M. (1997). Supplemental instruction: The long-term impact. Journal of Developmental Education, 21(1), 2.
- Reyes, L. H., & Stanic, G. M. (1988). Race, sex, socioeconomic status, and mathematics. *Journal for research in mathematics education*, 19(1), 26-43. https://doi.org/10.5951/jresematheduc.19.1.0026
- Reynolds, R. (2010). "They think you're lazy," and other messages Black parents send their Black sons: An exploration of critical race theory in the examination of educational outcomes for Black males. Journal of African American Males in Education (JAAME), 1(2), 144-163.
- Rhoden, W. C. (2010). Forty million dollar slaves: The rise, fall, and redemption of the Black athlete. Crown. https://www.penguinrandomhouse.com/books/141584/forty-million-dollar-slaves-by-william-c-rhoden/

- Roberts, D. E. (2004). The social and moral cost of mass incarceration in African American communities. *Faculty Scholarship at Penn Law*. 583. https://scholarship.law.upenn.edu/faculty\_scholarship/583
- Rodriguez, A. J. (1998). Busting open the meritocracy myth: Rethinking equity and student achievement in science education. *Journal of Women and Minorities in Science and Engineering*, 4(2&3). https://doi.org/10.1615/jwomenminorscieneng.v4.i2-3.80
- Rong, X. L. (1996). Effects of Race and Gender on Teachers' Perception of the Social Behavior of Elementary Students. Urban Education, 31(3), 261–290. https://doi.org/10.1177/0042085996031003003
- Rose, G. (1997). Situating knowledges: positionality, reflexivities and other tactics. *Progress in Human Geography*, 21(3), 305–320. https://doi.org/10.1615/jwomenminorscieneng.v4.i2-3.80
- Rubovits, P. C., & Maehr, M. L. (1973). Pygmalion black and white. *Journal of Personality and Social Psychology*, 25(2), 210. https://doi.org/10.1037/h0034080
- Salvo, S. G., Shelton, K., & Welch, B. (2019). African American males learning online: Promoting academic achievement in higher education. *Online Learning*, 23(1), 22–36. https://files.eric.ed.gov/fulltext/EJ1211043.pdf
- Savin-Baden, M., & Howell-Major, C. (2013). Qualitative research: The essential guide to theory and practice. *Qualitative Research: The Essential Guide to Theory and Practice. Routledge*.
- Schaeffer, N.C. (1980). Evaluating race-of-interviewer effects in a national survey. Sociological Methods and Research, 8, 400 419. https://doi.org/10.1177/004912418000800403
- Schuman, H., & Converse, J. M. (1971). The effects of black and white interviewers on black responses in 1968. Public Opinion Quarterly, 35(1), 44-68. https://doi.org/10.1086/267866
- Secada, W. G. (1992). Race, ethnicity, social class, language, and achievement in mathematics. In D. A. Grouws (Ed.), *Handbook of research on mathematics teaching and learning: A project of the National Council of Teachers of Mathematics* (p. 623–660). Macmillan Publishing Co, Inc
- Shifrer, D., Muller, C., & Callahan, R. (2011). Disproportionality and learning disabilities: Parsing apart race, socioeconomic status, and language. *Journal of Learning Disabilities*, 44(3), 246–257. https://doi.org/10.1177/0022219410374236.
- Seidman, I. (2006). Interviewing as qualitative research: A guide for researchers in education and the social sciences. Teachers college press.

- Skiba, R. J., Michael, R. S., Nardo, A. C., & Peterson, R. L. (2002). The color of discipline: Sources of racial and gender disproportionality in school punishment. *The Urban Review*, 34(4), 317–342. https://doi.org/10.1023/A:1021320817372
- Skovsmose, O. (1994). Towards a critical mathematics education. Educational studies in mathematics, 27(1), 35-57. https://doi.org/10.1007/BF01284527
- Smith, W. A., Allen, W. R., & Danley, L. L. (2007). "Assume the position... you fit the description" psychosocial experiences and racial battle fatigue among African American male college students. *American Behavioral Scientist*, 51(4), 551–578. https://doi.org/10.1177/0002764207307742
- Smith, W. A., Hung, M., & Franklin, J. D. (2011). Racial battle fatigue and the miseducation of Black men: Racial microaggressions, societal problems, and environmental stress. *The Journal of Negro Education*, 63–82. http://www.jstor.org/stable/41341106
- Smith, W. A., Mustaffa, J. B., Jones, C. M., Curry, T. J., & Allen, W. R. (2016). 'You make me wanna holler and throw up both my hands!': Campus culture, Black misandric microaggressions, and racial battle fatigue. *International Journal of Qualitative Studies in Education*, 29(9), 1189–1209. https://doi.org/10.1080/09518398.2016.1214296
- Solórzano, D. G., & Yosso, T. J. (2002). Critical race methodology: Counter-storytelling as an analytical framework for education research. Qualitative inquiry, 8(1), 23-44. https://doi.org/10.1177/107780040200800103
- Stewart, D. A. (2004). Effective teaching: A guide for community college instructors. Amer. Assn. of Community Col.
- Stigler, J. W., Givvin, K. B., & Thompson, B. J. (2010). What community college developmental mathematics students understand about mathematics. MathAMATYC Educator, 1(3), 4-16. https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.214.7819&rep=rep1&type=pd f
- Stinson, D. (2008). Negotiating Sociocultural Discourses: The Counter-Storytelling of Academically (And Mathematically) Successful African American Male Students. American Educational Research Journal, 45(4), 975-1010. https://doi.org/10.3102/0002831208319723
- Stinson, D. W. (2011). When the "burden of acting White" is not a burden: School success and African American male students. *The Urban Review*, 43(1), 43– 65. https://doi.org/10.1007/s11256-009-0145-y
- Stinson, D. W. (2013). Negotiating the "White male math myth": African American male students and success in school mathematics. *Journal for Research in Mathematics Education*, 44(1), 69–99. https://doi.org/10.5951/jresematheduc.44.1.0069

- Stinson, D. W., & Bullock, E. C. (2012). Critical postmodern theory in mathematics education research: A praxis of uncertainty. Educational Studies in Mathematics, 80(1), 41-55.
- Strayhorn, T. L. (2012). Satisfaction and retention among African American men at two-year community colleges. Community College Journal of Research and Practice, 36(5), 358-375. https://doi.org/10.1080/10668920902782508
- Strayhorn, T. L. (2015). Factors Influencing Black Males' Preparation for College and Success in STEM Majors: A Mixed Methods Study. *Western Journal of Black Studies*, *39*(1).
- Tate, W. F. (1997). Race-Ethnicity, SES, Gender, and Language Proficiency Trends in Mathematics Achievement: An Update. *Journal for research in mathematics education*, 28(6), 652-679. https://doi.org/10.5951/jresematheduc.28.6.0652
- Terry, Sr, C. L. (2011). Mathematical counterstory and African American male students: Urban mathematics education from a critical race theory perspective. *Journal of Urban Mathematics Education*, 4(1), 23–49. https://doi.org/10.21423/jume-v4i1a98
- Terry, Sr, C. L., & McGee, E. O. (2013). "I've come too far, I've worked too hard": Reinforcement of support structures among Black male mathematics students. *Journal of Mathematics Education at Teachers College*, 3(2). https://doi.org/10.7916/jmetc.v3i2.750
- Tobias, S. (1993). Overcoming math anxiety. WW Norton & Company.
- Thompson, L. R., & Lewis, B. F. (2005). Shooting for the stars: A case study of the mathematics achievement and career attainment of an African American male high school student. *The High School Journal*, 88(4), 6–18. http://www.jstor.org/stable/40364252
- Thompson, H. A. (2010). Why mass incarceration matters: Rethinking crisis, decline, and transformation in postwar American history. *The Journal of American History*, 97(3), 703–734. https://doi.org/10.1093/jahist/97.3.703
- Thompson, L., & Davis, J. (2013). The meaning high-achieving African-American males in an urban high school ascribe to mathematics. The Urban Review, 45(4), 490-517.
- Townsend, B. L. (2000). The disproportionate discipline of African American learners: Reducing school suspensions and expulsions. *Exceptional Children*, 66(3), 381–391. https://doi.org/10.1177/001440290006600308
- Tyler, K. M., Boykin, A. W., & Walton, T. R. (2006). Cultural considerations in teachers' perceptions of student classroom behavior and achievement. *Teaching and Teacher Education*, 22(8), 998–1005. https://doi.org/10.1016/j.tate.2006.04.017
- Varelas, M., Martin, D. B., & Kane, J. M. (2012). Content learning and identity construction: A framework to strengthen African American students' mathematics and science learning in urban elementary schools. Human Development, 55(5-6), 319-339. https://doi.org/10.1159/000345324

Vaughan, G. B. (2006). The community college story. Amer. Assn. of Community Col.

Wacquant, L. (2002). From slavery to mass incarceration. New Left Review, 13.

- Wallace, Jr, J. M., Goodkind, S., Wallace, C. M., & Bachman, J. G. (2008). Racial, ethnic, and gender differences in school discipline among US high school students: 1991-2005. *The Negro Educational Review*, 59(1-2), 47–62. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2678799/
- Warde, B. (2008). Staying the course: Narratives of African American males who have completed a baccalaureate degree. *Journal of African American Studies*, *12*(1), 59-72.
- Warren, C. (2017). Urban Preparation: Young Black Men Moving from Chicago's South Side to Success in Higher Education. Cambridge, MA: Harvard Education Press.
- Watkins, N. L., LaBarrie, T. L., & Appio, L. M. (2010). Black undergraduates' experiences with perceived racial microaggressions in predominately White colleges and universities. In D. W. Sue (Ed.), *Microaggressions and marginality: manifestation, dynamics, and impact* (p. 25–57). John Wiley & Sons Inc.
- Wesley, L., & Ellis, A. L. (2017). Exclusionary discipline in preschool: Young Black boys' lives matter. *Journal of African American Males in Education*, 8(2), 22–29.
- Whiting, G. (2009). Gifted Black males: Understanding and decreasing barriers to achievement and identity. *Roeper Review*, *31*(4), 224–233. https://doi.org/10.1080/02783190903177598
- Whiting, G. W. (2006). From at risk to at promise: Developing scholar identities among Black males. *Journal of Secondary Gifted Education*, 17(4), 222–229. https://doi.org/10.4219/jsge-2006-407
- Wood, J. L. (2014). Apprehension to engagement in the classroom: Perceptions of Black males in the community college. *International Journal of Qualitative Studies in Education*, 27(6), 785–803. https://doi.org/10.1080/09518398.2014.901575
- Wood, J. L., & Ireland, S. M. Y. (2014). Supporting black male community college success: Determinants of faculty–student engagement. Community College Journal of Research and Practice, 38(2-3), 154-165. https://doi.org/10.1080/10668926.2014.851957
- Wood, J. L., & Turner, C. S. (2010). Black males and the community college: Student perspectives on faculty and academic success. *Community College Journal of Research* and Practice, 35(1-2), 135–151. https://doi.org/10.1080/10668926.2010.526052
- Wood, J. L., & Williams, R. C. (2013). Persistence factors for Black males in the community college: An examination of background, academic, social, and environmental variables. *Spectrum: A Journal on Black Men*, 1(2), 1-28. https://doi.org/10.2979/spectrum.1.2.1

- Woodson, A. N., & Pabon, A. (2016). "I'm none of the above": Exploring themes of heteropatriarchy in the life histories of Black male educators. *Equity & Excellence in Education*, 49(1), 57–71. https://doi.org/10.1080/10665684.2015.1121456
- Wright, G. L., Wright, R. R., & Lamb, C. E. (2002). Developmental mathematics education and supplemental instruction: Pondering the potential. Journal of developmental Education, 26(1), 30-32.
- Zamudio, M., Russell, C., Rios, F., & Bridgeman, J. L. (2011). *Critical race theory matters: Education and ideology*. Routledge.