

Racism, Assessment, and Instructional Practices: Implications for Mathematics Teachers of African American Students

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Couched within a larger critique of assessment practices and how they are used to stigmatize African American children, the authors examine teachers' instructional practices in response to demands of increasing test scores. Many mathematics teachers might be unaware of how these test-driven instructional practices can simultaneously reflect well-intentioned motivations and contribute to the oppression of their African American students. The authors further argue that the focus of assessing African American children via comparison to white children reveals underlying institutionally-based racist assumptions about the competencies of African American students. Strategies are suggested for helping teachers resist test-driven instructional practices while promoting excellence and empowerment for African American students in mathematics.

KEYWORDS: African American students, assessment, instructional practice, racial hierarchy, racism

Although the phrase “teaching to the test” has been spoken in hallways and teachers’ lounges throughout the nation’s public schools for decades, with the passage of the No Child Left Behind Act of 2001 (NCLB),¹ the phrase has become somewhat of a formalized instructional practice. The first author taught and conducted research at a middle school in the Baltimore City Public School

¹ *No Child Left Behind Act of 2001*, Public Law 107-110, 20 U.S.C., §390 *et seq.*

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System that utilized teaching to the test as the dominant instructional approach with its African American students. Our conceptualization of teaching to the test is characterized by classroom practices that emphasize remediation, skills-based instruction over critical and conceptual-oriented thinking, decreased use of rich curriculum materials, narrowed teacher flexibility in instructional design and decision making, and the threat of sanctions for not meeting externally-generated performance standards. Reflecting low-level expectations for African American children, these teaching-to-the-test approaches often require teachers to make use of remedial mathematics plans and strategies that focus on lower-level mathematical content. While mastery of this lower-level content is necessary, it often becomes the ceiling of the mathematics that students learn because it allows students to meet *minimum* standards for what counts as success.

In Baltimore, district and school administrators and teachers supported this approach by developing and implementing a supplemental Saturday mathematics program dedicated to preparing African American students for the state administered standardized test. The administrative staff at the school also developed and implemented an additional plan devoted to increasing African American students' performance on the test. The district and school administrators selected students to participate in these remedial programs based on their having standardized test scores that were at *basic* and *near-proficient* levels. Students were required to participate in both the in-school and Saturday school mathematics program. Nearly 25% of the student body at the researched middle school was required to participate in these special programs. During the school day, students were taken out of their elective courses twice a week to participate in the in-school mathematics program.

In the regular mathematics courses at the school, administrators instituted an additional remedial mathematics plan that required teachers to spend the first 30 minutes of their 90-minute class period reviewing mathematical concepts taught to students in previous mathematics courses. The remainder of their class time was spent focusing on the state administered test in mathematics. Students were taught from textbooks that focused on this test. They were also inundated with worksheets, board work, test-taking strategies, and other materials devoted to the state administered standardized test in mathematics.

Because our conceptualization of teaching to the test is based largely on the first author's observation in a single middle school, it is clearly not exhaustive of the instructional practices found throughout Baltimore. We believe, however, that these practices are not isolated to the first author's experiences. The practices that were observed bear a striking resemblance to those documented in the larger literature (see, e.g., Kozol, 1992; Lipman, 2004; Noguera, 2003; Oakes, 1990; Oakes, Joseph, & Muir, 2004) on school inequality and propelled us to use this example to begin a conversation among mathematics educators about such

practices and approaches. The literature reveals that teachers with large numbers of African American students reported more often that test scores were used to evaluate students' progress, select textbooks, provide students with special services, and make curriculum and instructional decisions (Madaus, West, Harmon, Lomax, & Viator, 1992; Strickland & Ascher, 1992). In these classrooms, teachers indicated that emphasis was placed on test content, teaching test-taking skills, teaching topics known to be on the assessment, and preparing students for the test more than a month before the test (Madaus, et al., 1992). These practices force teachers to rush instruction and provide students with little to no opportunity to learn more advanced-level mathematical concepts (Madaus, et al., 1992). Teachers of African American students who focused mainly on preparing these students for tests in mathematics spend a significant amount of time on rudimentary levels of mathematics (Madaus, et al., 1992).

In her book, *High Stakes Education*, Lipman (2004) provided evidence of this approach to educating African American and Latino/a children in the Chicago Public School System (CPS). She documented widespread remediation and test-focused instruction in the schools where she conducted her research. Lipman stated:

CPS leaders contend that the harshness of accountability is offset by new remedial "supports"...including after-school remedial classes, mandatory summer "Bridge" classes for failing students, and transition high schools. However, these remedial programs are explicitly aimed at the [statewide assessment test]....The impoverishment and redundancy of this basic skills education for students the district has defined as "behind" can hardly be construed as an antidote for the inequities of the system, particularly as African American and Latino/as are disproportionately assigned to this type of schooling. Mandating a rudimentary curriculum that few middle-class parents would choose for their own children publicly signals that low-income children and children of color are deficient. (p. 47)

Lipman's (2004) analysis is especially powerful because she also highlighted the voices of the teachers who carried out these practices on behalf of the district. The following comments come from interviews that Lipman conducted:

Grover teacher: I've been at this school for five years, and the emphasis on standardized tests weighs more heavily than it ever has in my career. (p. 77)

Westview teacher: We are test driven... everything is test driven. (p. 77)

Eighth-grade teacher: With all the teaching strategies—teaching them how to take tests. I have tested them to death to tell you the truth. (p. 78)

We concur with Lipman (2004) when she stated the following about this narrow approach to educating African American children:

The emphasis on analyzing and preparing for standardized tests; the immense pressure on administrators, teachers, and students to raise scores; the substitution of test-preparation materials for the existing curriculum; practice in test-taking skills as a legitimate classroom activity—these constitute a meaning system that reinforces the definition of education as the production of “objective,” measurable, and discrete outcomes. (p. 80)

Without an awareness that what was observed in a single middle school in Baltimore is also taking place in other locations around the country, one might easily conclude that the approach to teaching mathematics to the students in Baltimore was appropriate. There would be no linking of the practices in one context to similar practices in another. Hence, the institutionalized nature of African American students’ mis-education would be lost. One might argue that these students needed support to help raise their level of achievement to that of white students and that the district and school officials were simply providing them with that support. Many administrators and teachers, however, might be unaware of how such practices can, on one hand, reflect well-intentioned goals but simultaneously contribute to the oppression of their African American students.

Reflecting on the experiences of the first author, both of us agree that although this approach resulted in increased test scores for sixth- and eighth-grade students, these increases do not mitigate the oppression. We unequivocally oppose such a narrow instructional approach and conceptualization of mathematics education for African American children. Our opposition is based on our scholarly analysis, our respective teaching experiences in diverse African American contexts, and our willingness to advocate, as African American scholars, on behalf of African American children.

Yet, as Lipman (2004) argued, it is insufficient to analyze such practices in isolation of the larger ideologies and political movements that undergird them. Utilizing a race-critical perspective (Martin, 2009), we argue that such test-driven instructional practices, particularly within hyper-segregated African American schools, like those in Baltimore and elsewhere, must be situated within a larger system of assessment that has “scientifically” (a) supported the social construction of African American children as intellectually inferior and (b) facilitated the development of ranking systems that reify these negative social constructions.

Although a full deconstruction of this assessment system is beyond the scope of this article, we offer a partial deconstruction that links scientific racism, race-based ranking systems, and instructional practice in classrooms predominated by African American children. In concert with this deconstruction,

we suggest strategies for helping teachers resist narrow, test-focused, instructional approaches while promoting excellence and empowerment for African American children in mathematics.

Assessment and Scientific Racism

Historically, testing and assessment has been linked to larger eugenics and white supremacy efforts that have tried to prove, through science, that African Americans and other non-whites are intellectually and culturally inferior (Gould, 1981; Herrnstein & Murray, 1994; Jensen, 1969; Ladson-Billings, 1999). Intelligence testing has evolved alongside various racist beliefs about African Americans. According to Ladson-Billings (1999), “throughout U.S. history, the subordination of Blacks has been built on ‘scientific’ theories (e.g., intelligence testing), each of which depends on racial stereotypes about Blacks that makes the conditions appear appropriate” (p. 23). From the seventeenth century to the first half of the twentieth century, the scientific community participated in validating the so-called inferiority of African Americans when compared to whites and the formation of a racial hierarchy in both intelligence and culture (Gould, 1981; Herrnstein & Murray, 1994; Jensen, 1969; Montagu, 1997; Norman, 2000).

Montagu (1997) argued that few members of the scientific community spoke against the notion of a hierarchy of races. Instead, the shared beliefs, values, and techniques exhibited by the scientific community formed the basis of *scientific racism* (Norman, 2000). Scientific racism can be defined as the use of scientific methods to support and validate racist beliefs about African Americans and other groups’ based on the existence and significance of racial categories that form a hierarchy of races that support political and ideological positions of white supremacy (Gould, 1981; Herrnstein & Murray, 1994; Jensen, 1969; Montagu, 1997; Norman, 2000). Gould (1981), Montagu (1997), and Norman (2000) asserted that the science establishment invested a considerable amount of resources into advancing scientific racism. According to Montagu, “virtually every scientist writing during the nineteenth century was...caught in an inexorable web of racist beliefs” (p. 32). Similarly, Norman argued, “Despite an impressive array of eminent scientific advocates, scientific racism had, from its inception and even up to its modern-day manifestations, been nothing more than the uncritical couching of popular racist beliefs in the idiom of science” (p. 3).

There are three faulty assertions guiding scientific examinations of race and intelligence that conceal and couch racist beliefs about African Americans and other groups (Gardner, 1995; Gould, 1981). First, there is widespread belief that intelligence can be described by a single number. Gould (1981) contended that converting abstract concepts such as intelligence into numerical entities is a fallacy. Gardner (1995) argued that the belief in a single, standardized, and

inherent human intelligence or *g* (general intelligence) ignores the concept of multiple intelligences. Second, these faulty assertions fail to take into consideration Jones' (1995) arguments about the long-forgotten justifications of slavery and segregation that rest on beliefs about African American intellectual inferiority and the alleged intellectual superiority of whites; in that, there exists a faulty belief that intelligence can be used to rank social groups in some linear order. Gould argued that such ranking requires a criterion that takes the form of an "objective number" to assign all individuals to their proper status. The assumption is that "if ranks are displayed in hard numbers obtained by rigorous and standardized procedures, then they must reflect reality, even if they confirm what we wanted to believe from the start" (Gould, 1981, p. 26). Nonetheless, we concur with Gould, who also argued: "Science must be understood as a social phenomenon, a gutsy, human enterprise, not the work of robots programmed to collect pure information....Science, since people must do it, is a socially embedded activity" (p. 21). Third, the most conservative research on intelligence suggests that it is genetically-based and immutable. This suggestion "invariably [leads] to [the conclusion] that oppressed and disadvantaged groups—races, classes, or sexes—are innately inferior and deserve their status" (Gould, 1981, p. 25).

Several scholars abandoned the word *intelligence* to avoid debates and endless arguments associated with intelligence testing, biological determinism, scientific rationalism, and scientific racism (Gould, 1981; Herrnstein & Murray, 1994; Jensen, 1969). Herrnstein and Murray (1994) suggested that scholars use more neutral terms such as *cognitive ability* to subside criticism. Essentially, the discourse about intelligence testing was minimized throughout the 1970s. We argue that contemporary, race-comparative analyses began to flourish on the heels of this changing discourse, however. Since that time, a number of comparative analyses of mathematics achievement have been conducted, typically supporting and serving as evidence for so-called racial achievement gaps (see, e.g., Lubienski, 2002; Strutchens & Silver, 2000). These analyses have consistently normalized white student performance and portrayed African American children as lacking in mathematics skills and ability.

Politics and Purposes of Standardized Tests

Apparently neutral assessments are not objective at all, but rather 'objects of history'—created to fulfill particular social functions, which have shaped the assessments in particular directions that are not readily apparent. The seemingly innocuous requirement for the results of a test to be reliable requires that the test disperses individuals along a continuum so having the effect of placing a magnifying glass over a very small part of human performance, and this is particularly marked in mathematics. (Williams, Bartholomew, & Reay, 2004, p. 58)

The history, politics, and purposes of standardized testing, particularly in mathematics, are rooted in the research and discourse revolving around race and intelligence that we outlined above. We contend that deconstructing this research and discourse on intelligence testing is important in understanding the racist underpinnings of contemporary standardized testing not only in mathematics, but also in every discipline. As the quote by Williams, Bartholomew, and Reay points out, one of the purposes of assessment is to create hierarchies. We claim that the use of a single form of assessment or a single statistic to describe mathematical ability is limited in explanatory power. Nonetheless, this happens for two main reasons. The first—to convey certainty and absolute truth—stems from the fact that numbers and statistics represent a special form of being “objective” (Gould, 1981, 1995). They carry the weight of proof. The analysis of all types of data, including statistics, however, involves interpretation that cannot be divorced from social and political contexts. How data is chosen and used depends on who is doing the choosing and their purpose for conducting the analysis.

It is not uncommon for statistical reports to be presented in the absence of important qualitative and contextual considerations. Even when inclusion does occur, misunderstanding of these contextual forces occurs in deference to supporting the validity of the statistics. For example, *race*, which usually appears in achievement studies as an undertheorized independent variable, is said to cause measured achievement differences among socially constructed racial groups. Yet, this faulty use of the concept of race usually reflects an inadequate understanding of *racism* and *racialization* and their impact on educational outcomes. Socioeconomic status, typically described by *income*, is also said to determine achievement outcomes but is made causal without a nuanced understanding of *wealth* differentials (e.g., property ownership, investments, inheritance) within the same socioeconomic (income) strata and how forces like racism and discrimination, in turn, account for those wealth differences (Conley, 1999). Similarly, neighborhood effects are used to construct theories about opposition, disengagement, and resistance to schooling that leads to academic failure. Yet, these analyses fail to account for student success in these very same neighborhoods.

The second reason is that statistics allow students to be ranked and sorted along what are thought to be racial lines (Gould, 1981, 1995; Tate, 1993). Because of how test scores are used in race-comparative analyses (Lubienski, 2002; Strutchens & Silver, 2000; U.S. Department of Education, 1997), African American students are frequently constructed and represented as being inferior to white and Asian students in mathematics (Martin, 2007, 2009). In mathematics education, these rankings and sortings have been used to produce what Martin (2009) has termed the *racial hierarchy of mathematical ability*. This racial hierarchy results in white students being positioned at the top and African

American students at the bottom. This “ranking” proves to be particularly interesting because Asian students, collectively, perform better than white students. Yet, it is white students who are used as the barometer for African American students’ performance. For example, a commonly cited research finding has suggested that African American 12th graders perform at the same level as white 8th graders (Lubienski, 2002; National Research Council, 1989; Thernstrom & Thernstrom, 1999; U.S. Department of Education, 1997). Such findings provide pseudoscientific support for racist assumptions (Tate, 1993) that suggest African American students are intellectually inferior to white students and located at the lowest levels of a racial hierarchy.

A belief in racial hierarchies undergirds all forms of intelligence testing, including school-based achievement testing (Gardner, 1995; Gould, 1981; Herrnstein & Murray, 1994), and is aligned with the same racist assumptions that have allowed African Americans to be exploited within the laws and practices of the United States more generally (Ture & Hamilton, 1992; Wilson, 1998). We suggest that teachers who engage in teaching to the test and other shortsighted remediation must necessarily accept the existence of this hierarchy as evidenced by their subsequent efforts to relocate African American students within it.

Assessment in Mathematics Education: Foregrounding Race and Racism

Invoking a race-critical perspective, we claim along with others (see, e.g., Hilliard, 2003; Ladson-Billings, 1999) that, beyond any knowledge that might be gained about student thinking and development, the larger political effect of standardized testing, particularly in the area of mathematics education, is to maintain white supremacy in one form or another (e.g., U.S. international standing and competitiveness, normalization of white student behavior).² Ladson-Billings (1999), for example, has argued that the school curriculum suppresses multiple voices and perspectives while simultaneously legitimizing the dominant, white, male, upper-class ways of knowing and being as the “standard” that all students should be required to emulate (see also Swartz, 1992). This dominance is evidenced by the fact that schools serving African American students typically adopt curriculum from predominantly white school districts (Davis, 2008; Martin, 2007). Such choices are often not done in response to the authentic needs of

² By this statement, we mean that the goals for testing are often framed in terms of improving the “standing” of the United States relative to other countries in international comparisons. Many high-achieving Asian countries are often discussed as threats to the standing of the United States. The goals for African American children are often framed as increasing test scores for the purpose of having outcomes match those of white children.

African American learners, but suggest that what African American children need is determined by what is best for white children.

We also claim that commonly used race-comparative analyses are one small piece of the larger structural and institutional mechanisms that support this goal. It is this larger *structural* effect, above and beyond the efforts and intentions of *individual* white scholars and policy-makers, that continues to drive instructional practices for teachers of all children but especially African American children when they are viewed as less than ideal learners and mathematically illiterate (Martin, 2007, 2009).

In Tate's (1993) critical race analysis of standardized testing practices in poor school districts serving large numbers of African American students, he used the voluntary national mathematics assessment as a platform to discuss the racist underpinnings of standardized testing. Tate argued that standardized tests are "scientifically" constructed to socially reproduce the most negative aspects of African American students' lived realities. He also argued that standardized tests were designed to prepare poor African American students to replicate their parents in the division of labor by providing them with instruction in mathematics suitable for this purpose. Tate further claimed that policies governing standardized test were designed to ensure that poor African American students did not receive the same instruction in mathematics as middle- and upper-class members of society. He believed that test scores are not intended to provide feedback for the purposes of educational improvement in mathematics, but to rank students and to determine their economic potential. In other words, standardized test shape the lives of poor African American students in more significant ways than middle-class or affluent students.

We agree with Tate's (1993) analysis. The current environment of high-stakes testing engendered by NCLB has caused many states and local school districts to shift their instructional approaches in ways where satisfactory outcomes on state assessments—not authentic learning and development—become the primary goal. These pressures have also positioned administrators and teachers to appropriate much of the underlying ideology that characterizes African American children as mathematically illiterate, using white and Asian student performance as the standard.

The current environment of high-stakes testing is not only just a contemporary phenomenon, but also one that has historical ties to intelligence testing and the construction of racial hierarchies. NCLB has repositioned state and local policies and instruction and standardized testing efforts in public schools, specifically, in mathematics, to carry out the construction of these hierarchies.

There are two aspects of NCLB that shape our discussion of standardized testing in mathematics education. First, one of the main goals of NCLB is to close the so-called racial achievement gap in reading and mathematics. Martin (2009)

argued that plans to move African Americans and other marginalized groups from their perceived positions of being mathematically illiterate to being mathematically literate, an intellectual space supposedly occupied by white and Asian students, is rooted in racist beliefs about these students. The underlying assumption is that African American students' performance in mathematics must conform to that of white students in order for these students to be considered mathematically literate (Martin, 2009). In our view, the performance of white students as the benchmark for African American students sets an artificially low standard for African American learners given that the collective averages of white students on many large-scale mathematics assessments are less than the highest levels of proficiency (Secada, 1992; Strutchens & Silver, 2000; Tate, 1997) and ignores the needs of African American children *as African American children*. Connecting the discourse on African American students in mathematics education to intelligence testing, the assumption is that "Black inferiority is purely cultural and that it can be completely eradicated by [mathematics] education to a Caucasian standard" (Gould, 1981, p. 32).

The accountability measures dictated by NCLB require states to publicly identify low-performing schools. This practice has played a major role in subjecting African American students, their schools, and school systems to inferior labels as a result of failing to meeting standardized testing goals (Davis, 2008; Lattimore, 2001, 2003, 2005a; Sheppard, 2006). This practice was clearly evident in the Baltimore city school and district discussed in the introduction of this article. Currently, this African American school district is in its second year of system improvement and the students are considered the lowest performers in mathematics in the state. In addition to these labels, the failure to meet standardized test goals places their schools in danger of losing federal dollars to finance their education.

Second, NCLB has explicitly attempted to standardize what constitutes highly qualified teachers for all students.³ The policy mandates the use of standardized tests to quantify what constitutes a highly qualified mathematics teacher. This policy treats the instruction African American students receive in mathematics as a generic set of teaching competences that should work for all students (Ladson-Billings, 1999; Martin, 2007). When these approaches to teaching fail to produce the desired results, African American students are deemed deficient—not the approaches used to teach these students (Ladson-Billings, 1999; Martin, 2007).

³ In this article, we do not give extensive attention to the forms of assessment used for teacher certification. We do, however, claim that the same logic applies to these tests. The NCLB policy document defines *highly qualified* as a teacher who holds at least a bachelor's degree and has passed state-certification or licensing exams.

Later in this article, we will briefly revisit arguments made by Martin (2007) who problematized notions of highly qualified mathematics teachers by asking: “Who should teach mathematics to African American students?” We use the characteristics described by Martin as a catalyst to provide mathematics teachers with strategies to resist contributing to the oppression of African American students.

African American Students’ Experiences in Mathematics Education

Martin (2007) discussed how *achievement* has served as the dominant discursive frame used to talk about the competencies of African Americans in mathematics within the context of mainstream mathematics education research and policy. He demonstrated how a framework of color-blind racism, in turn, supports this achievement-focused discourse. Martin challenged mathematics education researchers to construct an alternative discursive and assessment frame focused on how African American learners *experience* mathematics education, and suggested that future research should focus on mathematics learning and participation as *racialized forms of experience*, not only for African American learners but also for all learners.

Analysis of the relevant literature reveals two important insights about African American students’ experiences with standardized testing (Berry, 2005; Corey & Bower, 2005; Lattimore, 2001, 2003, 2005a; Lubienski, 2002; Moody, 2003, 2004; Strutchens & Silver, 2000; U.S. Department of Education, 1997). First, school districts serving large numbers of African American students often implement remedial strategies to comply with state and federal regulations surrounding standardized testing in mathematics (Davis, 2008; Lattimore, 2001, 2003, 2005a; Tate, 1993). In support of this strategy, African American students are inundated with practice materials that include worksheets and in-class practice tests devoted to state assessments (Lattimore, 2001, 2003, 2005a). The mathematics instruction that these students are exposed to emphasizes repetition, drill, right-answer thinking that often focuses on memorization and rote learning, out-of-context mathematical computations, and test-taking strategies (Davis, 2008; Ladson-Billings, 1997; Lattimore, 2001, 2003, 2005a). This type of instruction often leaves African American students disengaged and viewing mathematics as irrelevant and decontextualized from their everyday experiences (Corey & Bower, 2005; Davis, 2008; Ladson-Billings, 1997; Lattimore, 2005b; Tate, 1995).

Second, standardized tests serve as a “gatekeeper” in providing African American students access to higher-level mathematics, gifted and honors programs, and future aspirations (Berry, 2005; Davis, 2008; Lattimore, 2001,

2003, 2005a; Moody, 2003, 2004; Oakes, 1990; Sheppard, 2006). Throughout their schooling experiences, African American students are often denied access to higher-level mathematics and advanced programs because of their performance on standardized test (Berry, 2005; Davis, 2008; Moody, 2003, 2004; Oakes, 1990), thereby leaving the majority of African American students in lower-level mathematics courses (Corey & Bower, 2005; Davis, 2008; Lubienski, 2001, 2002; Moody, 2003, 2004; Oakes, 1990; Oakes, Joseph, & Muir, 2004). In high school, state administered standardized tests have also been found to serve as the gatekeeper to African American students receiving a high school diploma (Lattimore, 2001, 2003, 2005a). For example, since 2006, students in California must pass an exit exam to graduate. Students in Maryland will have to pass the state administered standardized test to receive their high school diploma beginning with the graduating class of 2009.

Re-conceptualizing the Assessment of African American Students in Mathematics: Implications for Teachers

There is very little consideration given to the argument that African American students represent a distinct cultural group (Akbar, 1980; Ladson-Billings, 1994), requiring an education in mathematics that reflects their lived realities and collective conditions (Martin, 2007; Thompson, 2008). According to Ladson-Billings (1999):

African American students are a part of almost every social strata and their social context may affect what experiences they have and how they view the world, their cultural knowledge, expressions, and understandings, which may be transmitted over many generations, may share many features with African Americans across socioeconomic and geographical boundaries. (p. 699)

We argue African American students must receive an education in mathematics that not only prepares them to function effectively in mainstream society but also builds on their cultural knowledge base and value systems (Ladson-Billings, 1997). This argument implies framing the purpose, structure, and ideology of mathematics education for African American learners in ways that are responsive to their needs *as* African American learners (Martin & McGee, in press).

In reconceptualizing and reframing mathematics education for African American learners, a growing number of African American scholars have begun to advance liberatory mathematics education agendas for African American students (Martin & McGee, in press; Moses & Cobb, 2001; Thompson, 2008). The most notable example of this agenda is the Algebra Project (Moses & Cobb,

2001) and its parallel youth development program, The Young People's Project (YPP). Through the Algebra Project, civil rights activist and mathematics educator Robert Moses has led the charge to provide African American students with a liberatory mathematics experiences via a curriculum anchored in culturally relevant activities. Moses argued the fight for mathematics literacy is a fight for twenty-first century citizenship and that African American youth must be empowered to fight for their liberation on their own terms. This empowerment was clearly evident in Baltimore where African American youth from the Algebra Project in that city challenged school officials for not providing them with an adequate education (Prince, 2006).

Martin and McGee (in press) argued, "Any framing of the form, philosophy, and content of mathematics education for African Americans must address the historical and contemporary social realities that they face." They suggested that history "compels us to frame African Americans mathematics education and mathematics literacy in the same way that education, in general, was framed around their life conditions in the past, for the purposes of *liberation*." In defining liberation, they drew on the work of Watts, Williams, and Jagers (2003), who defined *liberation* as follows:

Liberation in its fullest sense requires the securing of full human rights and the remaking of a society without roles of oppressor and oppressed....It involves challenging gross social inequities between social groups and creating new relationships that dispel oppressive social myths, values, and practices. The outcome of this process contributes to the creation of a changed society with ways of being that support the economic, cultural, political, psychological, social, and spiritual needs of individuals and groups. (pp. 187–188)

Thompson (2008) similarly argued for a liberatory framing of mathematics education for African American learners through what she calls *Nation Building*. She defined Nation Building "as the conscious and focused application of knowledge, skills, and abilities to the task of liberation" (p. 17). Thompson further argued that Nation Building "involves the development of behaviors, values, institutions, and physical structures that elucidate African history and culture" for the purposes of ensuring "the future identity, existence, and independence of the nation" (p. 17). She believed that efforts to increase African Americans in mathematics and science should be geared toward the liberation of African people throughout the Diaspora and to eradicate systems of racism (white supremacy).

These liberatory agendas typically stand little chance of being accepted in mainstream discussions of mathematics education because "African Americans seeking equal opportunity in education [specifically in mathematics] will only be granted when the opportunity being sought converges with the economic self-interest of whites" (Tate, 1993, p. 17). Bell (1980) has referred to this contingency as *interest convergence*.

Critical Reflection and Advocacy by Mathematics Teachers of African American Students

We realize that teachers cannot expect to engage in liberatory instructional practices with African American students and be rewarded by the same system that demands that they contribute to the negative social construction of these students (Ture & Hamilton, 1992). Yet, we would appeal to what is morally correct, given the needs and social realities (Ladson-Billings, 1997) of these students and frame the discussion that follows as both a challenge and an invitation for teachers. We challenge teachers to engage in critical reflection on their own practices and we invite them to consider the suggestions we make about changes in these practices, where necessary.

Martin (2007) suggested that teachers should (a) develop a deep understanding of the social realities experienced by African American students, (b) take seriously one's role in helping to shape the racial, academic, and mathematics identities of African American learners, (c) conceptualize mathematics not just as a school subject but as a means to empower African American students, and (d) become agents of change who challenge research and policy perspectives that construct African American children as less than ideal learners and in need of being saved or rescued from their blackness. We encourage teachers of African American students to reframe their instructional practices by taking the ideas developed by Martin seriously. In our view, "teachers who are unable, or unwilling, to develop in these ways are not qualified to teach African American students no matter how much mathematics they know" (Martin, 2007, p. 25).

While we do not offer prescriptive or formulaic approaches for how teachers might utilize Martin's (2007) suggestions, we do point to some important initial steps and underscore that many of these steps should occur simultaneously and throughout teachers' work with African American students. Our conceptualization of the *instructional* strategies and strategies of *resistance* offered in this section are in many respects inextricably linked and presented in concert with one another. The strategies are intended to help teachers resist teaching to the test and resist contributing to the negative social construction of African American students. To help resist these efforts, we strongly believe that teachers must continuously engage in critical reflection about their practice, their beliefs about African American students, and their commitment to these students. Individually and collectively, teachers must engage in critical reflection on how they conceptualize mathematics education for African American students. In so doing, we believe that issues of race and racism must be at the forefront of discussions of mathematics education for African American students. Martin argued that there are several documented cases where failing to do so can stall the progress and design of meaningful mathematics education for these students.

Teachers have to realize that we are all socialized by institutions (e.g. media, policies, laws, etc.) that support racist views and beliefs about African American children. Policies and ideologies associated with high-stakes testing, for example, often position teachers in ways where critical reflection on their practices is de-emphasized or derailed by progressive rhetoric. Martin (in press) discussed how he has used the following three-question quiz in professional development and research contexts with teachers from various ethnic and racial backgrounds, years of experience, and geographic locations:

- How many of you have heard of, and understand, what is meant by the racial achievement gap?
- How many of you have, or plan to, devote some aspect of your practice to closing the racial achievement gap?
- How many of you believe in the brilliance of African American children?

After noting that the vast majority of teachers answer affirmatively to all three questions, Martin (in press) goes on to point out how the second and third questions are conceptually and practically incompatible. He pointed out that acceptance of the racial achievement gap rhetoric necessarily requires that teachers, even African American teachers, accept the inferiority of African American children, especially when closing the so-called racial achievement gap is translated as raising African American children to the level of white children. The quiz was a strategy to help teachers' resist and rethink negative social constructions of African American students.

In addition to taking the quiz, teachers must ask themselves difficult and uncomfortable questions about African American students and their conditions that include, but are not limited to: Do I believe African American students are intellectually inferior? Do I believe that issues of race and racism play a role in shaping the lives, schooling, and mathematics education of African American students? Do I harbor racist beliefs about African American students? Do I believe that history has any bearing on African American students' contemporary lived realities, schooling, and mathematics education? Questions of this nature are reflective strategies of resistance that must be considered, thought about, and answered truthfully. We pose these questions for all teachers but we particularly direct them to those white teachers whom the literature has identified as being particularly resistant to change in their negative or deficit beliefs about African American children (Sleeter, 1993).

We believe that teachers must decide whether they are willing to be agents of social change for African American students. Teachers should ask themselves the following questions: What am I willing to sacrifice for African American students? Am I willing to sacrifice or take the risk to provide African American

students with a liberatory mathematics education in the face of policies that require me to do otherwise? Am I willing to challenge policies that treat African American students as less than ideal learners?

Once teachers have explored these considerations, we believe that teachers need to spend time seriously thinking about how they envision mathematics education for African American students. In the process of conceptualizing what mathematics education for African American students should look like, teachers should ask themselves the following question: What do I want African American students to be able to do as a result of their mathematics education? We suggest that African American students should be able to use mathematics as a tool to (a) reexamine history and use this history to generate critiques and better understandings of their immediate life conditions and collective group conditions in the world, and (b) gain access to areas in the larger opportunity structure where mathematics knowledge has often been used to keep African Americans out. Overall, the mathematics education African American students receive should be designed to improve their life and group conditions (Martin, 2009; Thompson, 2008).

In terms of the goals for mathematics learning, teachers might consider adopting the stance that effective teaching should not only produce growth in students' mathematical skills but also connect to these students' lives, experiences, and lead them to employ their mathematical knowledge in multiple settings and develop their racial, academic, and mathematics identities. For teachers, this entails thinking of empowerment along three lines: mathematical, social, and epistemological (Ernest, 2002; Martin & McGee, in press).⁴ This stance does not mean that students cannot be shown how to carry out procedures and learn to produce correct answers. However, if they do not see themselves as legitimate doers of mathematics, then the acquisition of skills with little personal identification on the part of students is not likely to sustain itself. In other words, we argue that teachers of African American students should consciously attempt to integrate these students' experiences, home and community lives into their

⁴ According to Ernest (2002), mathematical empowerment concerns the gaining of power over the language, skills, and practices of using and applying mathematics; that is, the gaining of power over a relatively narrow domain, for example, that of school mathematics. Social empowerment through mathematics concerns the ability to use mathematics to better one's life chances in study and work and to participate more fully in society through critical mathematical citizenship. Thus it involves the gaining of power over a broader social domain, including the worlds of work, life and social affairs. Epistemological empowerment concerns the individual's growth of confidence not only in using mathematics, but also a personal sense of power over the creation and validation of knowledge. This empowerment is a personal form: the development of personal identity so as to become a more personally empowered person with growth of confidence and potentially enhanced empowerment in both the mathematical and social senses (and for the mathematics teacher—enhanced professional empowerment).

conceptualization of mathematics and teach them how to use mathematics as a means to view and critique the world (Lynn, 2001; Tate, 1995).

Several scholars' work has provided insight into how mathematics teachers have conceptualized mathematics along mathematical, social, and epistemological lines (Ladson-Billings, 1997; Lynn, 2001, Tate, 1995). For example, Ladson-Billings (1997) described a sixth-grade mathematics teacher of African American students who went beyond the district curriculum by providing her students with an engaging, rigorous, and challenging education in algebra. This teacher's students were engaged in problem solving around algebra, pushed to think at higher levels, and encouraged and reassured by their teacher that they were capable doers of mathematics. In this class, a student with special needs benefited from this teacher's belief system and instruction in mathematics. At the end of the school year, this teacher convinced the school principal to remove the student from receiving special education services because of his mathematical performance in her class.

Lynn (2001) captured the experience of a middle school mathematics teacher who reflected seriously on issues of poverty and racism. This teacher engaged students in a discourse about how the history of lynching and Jim Crow racism has shaped African Americans' lives. He used this history to teach his students the importance of checking their work and knowing their math facts. This teacher connected the two by making the case that historically African Americans have had to prove that injustices actually occurred to them by supporting their experiential claims with facts. In this lesson, the teacher situated this discourse in a historical analysis of African American experiences with racism in society. The teacher provided his students with concrete examples of how to use numerical data presented in the media to critically examine the ways that numbers get utilized in an unjust society. For example, the teacher made the case that a media report describing a decrease in joblessness does not always translate into increasing jobs for the masses of African Americans. Essentially, this teacher was committed to raising African American students' social consciousness about the uses and abuses of mathematics in society much like we attempt to do in the article.

Tate (1995) described a mathematics teacher who engaged her African American students in real problems of social and economic importance for African Americans and their community. This teacher asked students to pose problems they felt were important to them and affected their community, to conduct research on one of the posed problems, and to develop strategies to solve that problem. The students were then encouraged to execute the strategy they developed. The students posed a wide range of problems that included the AIDS epidemic, drugs, ethics in medicine, and sickle cell anemia. In one class, students posed problems about the excessive number of liquor stores in their community

and “embarked on an effort to close and/or relocate 13 liquor stores within 1000 feet of their school” (p. 170). The students’ action resulted in “over 200 citations to liquor store owners and two of the 13 stores closed down for major violations” (p. 170).

We recommend that teachers spend time developing relationships with their students that extend beyond the mathematics content being taught in their classroom. Teachers should not rely solely on secondary sources (e.g. principals, other teachers, cumulative records, etc.) to define their outlook, views, and beliefs about African American students. Teachers can spend time learning about African American students’ home life, social realities, childhood experiences, and likes and dislikes. In this way, teachers can show that they are committed to African American children and their families in ways that extend beyond just raising test scores.

In his study of African American middle school students, Davis (2008) described an African American female mathematics teacher, Mrs. Rene Taylor, who got to know her students by spending time with them in and out of school (e.g. lunch, after school, hallways, taking students to the movies, inviting students to her home, etc.). Mrs. Taylor spent time listening and talking to students as they spoke about their problems, interests, likes and dislikes. She engaged her students in a discussion about herself that respected the boundaries of her position. Mrs. Taylor’s relationship with her students inevitably resulted in developing a relationship with their parents. It should be noted that Mrs. Taylor also allowed two students to move into her home, primarily because one student was homeless and the other student had problems with a drug-addictive parent. We are not suggesting that teachers should do everything that Mrs. Taylor did, but clearly her actions demonstrate how teachers can develop relationships with students that are genuine and meaningful. Her actions also illustrated the level of commitment she has to her students and what she was willing to do for them.

While getting to know their African American students, teachers should not come to hasty conclusions or generate stereotypical assumptions about their abilities and values. However, teachers should not lose site of the fact that the historical legacy of racism continues to shape African American students’ contemporary lived realities in their community, home life, schooling, and mathematics education despite the absence of overt racist laws and social customs (Davis, 2008). Research has shown that teachers who know or get to know their African American students provide them with a more enriching educational, mathematical, and social experience (Ladson-Billings, 1994, 1997; Lynn, 2001; Moody, 2003, 2004; Tate, 1995). In the first author’s research of African American middle and high school students, participants cited the impact that Mrs. Taylor had on their educational, mathematical, and social experiences.

In the midst of conceptualizing mathematics education for African American students and getting to know these students, teachers should spend time learning about and helping to positively shape African American students' racial, academic, and mathematics identities (see, e.g., Martin, 2000; Nasir, 2007; Nasir, Jones, & McLaughlin, 2007). Martin (2000) argued that African American students' racial, academic, and mathematics identities are linked and contribute to these students larger sense of self. He characterizes mathematics identity as being shaped by students' beliefs about (a) their ability to perform in mathematical contexts, (b) the instrumental importance of mathematical knowledge, (c) the constraints and opportunities in mathematical contexts, and (d) the resulting motivations and strategies used to obtain mathematics knowledge. Nasir, Jones, and McLaughlin (2007) argued that African American students' racial and ethnic identities vary across individuals and that "the kind of racial identities students hold has implications for their sense of themselves as students, and for their achievement" (p. 3). Hence, these scholars' work indicated that teachers play a significant role in shaping these identities.

Teachers might question their students about whether they believe that "being African American" and "being a doer of mathematics" are compatible (Martin, 2006). Ellington's (2006) study of high achieving African American students found that these students' racial, academic, and mathematics identities were shaped by how these students saw themselves in the larger African American community. If African American students do not perceive "being African American" and "being a doer of mathematics" as being compatible, then rich and meaningful discussions that affirm students' racial, academic, and mathematics identities should become an ongoing part of teachers' practice. This practice would include explicitly addressing (through discussions or journals) and shattering stereotypes about who can and cannot do mathematics and reducing the "stereotype threat" (Steele & Aronson, 1995) that accompanies practices like standardized testing. Stereotype threat occurs when a negative stereotype (e.g., African American students are lacking in mathematics ability) becomes salient as a criterion for test evaluation. In that, students become concerned about confirming the stereotype and through various psychological mechanisms; the concern can cause one to perform more poorly than they would perform in a neutral context.

We are not suggesting that teachers are not engaging in practices that contribute to the development of their African American students' racial, academic, and mathematics identities. However, for those teachers who might not have considered this aspect of mathematical development, we strongly believe that these identities are important constructs for teachers to understand and intentionally incorporate into their instructional practices with African American students. For example, as a mathematics teacher, in a high-stakes testing

environment at the high school level, the first author engaged in practices that positively shaped his African American students' racial, academic, and mathematics identities without formal knowledge of these identities. Davis (2005) developed a project intended to expose his African American students to the mathematical, technological, and scientific contributions of people of African descent.⁵ The project required students to do research, write a report, do an oral presentation, create a display, and participate in a school-wide exhibit to expose and engage their school community in a discussion about the person they researched and their contribution to these fields. The students' oral presentation, research reports, letters, responses to the project, exhibit, and trip ultimately allowed the first author to understand how the project assisted in shaping his students' racial, academic, and mathematics identities.

With respect to African American students' being characterized as low performers, behavior problems, and disengaged in mathematics setting, teachers should seriously consider alternative reasons for these students' actions other than the ones commonly cited (i.e., mathematically incapable, uninterested in being doers of mathematics, etc.) by researchers, teachers, and administrators (Akbar, 1980; Berry, 2005; Davis, 2008). Akbar (1980) argued that boredom and cultural disconnect of schools are the primary reasons for African American students' behavior, disengagement, and performance issues in these settings. In mathematics education, Berry (2005) and Davis (2008) found African American students across achievement levels were bored and disengaged from mathematics and other academic disciplines. Berry and Davis, similar to Corey and Bower's (2005) research, made the case that these students' mathematics education was disconnected from their culture.

In Davis's (2008) research, he found the African American middle school students who he studied in high-stakes testing environments disengaged from mathematics because of the actions of some of their past and present mathematics teachers. These students reported that their mathematics teachers often (a) would not "teach" them; (b) were not able to help them learn mathematical topics and concepts in which they were experiencing difficulty; (c) disrespected, embarrassed, or humiliated them with respect to learning mathematics; (d) did not provide them with challenging and intellectually stimulating mathematics; (e) presented them with mathematical concepts and topics that they had already learned; (f) provided instruction that was centered around worksheets, rote

⁵ We use African descent in this context to connote that the racial and ethnic background of the people did not just include African Americans or Africans, but included a wide range of Black people from around the world. This inclusion was done to help expand African American students' conceptualization of what it means to be Black or African American into a larger cultural discourse that connects these students to a larger cultural history and heritage.

memorization, board work, and test-taking materials and strategies; and (g) maintained classrooms that were in constant disarray. While these students were disengaged from the learning process, they participated in activities (e.g., walking around the classroom and school hallways, horse playing, etc.) that often led them to be further marginalized by district and school rules and policies (e.g. federal, state, local testing policies) and teacher subjectivity when their behaviors were reflective of their resistance to the realities of their schooling and mathematics experience.

We strongly urge teachers to continuously engage in critical reflection about African American students, their instructional practice, and conceptualization of mathematics by asking questions such as: Do I provide African American students with lower-level coursework because I believe they are incapable of doing higher-level coursework? Do I perceive African American students as being lazy in mathematics because of their racial identities or because they do not engage in mathematics the way white students do? Do I believe these students are undeserving of a mathematics education requiring higher-level thinking and coursework? We strongly encourage teachers to consider and make use of our questions, suggestions, and examples, where applicable.

Conclusion

We started this article by framing our discussion about standardized testing practices in a local school district and school serving large populations of African American students where policy initiatives and administrators require teachers to teach to the test in mathematics. Our goal for this article was to present arguments about the racist underpinnings of such instructional practices and how federal, state, and local policies institutionalize racist beliefs about African American students. We situated our analysis of these instructional practices within a deconstruction of systems of assessment that seek to create racial hierarchies and offer “scientific” support for African American intellectual inferiority.

Based on our critical analysis, our request to mathematics teachers is simple. Mathematics teachers of African American students must stop engaging in teaching-to-the-test and other narrow instructional practices and provide these students with a challenging and intellectually stimulating mathematics education that assists these students in improving their individual and collective group conditions. We are not dismissing the reality that teachers must operate under the conditions created by the oppressive forces of mandates such as NCLB. Nevertheless, out of genuine concern for African American students, this article is an instantiation of our advocacy for these students to receive the mathematics education they deserve. We appeal to teachers’ moral commitment to African

American students by encouraging them to put these students' well-being over their fear of federal, state, and local sanctions.

We urge teachers to take action both individually and collectively at the district, school, and classroom level to provide African American students with a liberatory education in mathematics. In so doing, we have provided teachers with insight and examples of how that might be done. We urge teachers to be agents of social change in their own school and classroom contexts, hopefully driven by beliefs that build on the following:

African American children [must be prepared] with the knowledge, skills, and attitude needed to struggle successfully against oppression. These, more than test scores, more than high grade point averages, are the critical features of education for African Americans. If students are to be equipped to struggle against racism they need excellent skills from the basics of reading, writing, and math, to understand history, thinking critically, solving problems, and making decisions; they must go beyond merely filling in test sheet bubbles with Number 2 pencils. (Ladson-Billings, 1994, pp. 139–140)

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