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Black Mathematics Educators: Researching Toward Racial Emancipation of Black Students

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Abstract This article focuses on the scholarship of Black mathematics education researchers whose work focuses on Black students in P–20 mathematics spaces. We conducted a metasynthesis literature review of empirical studies by Black mathematics education researchers. The authors utilized critical theories of race and racism to aid in the synthesis of the literature. The Black researchers we reviewed challenged the perspective that failure and limited persistence in Black students who are learning and participating in mathematics is normative. As a critical defense, these scholars offer research that problematizes test score data, race and racism, opportunities to learn mathematics, identity considerations, and other constructs that produce unequal effects in mathematics learning. We found that Black mathematics education researchers strategically disrupt the deficit narrative about Black students. Black scholars select theoretical frameworks that allow them to focus on race and how racism operates in mathematics education. We present this research to incite dialogue among all mathematics educators about improving the mathematical context for Black students.

Keywords Black students · African American students · K-12 · Higher education · Mathematics education · Race · Racism

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Introduction

> [In our] attempts to alter research, policy, and practice with respect to Black children and mathematics, we claim that asserting and developing an identity of a critical Black scholar is not just a voluntary assertion of identity but, in our view, a necessary one (Martin and Gholson 2012, p. 203).

This manuscript details the research of critical Black mathematics education scholars who have been challenging the dominant, deficit-oriented narrative about Black students in mathematics.[1] This deficit-oriented narrative has represented Black students in a variety of simplistic ways, such as being low-achieving and disengaged learners. Though Black mathematics education scholars are few compared to the larger mainstream education community, they provide relevant explanations of national performance trends of Black P–20 students and insight into the experiences of Black mathematics learners. Some scholars have examined the conditions in which Black students are forced to learn mathematics. These adverse conditions arise from the operationalizing of race and racism to position Black students at the bottom of the racial hierarchy of mathematical ability.

In this article we assert that Black mathematics education scholarship has its own history, which we discuss first. Then we position Black math education scholars in the larger field and establish the significance of race and racism in the way Black children have been taught. After explaining the study's methodology, we present our findings. In general, we found that Black mathematics education researchers have aimed to disrupt the dominant discourse, confront structural obstacles in the education of Black children, and favor mathematics experiences over outcomes. We show how the researchers use critical theories of race, analyze effective and ineffective curricula, and consult one another's work to deepen their investigations. In conclusion, our discussion summarizes and analyzes these scholars' contributions to the field and cites signs of progress being made in understanding and enriching Black students' mathematical experiences.

The History of Black Mathematics Scholarship

The first person to publish on the role of race and racism in mathematics education in the United States was Black historian Carter G. Woodson. Woodson (1933) provided strong evidence that race and racism are prevalent in most aspects of life for Black Americans and that the educational systems to which they had access were particularly inequitable. Woodson's (1933) major thesis is that Black Americans have been educated away from their culture and traditions toward European values and traditions, which is psychologically damaging for Black Americans. As early as

[1] The authors have extended this literature review in forthcoming manuscripts to include the scholarship of Black, Latinx, and Native American mathematics education researchers who have contributed various forms of scholarship (e.g., conceptual articles, literature reviews, policy reviews, and non-human studies).

1933, Woodson proclaimed, "And even in the certitude of science and mathematics it has been unfortunate that the approach to the Negro has been borrowed from a 'foreign method'" (p. 4).

Woodson's thesis, echoed in the scholarship of contemporary Black scholars, is tied to the argument that Black Americans' history of slavery, oppression, and deprivation has produced a collective memory and frame of reference that has influenced the development of African American culture in significant ways (Dumas 2014; Moses and Cobb 2001; Tate 1995; Thompson and Davis 2013). Black researchers have long argued that the mathematics education paradigm largely ignores what is valued and taught in our school systems and that this helps to reproduce the dominant ideology of inequality in U.S. culture (Gholson and Wilkes 2017; Martin 2009; Martin and Gholson 2012). Martin (2009) stated that historically education, particularly certain gatekeepers of mathematics school achievement, plays a crucial role in reproducing societal inequality and actively reinforces existing differences and inequalities.

Veteran Black mathematics scholar and founder of the Algebra Project Dr. Robert P. Moses demonstrated that, beginning with the civil rights movement of the 1960s, those who possess mathematical competency are better positioned than those who do not to reduce structural barriers that often lead to economic dependence, and thereby they have more opportunities to increase autonomy and self-determination (Moses and Cobb 2001). Moses and Cobb took an urgent social stance to argue that mathematics literacy is the key to the future of disenfranchised communities, where Black Americans disproportionately reside. They claim that numeracy is a new civil rights issue because mathematics in general and algebra specifically act as curricular gatekeepers; with success in this content area, significant opportunity opens up both educationally and economically.

What Black Mathematics Education Researchers Bring to the Field of Mathematics Education

Many traditional mathematics education researchers use test scores and other numerical data to measure mathematics achievement outcomes. For example, the assessments conducted by the National Assessment of Educational Progress (NAEP) continue the time-honored tradition of illuminating the achievement gaps without proper diagnosis of the dynamics behind the scores (Nasir and McKinney de Royston 2013; Noble and Morton 2013; Nzuki 2010, 2013; Vanneman et al. 2009; Walker 2011). Scholars of color have been alarmed by the intense focus on and fetishism of the achievement gap by mainstream education researchers. Gutiérrez (2008) presented a strong critique of the consequences associated with general notions of the achievement gap:

> Although the term gap gazing may seem insulting to researchers of the achievement gap, its negative connotation gives voice to a group of concerned researchers like me. Notably, the term gap gazing is being used almost exclusively by faculty of color and people who specialize in equity research. (p. 357)

Scholars of color and other critical researchers are pressing for mathematics education research to incorporate sociocultural theories and practices into their work to better contextualize the mathematics educational landscape (Gholson 2016; Gholson et al. 2012; Leyva 2016, 2017; Martin 2009, 2012; Nasir and McKinney de Royston 2013; Nzuki 2010, 2013; Terry 2010, 2011). Leading the charge are Black mathematics education scholars who approach topics of race and racism thoughtfully and diagnostically to reshape and correct the narratives about Black students, their families, and their communities (Gholson and Wilkes 2017; Leonard and Martin 2013). These critical Black mathematics education scholars redirect the focus and blame from students, their families, and their communities to unearthing external factors that perpetuate the systematic marginalization of Black students (e.g., Larnell et al. 2014; Nasir et al. 2017; Nyamekye 2013; Terry 2010, 2011; Walker 2006). Black mathematics scholars have provided fuller explanations of performance trends, such as how experiences with teachers can influence student performance (Clark et al. 2013; Davis 2014; Id-Deen 2016; Tate 2008; Walker 2006), the low expectations of Black students (Strutchens et al. 2012), the lack of a challenging and culturally considerate curriculum (Davis 2014; Larnell et al. 2016; Leonard et al. 2005), undetected achievement (Morton 2014; Taylor 2009; Walker 2006, 2012), withholding mathematics knowledge from students (Bullock 2017; Gholson and Wilkes 2017), and placement in lower-tracked courses (Berry 2008b). Although these circumstances are largely beyond Black students' control, they have a profound impact on students' educational outcomes (Berry et al. 2011).

Accordingly, Black mathematics researchers draw from sociology and psychology research to refine distinctions between the role of race and racial identity in the mathematics achievement of Black students (e.g., Martin 2000; Nasir 2000, 2002; Nasir and Hand 2008; Nasir et al. 2017; Nasir et al. 2009a; Nasir and McKinney de Royston 2013; Nasir and Shah 2011; Terry 2010, 2011). Black mathematics scholars have shown that inequities in the U.S. education system are rooted in the racial and class nature of this society (Berry 2005a; Nyamekye 2013; Martin 2009; Tate 1995; Terry 2010, 2011). Whereas Black, Latinx, and Native Americans may experience race as salient in most contexts (Martin 2009; Nasir and McKinney de Royston 2013), White teachers often engage in racial indifference and colorblindness and dismiss discussions of White privilege and antiracist pedagogy (Jett 2013a; Ladson-Billings 1998; Martin 2009; Nyamekye 2013).

Thus, critical Black mathematics education scholars together form a strategic counter-resistance to mainstream mathematics education research. These scholars use a variety of techniques, such as citing the research of other Black scholars as seminal contributions (e.g., Berry et al. 2011; Jett 2011, 2016; Nyamekye 2013; Larnell et al. 2014), framing their work with antideficit approaches (e.g., Gholson and Martin 2014; Larnell 2016; Leonard et al. 2005; Nasir 2000, 2002; Taylor 2009), providing more nuanced understanding of Black mathematics learners (Id-Deen 2016; Martin 2009; McGee 2015; Thompson and Lewis 2005; Nasir and McKinney de Royston 2013; Nyamekye 2013), and selecting culturally considerate research methodologies (Gholson et al. 2012; Martin and Gholson 2012; Nasir and McKinney de Royston 2013; Noble 2011; Nzuki 2010, 2013; Terry 2010, 2011) and theoretical frameworks (e.g., critical race theory) that allow deep and critical analysis

(e.g., Jett 2013b, 2016; Martin 2006; Nyamekye 2013; Thompson and Lewis 2005; Walker 2006, 2011, 2012). Their collective research provides a much-needed justice and equity platform for mathematics learning, participation, and achievement for Black mathematics learners.

Interrogating Race and Racism in Mathematics Education

The literature just cited showcases research by Black mathematics education scholars into the racialized experiences of Black people in mathematics education (Martin and Gholson 2012; Tate 1994; Tyson 2003). The commitments of Black mathematics education scholars are critical because the research on academic achievement among Black students has often been misrepresented and misunderstood (O'Connor et al. 2007; Taylor 2009). For example, as Davis (2014) asserted in his study of Black middle school students with low-assessment mathematics performance in a persistently poor-performing school, these students should not be charged with their low performance because external factors, such as a disproportionate rate of underqualified teachers, limited students' exposure to high-quality instruction.

The institutional racism prevalent in education has deeply affected Black students' academic achievement. In the past two decades, more covert forms of racism and the myth of colorblindness have become especially prevalent, which has given many people the impression that equity is not pertinent in education (Bonilla-Silva 2003; Martin 2012; Nelson 2016). Several scholars have used critical race theory (CRT; e.g., Jett 2011, 2013b, 2016; Martin 2006; Nyamekye2013; Nasir and McKinney de Royston 2013; Nzuki 2010; Terry 2010, 2011) and identity (e.g., Larnell et al. 2014; Moody 2004; Nasir 2000, 2002; Nasir et al. 2017; Nzuki 2010, 2013; Thompson and Davis 2013) to theorize about race in the context of mathematics education in order to understand experiences of Black students and positive outcomes in race-conscious environments (Delgado and Stefancic 2001; Ladson-Billings and Tate 1995). Much mainstream education research ignores critical theories of race and as a result, the racial hierarchy of mathematical ability has become widely accepted, although it does not account for disparities in achievement. CRT addresses many issues related to race in education because it draws on historical perspectives and scholarly findings and it centers the voices, perspectives, and experiences of oppressed populations. It also recognizes that racism is implanted in the social structure of the United States (Delgado and Stefancic 2001). Linking critical theories of race and identity provides a pertinent background against which to understand race and racialized experiences of Black people in mathematics. Overall, these theories delve into the social construction of race and allow more critical and productive discussions about education for Black students.

Racializing Mathematics Identities

Significant amounts of mainstream research support the importance of identity construction in mathematics, but very little of it focuses on both mathematics and racial identity. However, some Black mathematics education scholars make

this connection in their research by showing that a mathematics identity is not created in isolation; rather, identities are entangled so that a student's mathematics identity also includes their racial, cultural, gendered, and other identities (Berry 2005b, 2008a; Martin 2000, 2006, 2012; Nasir 2000, 2002; Nasir and Hand 2008; Nasir et al. 2009a; Nasir and McKinney de Royston 2013; Nasir and Shah 2011; Nyamekye 2013; Nzuki 2010, 2013; Thompson and Davis 2013). Mathematics identity is continually constructed based on self-understanding as well as others' perceptions of performance in the context of mathematics (Clark et al. 2013; Larnell 2016; Nasir et al. 2017; Nzuki 2010, 2013).

Methodology

To better understand the contributions of theories and research on race and racism in mathematics education, we conducted a qualitative metasynthesis literature review (Berry et al. 2014; Pan 2016) on the scholarship of critical Black mathematics education scholars between January 2000 and September 2017. Qualitative metasynthesis draws from qualitative studies to make interpretations from the analyzed literature (Walsh and Downe 2005). Black scholars bring readers inside the experiences of Black students, their families, and their communities to provide insight into "what *it means to learn mathematics while Black*" (Martin 2012, p. 49). We zeroed in on Black scholars whose research focuses on Black students in P–20 education with explicit connections to how racism is operationalized in the United States and its impact on the experiences of Black students. Although this paper has a narrow focus on empirical research studies that explicitly discuss Black students in P–20, we recognize that other forms of scholarship add to the collective knowledge on Black students: literature reviews (e.g., Berry et al. 2014; Joseph et al. 2017; Martin 2012), conceptual articles (e.g., Berry 2004; Clark et al. 2013; Jett 2013a; Leonard 2012), historical studies (e.g., Joseph and Jordan-Taylor 2016), critiques (e.g., Gholson 2016; Larnell et al. 2016; Martin 2015; Tate 2008), books (e.g., Leonard and Martin 2013; Martin 2000, 2010), book chapters (e.g., Gholson and Wilkes 2017; Martin and Gholson 2012), and policy-related works (e.g., Jett et al. 2015; Martin 2007, 2015; Tate 1995, 2004).

Black scholars have pioneered the examination of racialized experiences and outcomes of Black students in mathematics education research. Their research has added merit, validity, and holistic understanding of race and racism. To this point, we have condensed the scholarship produced by Black mathematics education scholars related to empirical research studies to ask the following questions:

(1) In what ways do Black mathematics education researchers investigate how race and racism operate for Black students in mathematics education?
(2) In what ways, if any, do Black mathematics scholars resist the dominant narrative about Black students so as to highlight the complexity of their experiences?

Locating Critical Black Mathematics Education Scholars

Since library databases prohibit searching works based on the author's race, we employed nontraditional literature search methods to locate Black scholars. Our data collection for this study consisted of generating a list of names of Black mathematics education scholars active in the field as of September 2017. The second author is a critical Black STEM education researcher, and we developed the initial list from her knowledge of the field. We shared our initial list with three other Black mathematics education scholars, who expanded the list. One scholar we consulted with shared a previously generated list of Black mathematics scholars and practitioners, which we cross-referenced to capture all the Black scholars. Walker (2011) has described how Black networks informally and formally connect and support Black mathematicians, and we developed our list through the use of a Black network. Our list consisted of 77 Black mathematics education scholars and practitioners in U.S. higher education institutions. From the list of 77, we kept those mathematics education researchers who had published works, which reduced the list to thirty. We also would like to acknowledge some of the non-Black researchers who have added to this line of research about Black students in mathematics (Apple 1992, 1995; Gutiérrez 2002, 2008; Gutstein 2003; Oakes 1990; Secada 1992, 1995; Stinson 2006; Usiskin 1993).

Inclusive Criteria for Selecting Empirical Studies

We searched each name individually through EBSCO's Education Source and Education Resources Information Center (ERIC) databases. Both databases are large electronic libraries that allow inclusion criteria. We searched for peer-reviewed articles using author's name, Black or "African American," "African-American," and math*. The quotation marks around the term searched for the words together; for example, *African American* without quotation marks would have found articles that contained African and/or American. The asterisk after "math" allowed us to locate variations of the term (e.g., mathematics, mathematic, and mathematician). In addition, we included two peer-reviewed books that have been edited by Black scholars: *Mathematics Teaching, Learning, and Liberation in the Lives of Black Children* and *The Brilliance of Black Children in Mathematics*. We narrowed our search to *Black* and *African American* to focus only on research explicitly about Black students. All empirical studies published from January 2000 to September 2017 were included. This generated a list of 111 articles, and twenty-one of the thirty authors had search results ("Appendix"). In the next stage of determining which references to include, we used the following inclusion criteria:

- Empirical research study (e.g., qualitative, quantitative, and mixed methods).
- Involved human participants.
- Black or African American learners as primary participants.

- Situated in P–20 mathematics settings in the United States.
- Guided by critical theoretical frameworks (e.g., CRT, everyday racism, identity, and Black feminist thought) and/or made explicit connections to race and racism.
- Black/African American mathematics education researcher as first author.

Determining authorship can vary based on discipline, but typically the first author is the primary voice and contributor (Fine and Kurdek 1993; Winston 1985). This process culminated with 39 articles to analyze for this literature review. We read each publication and completed a chart with the following information: (a) publishing journal, (b) type of study, (c) research question or study purpose, (d) participants, (e) context, and (f) summary of findings. Afterward, we reread each study and conducted in-depth analysis to generate themes.

Findings

The findings we present are interconnected and consisted of three dominant themes: (1) using critical theories of race and identity to disrupt the dominant discourse, (2) Black scholars privileging experiences over mathematics outcomes, and (3) a focus on Black brilliance. Through their research, Black mathematics education scholars are pushing against mainstream education research and the negative propaganda that surrounds Black students. Grant, Crompton, and Ford (2015) asserted, "Many critical researchers have acknowledged that mathematics classrooms and mathematical tasks are not [culturally] neutral or without power dynamics, equitable access and opportunity for engag[ement]," and ignoring these factors means "there is no commitment to social justice and the status quo continues" (p. 95). Critical Black mathematics education scholars integrate societal issues and the voices of Black students to explain the learning context of their research. In addition, they use strong theoretical considerations often underutilized in mathematics education research to provide an alternate perspective to advocate for students and promote change (Martin and Gholson 2012).

Using Critical Theories to Disrupt the Dominant Deficit Narrative

We found that Black mathematics scholars chose their theoretical/conceptual framework(s) and research questions with a perspective guided by the inequities that Black students in mathematics endure and their brilliance in the field spite of these structural obstacles. Their research provides a deep analysis of the racialized nature of Black students' mathematical experiences. Researchers have the autonomy to investigate systemic societal issues or avoid them altogether, but regardless of their research method (mixed methods, quantitative, or qualitative), they select theoretical or conceptual frameworks that drive how they will approach answering research questions.

Each Black scholar we studied selected critical theoretical/conceptual frameworks or a literature foundation (the interrogation of critical literature without using a formal framework) that enabled them to consider the racialized mathematical learning experiences of Black students; examples are CRT (e.g., Berry 2005b, 2008a, b; Berry et al. 2011; Davis 2014; Jett 2011, 2013b, 2016; Martin 2006; Nasir and McKinney de Royston 2013; Nyamekye 2013; Nzuki 2010; Terry 2010, 2011), Black feminist thought (e.g., Borum and Walker 2012; Gholson and Martin 2014; Johnson 2009), African-centered worldview theory (e.g., Thompson and Davis 2013), and critical literature (e.g., Walker 2006, 2012). Critical scholars challenge mainstream mathematics education research in multifaceted ways. They boldly state their racial identities (Larnell 2016; Martin and Gholson 2012), call others to join their cause (e.g., Gholson et al. 2012; Martin 2009), and recognize the brilliance Black students bring to U.S. P–20 classrooms (Clark et al. 2013; Id-Deen 2016; Jett 2013b, 2016; Leonard and Martin 2013; Noble 2011; Nasir and McKinney de Royston 2013; Taylor 2009).

Use of Critical Theories of Race

Mainstream education researchers have underused critical theories of race as a theoretical and methodological framework to investigate the mathematical experiences of Black students. Another primary argument for the use of critical theories of race is that it does not contribute to the marginalization of Black students; instead, it provides a space for them to contribute to knowledge production about the mathematics context from their position (Berry 2005b, 2008a; Davis 2014; Jett 2011, 2013b, 2016; Nyamekye 2013). Several of the studies using CRT have applied this theoretical framework to investigate Black boys and men in mathematics (Berry 2005b, 2008a; Davis 2014; Jett 2011, 2013b, 2016; Terry 2010, 2011). In addition to its use in reexamining the performance of Black students in mathematics education (Jett 2011, 2016; Martin 2006), CRT can be used to listen to the success stories of Black students in mathematics, which could be considered a "rarity" (Walker 2011, p. 21) in mathematics education research (Jett 2011, 2016; Martin 2006; Nasir and McKinney de Royston 2013; Nyamekye 2013; Strutchens and Westbrook 2009; Terry 2010, 2011; Walker 2011). Using CRT as his theoretical framework, Davis (2014) investigated four Black middle school boys in a Baltimore school. The boys participated in the fifteen-week "Just Do It Math Program" offered by the school district to boost the assessment performance of students who were almost proficient in mathematics. Given Baltimore's 97% Black student body in a persistently poor-performing school, Davis believed institutional racism was the culprit: the poor condition of the building and underqualified teachers influenced students' performance. Davis (2014) and other researchers have shown that the mathematics programs most helpful for Black students gave them a culturally centered, meaningful, and challenging curriculum (Berry 2005b, 2008a, b; Davis 2014; Grant et al. 2015; Morton 2014; Nyamekye 2013; Nzuki 2010).

Nasir et al. (2009b) examined the role and impact of racial and ethnic stereotypes in the way Black high school students are perceived and portrayed in their mathematics classrooms. Conducted at an ethnically diverse high school, this yearlong

in-depth observational and qualitative study confirmed a racial hierarchy of mathematics ability where African American students are positioned on the bottom. The authors refer to this hierarchy as the master-narrative and suggest that the racialized talk and behavior that African American students employ is not meaningless social banter, but crucial tools for resisting and subverting dominant cultural ideas.

Middle school has been identified as a pivotal time for Black students to develop healthy mathematics identities that grow in tandem with their other identities, including race, ethnicity, and gender (Berry 2005b, 2008a, b; Davis 2014). Using the lens of institutional racism, racial identity, and mathematics identity, Spencer (2009) undertook a yearlong study of African American students' opportunities to learn and achieve in mathematics at two California middle schools. Her findings suggest that students and teachers can unwittingly reproduce negative views of Blackness that they have appropriated from the racialized master-narrative. Her research has implicated racial inequities and their influence on teacher beliefs and practices, such as some teachers' maintaining deficit views of Black children and their competencies and failing to provide rich mathematics learning opportunities.

In his critical ethnography, Davis (2014) showed that the boys had valid reasons for their disengagement and disinterest in mathematics in school. The Black boys in Davis's study were subjected to the stresses of a high-stakes testing environment. In response to the high-stakes state testing and the persistently low mathematic performance, the district decided to standardize the teaching materials used in mathematics classes. The boys quickly recognized the packetized approach to teaching (*packets* is the term both students and teachers typically used for paper handouts stapled together, usually with repetitive fill-in-the-blank questions). The boys realized the packets contained content they had learned in earlier years and found it repetitive, boring, and unchallenging. The students showed they were not interested in the materials by engaging in disruptive behaviors and skipping class. However, when put in a meaningful learning situation, the students became engaged in learning mathematics and showed growth according to the assessment measures developed by mainstream education research. Thus, Davis showed that external environmental factors affected the students' behavior and performance, which would not have been revealed if he had employed quantitative measures or a deficit-oriented lens. Grant, Crompton, and Ford (2015) wrote, "Classrooms where students engage collaboratively in cognitively demanding tasks are not available to all students, in particular Black students" (p. 90). Berry echoed this finding in several studies (2005a, b, 2008a, b), though his research focused on high-achieving Black middle school boys. Berry acknowledged that Black students being placed in gifted and advanced placement is not the norm for most Black students, they are relegated to lower-tracked classes.

Black girls and women are often ignored or forgotten in gendered racial studies (Borum and Walker 2012; Gholson 2016; Gholson and Wilkes 2017; Johnson 2009; Joseph et al. 2017). McGee and Bentley (2017) used the theoretical lens of structural racism to examine the experiences of three high-achieving Black undergraduate and graduate women in STEM, which revealed that complex forms of racism, sexism, and race-gender bias were salient in their academic experiences. These experiences were sources of strain, which the women dealt with in ways that demonstrated both

resilience and trauma. Johnson (2009) employed Black feminist thought and critical social theory to explore the past and present experiences of two-eighth-grade African American female students, revealing the complexities of Blackness and womanhood that valued both wanting to be cared for and the responsibility of being "strong" and independent.

Using Black feminist thought, Gholson and Martin (2014) conducted a study that challenged the narrative surrounding Black girls in elementary schools. In this work they investigated two high-achieving Black girls who negotiated power in different ways within their peer groups and classrooms. Research on Black students has overwhelmingly focused on learning outcomes, which places Black students at a disadvantage since most measures are narrow and are typically linked to mainstream assessment measures that do not account for Black students' world view (Malloy and Malloy 1998). Gholson and Martin broke from this tradition and took a "micro-sociological [approach]… using the girls' voices in this study to make sense of the emergent social structures that organize access to mathematics participation and learning" (p. 19). Focusing on students' voices and classroom observations provided a deep and nuanced description of the girls' participation. This study showed how Black girls can operate within a space and how their behaviors can be misunderstood and identified. Critical Black scholars provide insight into the complexities and dynamics of the experiences of Black students in P–20 spaces. Black feminist thought allows for the experiences of Black women in mathematics spaces in which they have been historically and contemporarily minoritized based on race and gender (Borum and Walker 2012).

Grounding Research in the Work of Other Black Scholars

Berry, Thunder, and McClain (2011) utilized Martin's (2009) article as a theoretical framework to guide their understanding of mathematics teaching and learning as a "racialized form of experience." They used Martin's article as a conceptual framework because it "contrast[s] approaches to race in mathematics education research, policy, and practice" (Berry et al. 2011, p. 13). Many Black scholars used the research of other critical Black scholars in order to develop their research (e.g., Berry 2005b, 2008a; Berry et al. 2011; Gholson and Martin 2014; Jett 2011, 2013b, 2016; Larnell 2016; Larnell et al. 2014; Noble 2011; Nyamekye 2013; Terry 2010, 2011; Thompson and Davis 2013). For example, Jett (2011) focused on one participant, Roger, a high-achieving Black graduate student in a mathematics program, using Berry's (2005b, 2008a) research on Black high-achieving middle school boys, Thompson and Lewis's (2005) research on a high-achieving Black high school student, and McGee's (2005) study on high-achieving college students to shape his research. Berry's research provided insight into the sources of support the boys had in middle school, like high expectations set by families and community, relationships developed during sports, and the role of community to aid identity development. Berry described the boys in middle school as having sports enhance their in-school learning experiences. Jett noticed that for Roger, from middle school to high school the increasing demands on student athletes began to interfere with learning. Thompson and Lewis (2005) studied Malik, a high school student who aspired to be

a pilot and successfully advocated for a pre-calculus course at his school, thereby demonstrating that Black students are committed to their learning and will advocate for themselves. McGee and Stovall (2016) employed CRT to argue that long-standing theoretical education frameworks and methodologies have failed to provide space for the role of mental health in mediating educational consequences for Black STEM students. This article also critiqued the current emphasis on grit, perseverance, and mental toughness in addressing achievement disparities in both research and practice, positing that we are encouraging Black students and faculty to enter a system that is riddled with race-related discriminatory barriers that have proved harmful to their health and well-being (McGee and Stovall 2016).

Switching Up the Measure: Privileging Experiences to Unpack Math Student Outcomes

Most studies conducted by critical Black mathematics education scholars were qualitative, a few used mixed methods (e.g., Leonard et al. 2005; Morton et al. 2012; Morton 2014; Nasir and McKinney de Royston 2013; Nasir et al. 2009b, 2017; Nzuki 2010, 2013; Taylor 2009), and one was quantitative (Noble and Morton 2013). These studies reveal the ways in which Black students have been challenged by pressures beyond their own agency and resilience, particularly race and racism (Martin 2006). Qualitative research values investigations of the social and cultural nature of schooling Black students (Borum and Walker 2012; Bullock 2012; Duncan 2005; Gholson et al. 2012; Martin 2006; Nyamekye 2013; Stinson and Bullock 2012; Terry 2010, 2011). Moody (2003) wrote, "Listening to [Black students'] stories has the potential to create useful discourse among mathematics educators about specific teaching practices and classroom environments" (p. 33). Listening to students is a qualitative approach to gaining insight into the experiences of Black learners. Bullock (2012) called for more qualitative, in-person interviews with Black students in addition to interdisciplinary approaches. Gholson et al. (2012) wrote,

> Even methodological approaches that claim little or no influence from researcher subjectivity are unable to avoid the residue of researcher bias. This evidence of our positionality as researchers is often not easily seen but becomes evident through careful reflection. As we consider the prevailing axioms about Black children… we must assess our own complicity in the perpetuation and reproduction of these discourses through even those elements of our research that seem insignificant. The way that we select participants, frame interview or research questions, write up our research, solicit grant funding, or even focus on particular students during classroom observations are all influenced by and evidence of the axioms that we choose about teaching, learning, research, and Black children (p. 5)

Black mathematics education researchers are themselves the research instrument, and they bring with them the ways they view and navigate the world as Black people (Gholson et al. 2012; Larnell 2016; Thompson and Davis 2013; Terry 2010, 2011; Tyson 2003). They can redirect the focus from students and their families to

systemic issues that surround Black people. These scholars bring readers into Black students' experiences through their research and provide a nuanced understanding of being a racialized person in the United States (e.g., Id-Deen 2016; Nyamekye 2013; Nasir and McKinney de Royston 2013; Nasir 2000, 2002; Nasir et al. 2017; Nzuki 2010; Terry 2010, 2011).

For example, Taylor (2009) approached his research of Black elementary students from working-class and poor families differently and created nontraditional forms of measuring outcomes. He conducted a two-part mixed-method study that looked at Black students' spending practices and connected it to their mathematical abilities. He believed students used mathematics every day but mainstream measures did not capture it. The study investigated two places: the local general (and liquor) store and the in-class mock store. Taylor found that Black students made sense of currency and purchasing in strategic ways; they had a sophisticated mathematical purchasing understanding that could be used as prior knowledge and that demonstrated student engagement. However, Taylor (2009) wrote:

> It should also be understood students' mathematical understanding might not be compatible with what is being taught in school, because students learn non-standard uses of currency that may influence their mathematical understandings…. It is important for educators to make connections between students' informal understandings and mathematics valued in the classroom (p. 412)

Taylor charged teacher professional development to support connections between the mathematics classroom and the mathematics embedded in students' lives. Berry and McClain (2009) investigated the pedagogical styles of White mathematics middle school teachers, and in particular the impact of their teaching on African American students. They concluded that teachers who embodied the tenets associated with culturally relevant pedagogy and are "warm demanders" are the most effective mathematics teachers for African American students. In collaboration with other researchers, Nasir has investigated Black students' use of mathematical knowledge through the cultural activities basketball and dominos (Nasir 2000, 2002; Nasir and Hand 2008; Nasir et al. 2009b, 2017; Nasir and McKinney de Royston 2013; Nasir and Shah 2011). Nasir has argued that the skills Black students use in basketball and dominos can be connected to classroom mathematics content. Not all Black students engage in these activities, however, so Nasir warns educators against reinforcing negative assumptions about Black students when attempting to make cultural connections with mathematics teaching and learning. Black students' everyday cultural use of mathematics content can be utilized as learning opportunities to bridge to classroom mathematics content.

A Focus on Black brilliance: Leveraging Black Student Populations to Disrupt Mainstream Research

Several Black scholars have focused their research on high-achieving Black students (Berry 2005b, 2008a, b; Ellington and Frederick 2010; Gholson and Martin 2014; Jett 2011, 2013b, 2016; Larnell 2016; McGee 2015; Moody 2004; Nzuki 2010, 2013; Russell 2013; Walker 2006, 2011, 2012). However, we are in no way claiming

Black scholars value high-achieving students over the general Black student population. We believe high-achieving Black students are used for two reasons: to disrupt the literature of who is identified as high-achieving and to provide insight into the experiences of Black mathematics students. These scholars examined how racism in mathematics education reproduces racial advantages for White and some Asian students and disadvantages Black students and other historically marginalized students. They offer insight and extend analyses of the ways that race has been inadequately conceptualized in mainstream mathematics education.

Black students have the highest risk of having their intelligence and skills go unrecognized by traditional measures (Jett 2013a, 2016; Terry 2010; Nzuki 2010), especially if they come from poor and working-class families (Berry 2005b, 2008a; Clark et al. 2013; Nyamekye 2013; Taylor 2009). Grant, Crompton, and Ford (2015) said, "Segregation has been re-enacted through testing and tracking in many schools, and the brilliance of Black children has been largely ignored by the majority of mathematics educators and researchers "(p. 89). Ability grouping through the use of standardized assessments reifies the assumption that White and Asian students are superior in mathematics since they outperform Black students, which confirms their placement at the top of the racial hierarchy (Gholson and Wilkes 2017; Martin 2009, 2012).

Black students are the least likely to be identified as high-achieving. Berry gives examples of the scrutiny Black boys face and has repeatedly found that Black boys are subjected to additional layers of examination that their White counterparts are not (2004, 2005b, 2008a). Black boys have their behavior and mathematical intellect evaluated together to determine if they would be a "good fit" for advanced placement or gifted programming. Even in predominantly Black schools, Black students are in the minority of those selected for AP. While AP or gifted placement does provide Black students with access to intellectual property (Bullock 2017; Gholson and Wilkes 2017), it does not change the fact they are Black and operating in a White-normed paradigm (Jett 2010; Nyamekye 2013).

Walker (2006), aware of the arbitrary "good fit" behavior measurement used by teachers to identify Black and Latinx high-achieving high school students, asked students who else should be included as high-achieving. This allowed her to expand her study to include a more representative sample of high-achieving students in the school since students acknowledged their peers' intellect but not their behavior. "Low-achieving" students were not the focus of her study, but Walker wrote that "a student reported that she studied her [high-achieving] counterpart and changed her behavior so that she, too, would do well in mathematics" (2006, p. 67). It is common for Black students' brilliance to be ignored and their behavior to be noticed. This shows students that they should behave in ways that align to the White normed mainstream standard. Similarly, Russell (2013) explored in-school and out-of-school factors that influence successful mathematics achievement of African American students raised and socialized in U.S. schools, where success was defined by the students themselves. Russell employed interviews as "critical readings to talk back, challenge, and interrogate the mainstream image of mathematics" (p. 313) achievement. Results revealed three pivotal factors as influential to their success: (1) connections with math teachers, (2) strong social networks that make it possible to achieve certain ends, and (3) mediating their math identities.

As Lorde (2012) boldly stated, "*For the master's tools will never dismantle the master's house.* They may allow us temporarily to beat him at his own game, but they will never enable us to bring about genuine change" (p. 112). Black mathematics education scholars are making their own tools for the purpose of intentionally refuting the dominant deficit narrative about Black students and drawing attention to systemic issues (e.g., Clark et al. 2013; Leonard et al. 2005; Taylor 2009).

Discussion and Conclusion

This review stands with Martin and Gholson's (2012) article, "On Becoming and Being a Critical Black Scholar in Mathematics Education," which foregrounds the experiences of race and identity in the development of their own scholarly work and in conceptualizing what it means to be a critical Black scholar. As a critical defense against inequity, injustice, and racism in mathematics education, these Black mathematics education scholars offer research that problematizes the complexities of "learning mathematics while Black" and calls out unequal effects in mathematics learning. We present their insight and strategies for improving mathematics achievement for Black Americans in order to start dialogue among all mathematics educators about improving the mathematical experiences, outcomes, and career trajectories of Black students.

In line with the spirit and purpose of this special issue of *The Urban Review* on Black teachers Black teachers, Black education researchers have many commonalities in their struggles as they try to push back against the marginalization of P–20 Black mathematics learners while contending with their own marginalization. In fact, many critical Black mathematics education scholars have taught mathematics, and they bring with them their experiences as teachers and students (e.g., Berry 2005a, b). Ladson-Billings (2009) has described the stress and strain for many Black educators who are expected to assimilate into mainstream cultural norms and are measured in ways that reify these norms. That is, Black teachers are often expected to emulate White cultural norms that can contrast with their own. With a teaching force that is racially dominated by White teachers and with the Black teaching population being on a steady decline since the famous *Brown v. the Board of Education* ruling (Milner and Howard 2004), Black teachers, like Black scholars, must navigate a terrain in which they are outnumbered. This can lead to the illusion that their words are not significant because they are not the words of the majority.

Delpit (1988) opened her widely cited article, "The Silenced Dialogue: Power and Pedagogy in Educating Other People's Children", with two Black educators. The article is typically cited for the five rules for the culture of power, in which she asserts that if marginalized Black children are taught the hidden rules of the culture of power, they can acquire more power in their K–12 classrooms in which oppressive practices are entrenched. This article is less acknowledged for the silencing of Black educators who try to share their cultural knowledge about Black students. Delpit (1988) recounted the words of a Black female teacher in an urban school district as she describes her interactions with her White colleagues when discussing Black students:

> When you're talking to White people they still want it to be their way. You can try to talk to them and give them examples, but they're so headstrong, they think they know what's best for everybody, for everybody's children. They won't listen, White folks are going to do what they want to do anyway. It's really hard. They just don't listen well. No, they listen, but they don't hear—you know how your mama used to say you listen to the radio, but you hear your mother? Well they don't hear me.
> So I just try to shut them out so I can hold my temper. You can only beat your head against a brick wall for so long before you draw blood. If I try to stop arguing with them I can't help myself from getting angry. Then I end up walking around praying all day "Please Lord, remove the bile I feel for these people so I can sleep tonight." It's funny, but it can become a cancer, a sore.
> So, I shut them out. I go back to my own little cubby, my classroom, and I try to teach the way I know will work, no matter what those folk say. And when I get Black kids, I just try to undo the damage they did (Delpit 1988, p. 280–281).

The words of this anonymous Black educator strongly communicate both her frustrations at having her voice and contributions marginalized and her feelings about how Black students are negatively affected in school. Her powerful statement is in line with Black mathematics educations scholars. In this article, we focused on the calculated resistance of Black scholars who are using their scholarship to combat mainstream education research that negatively depicts Black students. Black teachers can leverage their own experiences as well as the research of critical Black scholars to demonstrate that, while they might be small in number, their stance and perspective about Black students is in harmony with scholarship.

We remain encouraged by the recent and steady contributions of mathematics educators of all racial backgrounds. Education scholars have emerged who illuminate the challenges and opportunities of Black students' mathematics learning and participation, and their work offers nondeficit, insightful analysis of the mathematical experiences and outcomes of Black students (Apple 1992, 1995; Gutiérrez 2002, 2008; Gutstein 2003; Leyva 2016, 2017; Oakes 1990; Secada 1992, 1995; Stinson 2006; Usiskin 1993). We also recommend that Black mathematics education teachers and faculty not work in isolation. Many critical mathematics education scholars are members of organizations that support students of color thriving in mathematics. There are mathematics education groups of color dedicated to exposing the multiple forms of marginalization that students, teachers, and faculty of color endure. One such organization is the Benjamin Banneker Association, a national nonprofit dedicated to mathematics education advocacy, establishing a presence for leadership, and professional development to support teachers in leveling the playing field for mathematics learning of the highest quality for African American students. The Mathematics Education Scholars of Color (MESOC) emerged recently as an affirming space to discuss, interrogate, and collaborate on the purpose of mathematics education, those served by mathematics education, the type of methodologies used in the field, and the appropriateness of interventions that work, to name a few of their aims. Overwhelmingly, these educators have implicated traditional

mathematics education pedagogy, curriculum, and research in the reproduction of systems of class, race, gender, age, and other systems of oppression. We stand in solidarity with these organizations, and we see the utility of showcasing the accomplishments of Black mathematics education in making the plea for equity and justice in the field.

Appendix

List of Black scholars and manuscripts

List of Black scholars	Search results for manuscripts
Carol Malloy	No manuscripts were found that met the study criteria
Christine Thomas	No manuscripts were found that met the study criteria
Christopher Jett	Jett (2010, 2011, 2013a, b)
Crystal Hill-Morton	Morton et al. (2012), Morton (2014)
Danny B. Martin	Martin (2006)
Dorothy White	White (2001)
Duane Cooper	No manuscripts were found that met the study criteria
Edd Taylor	Taylor (2009)
Erica Walker	Walker (2006, 2011, 2012)
Erika Bullock	No manuscripts were found that met the study criteria
Francis Nzuki	Nzuki (2010, 2013)
Gregory Larnell	Larnell et al. (2014), Larnell (2016)
Imani Masters-Goffney	No manuscripts were found that met the study criteria
Jacqueline Leonard	Leonard et al. (2005)
Joi Spencer	Spencer (2009)
Julius Davis	Davis (2014)
Kara Johnson	Johnson (2009)
LaTasha Thompson	Thompson and Lewis (2005), Thompson and Davis (2013)
Lawrence M. Clark	Clark et al. (2013)
Lou Matthews	No manuscripts were found that met the study criteria
Maisie Gholson	Gholson and Martin (2014)
Marliyn Strutchens	No manuscripts were found that met the study criteria
Melva R. Grant	Grant et al. (2015)
Natasha D. Brewley	No manuscripts were found that met the study criteria
Na'ilah Suad Nasir	Nasir (2000, 2002), Nasir and Hand 2008, Nasir et al. (2009a, b, 2017), Nasir and McKinney de Royston (2013), Nasir and Shah (2011)
Nicole Joseph	No manuscripts were found that met the study criteria
Nicole Russell	Russell (2013)
Robert Q. Berry III	Berry (2005a, b, 2008a, b), Berry et al. (2011)
Roni Ellington	Ellington and Frederick (2010)
Vivian Moody	Moody (2003, 2004)
William F. Tate IV	No manuscripts were found that met the study criteria

References

Apple, M. (1992). Do the standards go far enough? Power, policy, and practice in mathematics education. *Journal for Research in Mathematics Education, 23*(5), 412–431.

Apple, M. W. (1995). Taking power seriously: New directions in equity in mathematics education and beyond. In W. G. Secada, E. Fennema, & L. B. Adajian (Eds.), *New directions for equity in mathematics education* (pp. 329–348). New York: Cambridge University Press.

Berry, R. Q. (2004). The equity principle through the voices of African American males. *Mathematics Teaching in the Middle School, 10*(2), 100–103.

Berry, R. Q. (2005a). Introduction: Building an infrastructure for equity in mathematics education. *The High School Journal, 88*(4), 1–5.

Berry, R. Q. (2005b). Voices of success: Descriptive portraits of two successful African American male middle school mathematics students. *Journal of African American Studies, 8*(4), 46–62.

Berry, R. Q. (2008a). Access to upper-level mathematics: The stories of successful African American middle school boys. *Journal for Research in Mathematics Education, 39*(5), 464–488.

Berry, R. Q. (2008b). Mathematically successful sons: The roles perceptions, and experiences of African American parents. *Adults Learning Mathematics, 3*(n2b), 23–35.

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

Berry, R. Q., III, & McClain, O. L. (2009). Contrasting pedagogical styles and their impact on African American students. In D. B. Martin (Ed.), *Mathematics teaching, learning, and liberation in the lives of Black children* (pp. 123–144). New York: Routledge.

Berry, 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, 2*(1), 10–23.

Bonilla-Silva, E. (2003). *Racism without racists: Color-blind racism and the persistence of racial inequality in the United States*. Lanham, MD: Rowman & Littlefield.

Borum, V., & Walker, E. (2012). What makes the difference? Black women's undergraduate and graduate experiences in mathematics. *The Journal of Negro Education, 81*(4), 366–378.

Bullock, E. C. (2012). Conducting "good" equity research in mathematics education: A question of methodology. *Journal of Mathematics Education at Teachers College, 3*(2), 30–36.

Bullock, E. C. (2017). Only STEM can save us? Examining race, place, and STEM education as property. *Educational Studies, 53*(6), 1–14.

Clark, L. M., Badertscher, E. M., & Napp, C. (2013a). African American mathematics teachers as agents in their African American students' mathematics identity formation. *Teachers College Record, 115*(2), 1–36.

Clark, L. M., Frank, T. J., & Davis, J. (2013b). Conceptualizing the African American mathematics teacher as a key figure in the African American education historical narrative. *Teachers College Record, 115*(2), 1–29.

Davis, J. (2014). The mathematical experiences of Black males in a predominantly Black urban middle school and community. *International Journal of Education in Mathematics, Science and Technology, 2*(3), 202–222.

Delgado, R., & Stefancic, J. (2001). *Critical race theory: An introduction*. New York: New York University Press.

Delpit, L. (1988). The silenced dialogue: Power and pedagogy in educating other people's children. *Harvard Educational Review, 58*(3), 280–299.

Dumas, M. J. (2014). 'Losing an arm': Schooling as a site of black suffering. *Race Ethnicity and Education*, *17*(1), 1–29.

Duncan, G. A. (2005). Critical race ethnography in education: Narrative, inequality and the problem of epistemology. *Race Ethnicity and Education, 8*(1), 93–114.

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.

Fine, M. A., & Kurdek, L. A. (1993). Reflections on determining authorship credit and authorship order on faculty–student collaborations. *American Psychologist, 48*(11), 1141.

Gholson, M. L. (2016). Clean corners and algebra: A critical examination of the constructed invisibility of black girls and women in mathematics. *Journal of Negro Education, 85*(3), 290–301.

Gholson, M. L., Bullock, E. C., & Alexander, N. N. (2012). On the brilliance of Black children: A response to a clarion call. *Journal of Urban Mathematics Education, 5*(1), 1–7.
Gholson, M. L., & Martin, D. B. (2014). Smart girls, Black girls, Mean girls, and bullies: At the intersection of identities and the mediating role of young girls' social network in mathematical communities of practice. *Journal of Education, 194*(1), 19–33.
Gholson, M. L., & Wilkes, C. E. (2017). (Mis)taken identities: Reclaiming identities of the "collective Black" in mathematics education research through an exercise in black specificity. *Review of Research in Education, 41*(1), 228–252.
Grant, M. R., Crompton, H., & Ford, D. J. (2015). Black male students and the Algebra Project: Mathematics identity as participation. *Journal of Urban Mathematics Education, 8*(2), 87–118.
Gutiérrez, R. (2002). Enabling the practice of mathematics teachers in context: Toward a new equity research agenda. *Mathematical Thinking and Learning, 4*(2–3), 145–187.
Gutiérrez, R. (2008). A "gap-gazing" fetish in mathematics education? Problematizing research on the achievement gap. *Journal for Research in Mathematics Education, 39*(4), 357–364.
Gutstein, E. (2003). Teaching and learning mathematics for social justice in an urban, Latino school. *Journal for Research in Mathematics Education, 34*(1), 37–73.
Id-Deen, L. (2016). Hidden casualties of urban teacher turnover: Black students share their experiences. *Journal of Urban Learning, Teaching, and Research, 12,* 142–149.
Jett, C. C. (2010). "Many are called, but few are chosen": The role of spirituality and religion in the educational outcomes of "chosen" African American male mathematics majors. *The Journal of Negro Education, 79*(3), 324–334.
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.
Jett, C. C. (2013a). Culturally responsive collegiate mathematics education: Implications for African American students. *Interdisciplinary Journal of Teaching and Learning, 3*(2), 102–116.
Jett, C. C. (2013b). HBCUs propel African American male mathematics majors. *Journal of African American Studies, 17*(2), 189–205.
Jett, C. C. (2016). Ivy league bound: A case study of a brilliant African American male mathematics major. *Spectrum: A Journal on Black Men, 4*(2), 83–97.
Jett, C. C., Stinson, D. W., & Williams, B. A. (2015). Communities for and with Black male students. *Mathematics Teacher, 109*(4), 284–289.
Johnson, K. (2009). The social construction of Youth and Mathematics: The case of a fifth-grade classroom. In D. B. Martin (Ed.), *Mathematics teaching, learning, and liberation in the lives of Black children* (pp. 175–199). New York: Routledge.
Joseph, N. M., Hailu, M., & Boston, D. (2017). Black women's and girls' persistence in the P–20 mathematics pipeline: Two decades of children, youth, and adult education research. *Review of Research in Education, 41*(1), 203–227.
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.
Ladson-Billings, G. (1998). Just what is critical race theory and what's it doing in a nice field like education? *International Journal of Qualitative Studies in Education, 11*(1), 7–24.
Ladson-Billings, G. (2009). 'Who you callin'nappy-headed?'A critical race theory look at the construction of Black women. *Race Ethnicity and Education, 12*(1), 87–99.
Ladson-Billings, G., & Tate, W. F. (1995). Toward a critical race theory of education. *Teachers College Record, 97,* 47–68.
Larnell, G. V. (2016). More than just skill: Examining mathematics identities, racialized narratives, and remediation among black undergraduates. *Journal for Research in Mathematics Education, 47*(3), 233–269.
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.
Larnell, G. V., Bullock, E. C., & Jett, C. C. (2016). Rethinking teaching and learning mathematics for social justice from a critical race perspective. *Journal of Education, 196*(1), 19–29.
Leonard, J. (2012). Er'body talkin''bout social justice ain't goin' there. *Journal of Urban Mathematics Education, 5*(2), 18–27.
Leonard, J., Davis, J. E., & Sidler, J. L. (2005). Cultural relevance and computer-assisted instruction. *Journal of Research on Technology in Education, 37*(3), 263–284.

Leonard, J., & Martin, D. B. (Eds.). (2013). *The brilliance of Black children in mathematics*. Charlotte, NC: Information Age Publishing.
Leyva, L. A. (2016). An intersectional analysis of Latin@ college women's counter-stories in mathematics. *Journal of Urban Mathematics Education, 9*(2), 81–121.
Leyva, L. A. (2017). Unpacking the male superiority myth and masculinization of mathematics at the intersections: A review of research on gender in mathematics education. *Journal for Research in Mathematics Education, 48*(4), 397–433.
Lorde, A. (2012). *Sister outsider: Essays and speeches*. Berkeley, CA: Crossing Press.
Malloy, C. E., & Malloy, W. W. (1998). Issues of culture in mathematics teaching and learning. *The Urban Review, 30*(3), 245–257.
Martin, D. B. (2000). *Mathematics success and failure among African-American youth: The roles of sociohistorical context, community forces, school influence, and individual agency*. Mahwah, NJ: Lawrence Erlbaum.
Martin, D. B. (2006). Mathematics learning and participation as racialized forms of experience: African American parents speak on the struggle for mathematics literacy. *Mathematical Thinking and Learning, 8*(3), 197–229.
Martin, D. B. (2007). Beyond missionaries or cannibals: Who should teach mathematics to African American children? *The High School Journal, 91*(1), 6–28.
Martin, D. B. (2009). Researching race in mathematics education. *Teachers College Record, 111*(2), 295–338.
Martin, D. B. (Ed.). (2010). *Mathematics teaching, learning, and liberation in the lives of Black children*. New York, NY: Routledge.
Martin, D. B. (2012). Learning mathematics while Black. *The Journal of Educational Foundations, 26*(1/2), 47.
Martin, D. B. (2015). The collective Black and "principles to actions.". *Journal of Urban Mathematics Education, 8*(1), 17–23.
Martin, D. B., & Gholson, M. (2012). On becoming and being a critical Black scholar in mathematics education. In O. Skovsmose & B. Greer (Eds.), *Opening the cage: Critique and politics of mathematics education* (pp. 203–222). Berlin: Springer Science & Business Media.
McGee, E. O. (2005). *Chronicles of success: Black students achieving in mathematics, science and engineering*. Retrieved from: https://blacksuccessfoundation.org/reports/.
McGee, E. O. (2015). Robust and fragile mathematical identities: A framework for exploring racialized experiences and high achievement among black college students. *Journal for Research in Mathematics Education, 46*(5), 599–625.
McGee, E. O., & Bentley, L. (2017). The troubled success of Black women in STEM. *Cognition and Instruction, 35*(4), 265–289.
McGee, E. O., & Stovall, D. O. (2016). The mental health of Black college students: A call for critical race theorists to integrate mental health into the analysis. *Republished in Harvard Journal of African American Public Policy, 2015–16,* 41–60.
Milner, H. R., & Howard, T. C. (2004). Black teachers, Black students, Black communities, and Brown: Perspectives and insights from experts. *Journal of Negro Education, 73*(3), 285–297.
Moody, V. R. (2003). The ins and outs of succeeding in mathematics: African American students' notions and perceptions. *Multicultural Perspectives, 5*(1), 33–37.
Moody, V. R. (2004). Sociocultural orientations and the mathematical success of African American students. *The Journal of Educational Research, 97*(3), 135–146.
Morton, C. H. (2014). A story of African American students as mathematics learners. *International Journal of Education in Mathematics, Science and Technology, 2*(3), 234–245.
Morton, C. H., Yow, J. A., & Cook, D. A. (2012). Challenging minds: Enhancing the mathematical learning of African American students through games. *Curriculum and Teaching Dialogue, 14*(1/2), 105A.
Moses, R. P., & Cobb, C. E. (2001). *Radical equations: Math literacy and civil rights*. Boston: Beacon Press.
Nasir, N. S. (2000). "Points Ain't Everything": Emergent Goals and Average and Percent Understandings in the Play of Basketball among African American Students. *Anthropology & Education Quarterly, 31*(3), 283–305.
Nasir, N. S. (2002). Identity, goals, and learning: Mathematics in cultural practice. *Mathematical thinking and learning, 4*(2–3), 213–247.

Nasir, N. S., Atukpawu, G., O'Connor, K., Davis, M., Wischnia, S., & Tsang, J. (2009a). Wrestling with the legacy of stereotypes: Being African American in math class. In D. B. Martin (Ed.), *Mathematics teaching, learning, and liberation in the lives of Black children* (pp. 231–248). New York: Routledge.

Nasir, N. S., & Hand, V. (2008). From the court to the classroom: Opportunities for engagement, learning, and identity in basketball and classroom mathematics. *The Journal of the Learning Sciences, 17*(2), 143–179.

Nasir, N. S., & McKinney de Royston, M. M. (2013). Power, Identity, and Mathematical Practices Outside and Inside School. *Journal for Research In Mathematics Education, 44*(1), 264–287.

Nasir, N. S., McKinney de Royston, M., O'Connor, K., & Wischnia, S. (2017). Knowing about racial stereotypes versus believing them. *Urban Education, 52*(4), 491–524.

Nasir, N. S., McLaughlin, M. W., & Jones, A. (2009b). What does it mean to be African American? Constructions of race and academic identity in an urban public high school. *American Educational Research Journal, 46*(1), 73–114.

Nasir, N. S., & Shah, N. (2011). On defense: African American males making sense of racialized narratives in mathematics education. *Journal of African American Males in Education, 2*(1), 24–45.

Nelson, S. L. (2016). Different script, same caste in the use of passive and active racism: A critical race theory analysis on the (Ab) use of house rules in race-related education cases. *Washington and Lee Journal of Civil Rights and Social Justice, 22*, 297.

Noble, R. (2011). Mathematics self-efficacy and African American male students: An examination of models of success. *Journal of African American Males in Education, 2*(2), 188–213.

Noble, R., & Morton, C. (2013). African Americans and mathematics outcomes on national assessment of educational progress: Parental and individual influences. *Journal of Child and Family Studies, 22*(1), 30–37.

Nzuki, F. (2013). Exploring the co-development of mathematical and technological knowledge among African American students. In *Learning tools and teaching approaches through ICT advancements* (pp. 57–67). IGI Global.

Nyamekye, F. (2013). Separate schooling for Black adolescent mathematics learners. *For the Learning of Mathematics, 33*(3), 7–13.

Nzuki, F. M. (2010). Exploring the nexus of African American students' identity and mathematics achievement. *Journal of Urban Mathematics Education, 3*(2), 77–115.

O'Connor, C., Lewis, A., & Mueller, J. (2007). Researching "Black" educational experiences and outcomes: Theoretical and methodological considerations. *Educational Researcher, 36*(9), 541–552.

Oakes, J. (1990). *Multiplying inequities: The effects of race, social class, and tracking on opportunities to learn mathematics and science*. Santa Monica, CA: RAND.

Pan, M. L. (2016). *Preparing literature reviews: Qualitative and quantitative approaches*. New York: Routledge.

Russell, N. M. (2013). Unpacking brilliance: A new discourse for Black students and successful mathematics achievement. In J. Leonard & D. B. Martin (Eds.), *Beyond the numbers and toward new discourse: The brilliance of Black children in mathematics*. Charlotte, NC: Information Age.

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* (pp. 623–660). New York: Macmillan.

Secada, W. G. (1995). Social and critical dimensions for equity in mathematics education. In W. G. Secada, E. Fennema, & L. B. Adajion (Eds.), *New directions for equity in mathematics education* (pp. 329–348). New York: Cambridge University Press.

Spencer, J. A. (2009). Identity at the crossroads: Understanding the practices and forces that shape African American success and struggle in mathematics. In D. B. Martin (Ed.), *Mathematics teaching, learning, and liberation in the lives of Black children* (pp. 200–230). New York: Routledge.

Stinson, D. W. (2006). African American male adolescents, schooling (and mathematics): Deficiency, rejection, and achievement. *Review of Educational Research, 76*(4), 477–506.

Stinson, D. W., & Bullock, E. C. (2012). Critical postmodern theory in mathematics education research: A praxis of uncertainty. *Educational Studies in Mathematics, 80*(1–2), 41–55.

Strutchens, M., Bay-Williams, J., Civil, M., Chval, K., Malloy, C., White, D., et al. (2012). Foregrounding equity in mathematics teacher education. *Journal of Mathematics Teacher Education, 15*(1), 1–7.

Strutchens, M. E., & Westbrook, S. K. (2009). Opportunities to learn geometry: Listening to the voices of three African American high school students. In D. B. Martin (Ed.), *Mathematics teaching, learning, and liberation in the lives of black children* (pp. 249–264). New York: Routledge.

Tate, W. F. (1994). From inner city to ivory tower: Does my voice matter in the academy? *Urban Education, 29*(3), 245–269.

Tate, W. F. (1995). Returning to the root: A culturally relevant approach to mathematics pedagogy. *Theory into Practice, 34,* 166–173.

Tate, W. F. (2004). Chapter 5: Brown, political economy, and the scientific education of African Americans. *Review of Research in Education, 28*(1), 147–184.

Tate, W. F. (2008). The political economy of teacher quality in school mathematics: African American males, opportunity structures, politics, and method. *American Behavioral Scientist, 51*(7), 953–971.

Taylor, E. V. (2009). The purchasing practice of low-income students: The relationship to mathematical development. *The Journal of the Learning Sciences, 18*(3), 370–415.

Terry, C. L. (2010). Prisons, pipelines, and the president: Developing critical math literacy through participatory action research. *Journal of African American Males in Education, 1*(2), 73–104.

Terry, 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.

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.

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.

Tyson, C. (2003). Research, race, and an epistemology of emancipation. *Counterpoints, 195,* 19–28.

Usiskin, Z. (1993). If everybody counts, why do so few survive? In G. Cuevas & M. Driscoll (Eds.), *Reaching all students with mathematics* (pp. 7–22). Reston, VA: NCTM.

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

Walker, E. N. (2006). Urban high school students' academic communities and their effects on mathematics success. *American Educational Research Journal, 43*(1), 43–73.

Walker, E. N. (2011). Supporting giftedness: Historical and contemporary contexts for mentoring within Black mathematicians' academic communities. *Canadian Journal of Science, Mathematics and Technology Education, 11*(1), 19–28.

Walker, E. N. (2012). Cultivating mathematics identities in and out of school and in between. *Journal of Urban Mathematics Education, 5*(1), 66–83.

Walsh, D., & Downe, S. (2005). Meta-synthesis method for qualitative research: A literature review. *Journal of Advanced Nursing, 50*(2), 204–211.

White, D. Y. (2001). Kenta, kilts, and kimonos: Exploring cultures and mathematics through fabrics. *Teaching Children Mathematics*, *7*(6), 354.

Winston, R. B. (1985). A suggested procedure for determining order of authorship in research publications. *Journal of Counseling & Development, 63*(8), 515–518.

Woodson, C. G. (1933). *The mis-education of the Negro*. Trenton, NJ: First Africa World Press.