

Learning Mathematics While Black¹

By Danny Bernard Martin

A study that concludes that African-American students perform way below White mainstream students... is correct, but such a conclusion tells us very little about the material conditions with which African-American students work in the struggle against racism, educational tracking, and the systematic negation and devaluation of their histories. I would propose that the correct conclusion rests in a full understanding of the ideological elements that generate and sustain the cruel reality of racism and economic oppression. Thus an empirical study will produce conclusions without truth if it is disarticulated from the socio-cultural reality within which the subjects of the study are situated. (Macedo, 1998, p. xxii)

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In a recently edited book, titled *Mathematics Teaching, Learning, and Liberation in the Lives of Black Children* (Martin, 2009b), I charged the authors with the task of continuing to help change the direction of research on Black children and mathematics. I suggested that such a change was necessary because the knowledge base of rigorous, explanatory research, stretching a minimum of 30 years, has remained quite thin and that

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Black children and their competencies, more often than not, continue to be framed in negative and detrimental ways.² I noted that underachievement and failure in mathematics have been emphasized over success and resilience. I also noted that the aims and goals of mathematics education for Black children have often been conceptualized in overly simplistic ways that emphasize their commodification as future participants in higher-level mathematics courses or in the nation-preserving technological workforce (National Research Council, 1989; RAND Mathematics Study Panel, 2003; U.S. Department of Education, 2008). Liberatory and emancipatory themes have seldom been put forth in response to the question *why should Black children learn mathematics?* (e.g., Anderson, 1970; Martin & McGee, 2009; Woodson, 1933).

In my own chapter, titled “Liberating the Production of Knowledge About African American Children and Mathematics” (Martin, 2009c), I described how the dominant framings and storylines about Black children and mathematics have grown out of a race-comparative approach (McLoyd, 1991). As a result, and until very recently, much of the knowledge base on Black children and mathematics has consisted of summary reports documenting their performance on achievement tests in relation to other children (Johnson, 1984; Lubienski, 2002; Secada, 1992; Strutchens & Silver, 2000; Tate, 1997),³ particularly White children, whose mathematical behaviors and outcomes are typically normalized as the standard for all children (Martin, 2007b, 2009a, 2009d, 2009e). The discursive practice of referring to Black-White racial gaps in mathematics achievement and notions of closing such gaps by raising Black achievement to the level of White achievement contribute to this normalization (Ladson-Billings, 2006; Perry, 2003).

Although the race-comparative approach has been helpful in documenting and pinpointing disparities, it has also had the deleterious effect of helping to position Black children at the bottom of a *racial hierarchy of mathematics ability* (Martin, 2009a, 2009c, 2009d). This positioning often becomes the default, taken-as-shared assumption and starting point not only in many mainstream mathematics education research and policy discussions but also in everyday discourse among the general public. Elsewhere (Martin, 2007b, 2009a), I have also shown that this taken-as-shared assumption about Black learners draws on, and contributes to, racial ideologies informing larger social societal discourses about what it means to be Black. Moreover, construed far beyond their intended purposes, the results of race-comparative analyses have been used by some scholars to question *if*, not *how*, Black children can learn mathematics (Herrnstein & Murray, 1994; S. Thernstrom & A. Thernstrom, 1997; A. Thernstrom & S. Thernstrom, 2004).

A dominant storyline about Black children and mathematics has also included a fixed set of cultural and cognitive explanations for negative outcomes (Martin, 2000; McGee, 2009), including cultural differences or deficits, limited mathematical knowledge and problem solving skills, family background and socioeconomic status, and oppositional orientations to schooling. However, a number of scholars, particularly outside of mathematics education, have argued that these perspectives,

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in one way or another, are limited in explanatory scope and have only served to reinforce impoverished views of Black children (Anderson, 2004; Hale, 2001; Ladson-Billings, 2006; Lomotey, 1990; McLoyd, 1991; Murrell, 2002; Ogbu, 1992; Perry, Steele, & Hilliard, 2003; Shujaa, 1994).

My earlier call for expanding the counternarrative about Black children and mathematics reflected a heightened push by a growing number of scholars in the field to better understand complex relationships among cognitive, non-cognitive, structural, institutional, and ideological factors influencing patterns of participation and socialization as well as achievement outcomes among Black children (e.g., Berry, 2008; Gutierrez, 2000; Jackson, 2009; Johnson, 2009; McGee, 2009; Moody, 2001; Nasir, 2002; Spencer, 2009; Stinson, 2007, 2008; Tate, 1994, 1995a, 1995b; Terry, 2010; Walker, 2006). Scholars engaged in this work have begun to explore several important, but understudied, areas related to Black children's mathematics learning and development, including: (1) the racialized nature of students' mathematical experiences in school and non-school settings, (2) students' beliefs about their ability to participate meaningfully in mathematical contexts based on their socializing experiences, (3) their resulting motivations and rationales for learning and doing mathematics, and (4) the co-construction of mathematics identities and other social identities that are important to these students. Some scholars have also given focused attention to issues of pedagogy (Berry & McClain, 2009; Leonard, 2008; Malloy, 2009; Matthews, 2003).

While research by the scholars cited above, and others, has contributed greatly to an emerging knowledge base on Black children and mathematics, there continues to be a dire need for insightful research that de-centers longstanding accounts that have contributed to the construction of Black children as mathematically illiterate and as less than ideal learners relative to other student groups. Continued research will also help to refine the most promising theoretical and methodological approaches.

In this article, I argue for even greater attention by researchers to understand and document what it means to *learn mathematics while Black*. This is not a narrow call meant to suggest that Black children are idiosyncratic in their mathematical behavior and development. This is a call with much richer aims focused on learning and identity, two centrally important considerations in children's mathematical development (Boaler, 2002; Leonard, 2008; Martin, 2000; Nasir & Hand, 2006; Solomon, 2009; Spencer, 2009). Yet, while it is important to discuss the development of Black children as *children*, this call echoes the claims of many scholars who have argued that it is equally important to prioritize their development as *Black* children (Clark, 1984; Hale, 1986; 1994; 2001; Lomotey, 1990; Martin, 2009c, 2009d; McLoyd, 1991).

Mindful of McLoyd's (1991) critical question *what is the study of African-American children the study of?* the call made here is not a call for additional studies focused on documenting how Black children differ from White children. Instead, it is a call for understanding mathematics learning, development, and participation among Black children within their *phenomenal Black realities* (My-

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ers, Rana, & Harris, 1979, as cited in McLoyd, 1991), giving attention to the micro-, meso-, and macro-level forces affecting their lives and utilizing culturally sensitive research methods to account for these forces (Gordon, 1990; Milner, 2007; Tillman, 2002). Researchers seeking to honor the demands of this call should (a) explore the richness and complexities of what it means to be a Black child in a given context and (b) provide accurate and honest renderings of Black children's mathematical knowledge, identities, and agency. These considerations require that researchers explore, at sufficiently detailed levels of analysis, Black children's development and engagement with mathematics not only in the context of paper and pencil tests but also with respect to the contexts where these children use mathematics in meaningful and powerful ways. These considerations should be described across multiple contexts of analysis: sociohistorical, community, family, school, classroom, and intrapersonal (Martin, 2000). Research in these directions would also be strengthened by drawing on frameworks from cultural-ecological theory, racial identity development theory, sociological and critical theories of race, frame theory, and critical policy analysis.

Phenomenal Realities for Black Children

African American students face challenges unique to them as students in American schools at all levels by virtue of their social identity as African Americans and of the way that identity can be a source of devaluation in contemporary American society... Before we can theorize African-American school achievement, we need to have an understanding of what the nature of the task of achievement is for African Americans as *African Americans*. (Perry, Steele, & Hilliard, 2003, pp. vii-4)

The call to study *learning mathematics while Black* put forth here acknowledges that *being Black* is not the only aspect or the most salient aspect of Black children's senses of self and development. There is great diversity among Black children in the United States. There is no singular, essential characterization. They come from varied socioeconomic and family backgrounds and respond to schooling and education in multiple ways. However, given that the meanings for Blackness have always permeated the prevailing racial ideologies, institutional practices, social arrangements, and opportunity structures in the U.S. society (Bonilla-Silva, 2001), these meanings are no less relevant to Black children's mathematical development and lived realities.

First, they are relevant in the ways that Black children are socially constructed in mathematics education research and policy discourses (Martin, 2007b, 2009a, 2009c, 2009d). My critical analyses have shown that mathematics education research and policy are deeply implicated in racialized constructions of who is considered mathematically literate and who is not (Martin, 2007b, 2009c, 2010). Mathematics education policy reports dating back nearly 25 years have explicitly labeled Black children as mathematically illiterate (National Research Council, 1989). These constructions are not merely empirical but also ideological. Research focusing on Black children should always be examined for the way it conceptualizes and

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frames these children and the way it frames Blackness, either explicitly or implicitly. Moreover, the findings from these studies should be interpreted critically in light of these framings.

Second, these meanings are relevant in the ways Black children are socialized with respect to mathematics in both school and non-school contexts. In school contexts, for example, these meanings have been shown to influence teacher beliefs and practices to the degree that some teachers maintain deficit views of Black children and their competencies and fail to provide rich learning opportunities (Jackson, 2009; Spencer, 2009). These meanings can also emerge in peer interactions where students can unwittingly reproduce negative views of Blackness that they have appropriated from elsewhere (Nasir, Atukpawu, O'Connor, Wishnia, & Tsang, 2009; Spencer, 2009).

Third, these meanings are relevant in highlighting Black children's emerging intrapersonal conceptions of what it means to be Black and what it means to be doers of mathematics vis-à-vis the conceptions and meanings that are constructed by others (Martin, 2000; Nasir, Atukpawu, O'Connor, Wishnia, & Tsang, 2009; Nyamekye, 2010; Spencer, 2009). These emerging conceptions also reflect the fact that Black children are growing up in a time when geopolitical boundaries are being blurred by technology and globalization. Social media such as YouTube and Facebook are not only responsible for exporting and importing culture, ideology, protest, and revolution, but also for exposing the human condition and helping Black children to contextualize their lives vis-à-vis the conditions in which other children live and learn. As they negotiate their way in the world, they also draw on these sources to give meaning to their Blackness and to doing mathematics.

Despite these complex influences on the meanings for Blackness, it is unfortunate that some policymakers and researchers occasionally lose sight of this fact by confining Black children's existence to a single, pathological set of material and cultural circumstances: at-risk, poverty-ridden communities, ghettos, dysfunctional families, and oppositional stances toward schooling (D' Souza, 1991; Herrnstein & Murray, 1994; S. Thernstrom & A. Thernstrom, 1997; A. Thernstrom & S. Thernstrom, 2004; McWhorter, 2001). Ignoring historical and structural considerations, we are asked to believe that genetic, cultural, and intellectual inferiority account for these conditions. High-poverty contexts and ghettos, in particular, are not natural contexts for Black children and such circumstances should not be normalized in studies of their mathematical development. Like slavery and Jim Crow, these contexts are "race-making institutions" (Wacquant, 2006, p. 101) designed to dehumanize and inflict material, structural, and symbolic violence on those who are forced to live in them.

Moreover, many scholars have pointed out that there is a disturbing trend in society, the media, and public policy that attempts to strip Black children of their childlike qualities altogether by using such labels as thugs, urban terrorists, predators, threats to society, and endangered species (Bowditch, 1993; Ferguson, 2000; Noguera, 2003; Welch, 2007). While it is true that disproportionate numbers of Black children in the U.S. and around the world continue to experience material

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conditions that not only limit their opportunities to learn but that also threaten their very lives, this is not the end of the story. It is equally true that, wherever they live and learn, and no matter what their circumstances, Black children are also among the most resilient. More studies of this resilience are needed in mathematics education (e.g., Berry, 2008; Ellington, 2006; McGee, 2009; Stinson, 2007, 2008).

The conception of resilience envisioned here moves beyond reinscribing beliefs about Black deficiency or that essentializes Black learners into one of two simplistic categories: those who make it and those who do not. A more robust view of Black children's resilience is not confined to their overcoming a singular, pathological and stereotypical set of material or socioeconomic conditions. Risk and protective factors exist in *every* context. Moreover, this expanded view of resilience suggests that Black learners are likely to encounter *ideologies of Black intellectual inferiority* and racial stereotypes regardless of their material or socioeconomic circumstances (Perry, 2003; McGee, 2009; Steele, 1997). This is particularly true in the contexts of mathematics learning and participation. More than any other area of the school curriculum, mathematics has been used to sort, stratify, and make ability judgments about students, particularly along lines of race and ethnic background (Diversity in Mathematics Education, 2007; Gutierrez, 2008; Namukasa, 2004; Sells, 1978; Stinson, 2004).

Although her research on resilience involved adult students, McGee (2009) documented cases of mathematically successful Black college students from diverse family and socioeconomic backgrounds who encountered, and successfully negotiated, racist ideologies, racial stereotypes, and lowered expectations for their abilities and performance in college-level mathematics and science classrooms. This was particularly the case when these students were the only one or one of a small number of Black students enrolled in their courses or programs of study. In some instances, these experiences took place at elite universities known for their excellence in science and engineering. Because the coping mechanisms among the students varied and developed over time and experience, McGee was able to nuance her characterization of resilience into a continuum of overlapping, but not opposing or binary, developmental forms ranging from *fragile* to *robust*. The former characterized students whose success was motivated primarily by a desire to disprove external racial stereotypes about Blacks and mathematics. The latter characterized a range of students who had developed through fragile forms and who had come to develop motivations that were for self-generated and who positively defined Black racial identity on their own terms. The complexity of her characterizations was also revealed in the fact that elements of the fragile forms of resilience could co-exist with the more robust forms.

Future research about Black children and mathematics might also examine how these children respond to ideologies of Black inferiority as they are manifested in schools and classroom contexts where discourses about so-called racial achievement gaps prevail (Jackson, 2009; Martin, 2009e; Spencer, 2009). Researchers might also focus on how Black children experience mathematics learning and participation in

honors and gifted contexts where they may or may not be regarded as exceptions to a set of standard beliefs about Black learners. Similarly, studies of Black children's resistance (or acquiescence) to low-track mathematics assignments might reveal how and why some students maintain positive mathematics identities despite external constructions of their abilities. A fourth area of focus could be to examine Black children's mathematical development in contexts where there are deliberate and explicit attempts to combat racial stereotypes and ideologies of Black intellectual inferiority. Recent work by Nyamekye (2010) is illustrative, having focused on Black students learning mathematics in an African-centered school. Moreover, longitudinal studies of Black children engaging in mathematics as well as simultaneous study of their mathematics self-efficacy and identities are needed. These examples are not exhaustive but do offer promising directions for further study.

Linking Identity, Knowledge, and Black Children's Phenomenal Realities

As noted earlier, race-comparative research on Black children and mathematics has helped to document disparities in achievement and persistence. A perspective that calls for studying *learning mathematics while Black* is not dismissive of these findings because they have real consequences for Black children. Yet, such a perspective does call into question studies in mainstream mathematics education research that systematically produce disparate outcomes as a result of limited conceptualizations of Blackness and Black children's social realities.

Despite this critical view on race-comparative analyses, not all of mainstream mathematics education research has been detrimental to Black children. Elsewhere (Martin, 2009c), I have characterized *mainstream* mathematics education as that which has relied on traditional models of learning (e.g., information processing, constructivism, situated cognition) and research approaches (experimental studies, race-neutral analyses, race-comparative analyses, quantitative analyses).

One challenge for the emerging research perspective described in this article is how to integrate the most theoretically and methodologically relevant elements of mainstream mathematics education. In fact, while I argue that studies of mathematics development among Black children with respect to their phenomenal realities are needed, Schoenfeld (2006) offered a reminder that no description of children as doers and learners of mathematics is complete "without a thorough categorization of the set of skills, practices, and understandings" (p. 500) of those children. More broadly, Schoenfeld (2006) pointed to a need for an integrated perspective:

The grand theoretical issue is how to meld such theoretical perspectives, and other powerful perspectives, into or with the sociocultural and cognitive perspectives that now predominate in discipline-oriented fields such as mathematics education.... The issue is how to put things together—how to see everything connected to an individual ... and the communities to which the individual belongs as a coherent whole.... What is called for in theoretical terms is specifying the linkage between... identity and knowledge base. (pp. 497-500)

Schoenfeld's view overlaps with the concerns expressed in this paper. To il-

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illustrate the need for melding of perspectives, I present a summary of a hypothetical study that is representative of studies produced in mainstream mathematics education research and representative of a family of studies that have been endorsed as exemplars of highly valued math education research (Heid, 2010). I then subject the summary to some of the demands made in the arguments for studying *learning mathematics while Black* and offer some additional considerations for the effective integration that Schoenfeld calls for while preserving the focus of studying *learning mathematics while Black*.

Although hypothetical, the study description is representative of many that have focused on children's systematic errors in multi-digit subtraction problems involving whole numbers (i.e., Verschaffel, Greer, & DeCorte, 2007). The author of the hypothetical study draws primarily on developmental and cognitive psychology and his prior work has sought to identify universals in children's mathematical thinking. His recent work has turned to questions focusing on the role of culture. In addition, the researcher has decided to extend his work to urban settings, and he hopes that his research can contribute to discussions of equity by highlighting key areas of intervention for urban elementary school children. Highlighted in one portion of the study is a student identified only as Marcus. It is reported that Marcus demonstrated poor performance on a series of problems across clinical sessions such that even his pattern of errors differed significantly from known results presented in previous studies: many children develop only a concatenated single-digit conception of multi-digit numbers. Marcus's misconceptions are characterized as reflecting low cognitive ability. His case is used as a data point in a larger argument about the at-risk status of poor, urban children and as evidence to support the claims that "most children from low-income backgrounds enter school with far less knowledge than peers from middle-income backgrounds" (U.S. Department of Education, 2008, p. xviii) and that "although low-income children have pre-mathematical knowledge, they do lack important components of mathematical knowledge" (Clements & Sarama, 2007, p. 534).

However, when the study is contextualized, important limitations, central to the arguments in this paper, are revealed. For example, consider a contextualization informed by scholarship on the political economy and history of schooling in large, urban districts, where issues of race, class, and urban transformation have intersected with neoliberal educational reform and social policy in increasingly detrimental ways for many Black families and children (Lipman, 2004, 2008; Neckerman, 2007). These intersections have also helped to create the ideological contexts that Black children must negotiate in their development both as Black children and as learners. Such a contextualization is one of many that could be offered. However, drawing on the scholarship just cited speaks to well-documented social realities faced by large numbers of Black children every day.

Assume that Marcus is a Black child.⁴ He lives with his father and grandparents in a working-class neighborhood in a large, racially segregated city. Marcus's father works full-time for the post office and also works part-time as a handyman.

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Marcus's mother passed away from illness when Marcus was four years old. The neighborhood where Marcus lives consists primarily of Black families.⁵ The history of the neighborhood reveals that it has existed as a cultural enclave, first for various European immigrant groups, then for Black residents. As the neighborhood transitioned to being primarily Black, racial tensions emerged as a result of resentment from many of the White immigrant residents. Moreover, as the Black population in the neighborhood increased, city institutions, including the school system, have increasingly underserved the neighborhood and schools predominated by Black students (Lipman, 2003, 2004; Neckerman, 2007). In the last few years, racial dynamics have begun to shift again, coinciding with gentrification of nearby neighborhoods and the dislodging of long-time Black residents by wealthier White and Black residents. There is some concern among Marcus' family that they will be forced to move from their neighborhood when the gentrification comes.

Marcus attends the neighborhood school. The school is located in a District⁶ where 43% of the students are identified as Black and nearly 90% are identified as Black and Latino. Eight percent of the students are identified as White. In many of the most selective schools, White students are represented well beyond their 8% in the total population. Many of the remaining White students in the city attend private schools. District policy is driven by attempts to close the so-called racial achievement gap between the nearly 90% Black and Latino student population and the 8% White population. Several community groups and leaders have rallied against the growing number of charter schools and called for more school funding and school improvement plans that provide students in neighborhood schools with the comparable benefits as those in charter and selective schools. These groups and leaders have also argued that racial achievement gap rhetoric throughout the District sends a damaging message to Black children about their racial and academic identities and that this rhetoric contributes to a larger discourse in the city that pathologizes Black communities and families.

With the retirement of many experienced teachers, budgetary layoffs, and increasingly punitive accountability measures, the teaching force at Marcus's school has been in transition. Many of these new teachers know very little about the history of the community, and they struggle to engage the children they teach. Marcus's teacher reluctantly took her job after failing to be hired elsewhere and plans to leave when another opportunity opens up in the local suburbs. Marcus's teacher also struggles to teach math and, as a result of her struggles, she has helped to proliferate some of the errors and misunderstandings that Marcus demonstrated in the research study. However, Marcus's test scores from two years ago show that he scored in the 90th percentile for math and 85th percentile for reading on the state assessment test. Marcus was proud of his test scores and stated that math was his favorite subject in school. He was particularly attached to his teacher the previous year because he said the teacher "never put us down, and he always told us that he cared about us." This year, however, Marcus has been disciplined by his teacher many times, as have most of the African-American boys in the classroom

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(Ferguson, 2000; Kunjufu, 2005). She has also refused to consider Marcus for gifted and talented education. Marcus's teacher is often upset with Marcus for using non-standard methods in mathematics. Marcus has stated to his teacher that he likes his methods better than the "school way." Marcus and many of the children in the class often get confused because the teacher sometimes makes mistakes in her explanations. Mathematics is quickly losing its status as his favorite subject, and he is resigning himself to going through the motions of "school math" in the way his teacher tells him. Marcus's father has talked to his teacher on several occasions, but she maintains that she is simply teaching what is in the textbook.

Outside of school, Marcus prides himself on being able to help his father and grandmother go shopping at the local grocery store. Marcus is particularly proud of his ability to correctly add all the numbers on the checkout receipt. Marcus's grandmother decided it would be good practice for him and, in the evening after shopping, she reads the numbers back to Marcus so that he can add them cumulatively. Initially, this activity was a struggle for him but with help from his grandmother, he began to develop efficient methods for carrying out the calculations. During the week in which Marcus participated in the study, his grandmother was seriously ill, and he was very worried about her.

While seemingly important information was generated about Marcus's engagement with multi-digit subtraction in the summary of the hypothetical study, the subsequent contextualization shows that those results are very limited due to their isolation from important considerations of context and Marcus's phenomenal reality, including the salience of Marcus's Black racial (and gender) identity and the social realities enveloping that identity. Consistent with the call in this article, and showing that such considerations are highly important, Berry (2008) utilized a race-based theoretical framework and an experience-based methodological approach to document *learning mathematics while Black* for mathematically successful middle school Black boys. Utilizing a phenomenological methodological framework and Critical Race Theory (CRT), Berry identified several factors that contributed to the success of Black boys in his study, and that could only be uncovered through analysis of their experiences. These findings included (a) early educational experiences, (b) recognition of abilities and how it was achieved, (c) support systems, (d) positive mathematical and academic identity, and (e) alternative identities. In achieving their success, Berry noted:

African-American boys are often confronted with lowered expectations, even when they have shown themselves capable of high achievement.... School personnel, particularly teachers, are often seen as gatekeepers of power because they possess a great deal of autonomy and control over who gains access to advanced curricula.... The evocation of power by gatekeepers leads one to question the number of capable African-American boys who are denied access to a rigorous mathematics curriculum, pushed out of the advanced mathematics pipeline, met with lowered expectations, and not provided with the support to achieve in school mathematics.... In order for more African-American boys to achieve success in mathematics, it is critical to focus on [their] stories ... in order to identify the strengths, skills, and

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other significant factors it takes to foster success. Documenting their stories will serve as a catalyst toward a more comprehensive understanding of the educational performance and persistence of African-American boys. (pp. 465-466)

In most mainstream mathematics education research, just as in the hypothetical study above, the ecological context of Marcus's mathematical thinking and development is typically left unexplored.⁷ In fact, Berry's (2008) review of the literature on mathematics success among Black boys produced no studies at the middle school level. It is in this way that Black boys and their experiences are often rendered invisible. A focus on *learning mathematics while Black* precludes this possibility.

In my view, research that gives serious and sensitive attention to these realities is likely to reveal the variety of ways these children engage in mathematical thinking and knowledge construction in relation to the demands of their everyday lives (e.g., Tate, 1994, 1995a) and in relation to how they negotiate their schooling experiences. Knowing, for example, that Marcus developed efficient and accurate mathematical methods in out-of-school settings raises questions about conclusions drawn from the study of his in-school mathematical behavior. Marcus responded to the positive motivation of his family but was deterred by negative interactions with his teacher. These divergent motivations to willingly learn mathematics with purpose in some contexts and acquiesce to teacher demands in classroom contexts should not be ignored.

In my own research with Black adolescents (Martin, 2000), for example, it was not uncommon to hear students cite "not being cheated" as a motivation to learn mathematics (also see recent work by Nyamekye, 2010). Initially, I characterized these responses as simplistic because they did not represent the instrumental reasons for learning mathematics typically found in educational discourse: access to college or jobs. However, when I later discovered the same sentiments expressed in the narratives of ex-slaves describing their motivations for learning to read, write, and count, the profound racial context of learning and doing mathematics for Black children became even more apparent (Martin & McGee, 2009).

These findings were documented in the context of my own frameworks (Martin, 2000, 2006, 2007a, 2009a), which consider *mathematics socialization* and *mathematics identity* formation and the *racialized* nature of mathematics learning and participation. These frameworks represent productive directions for future work and have already informed the work of other scholars (e.g., Berry, 2008; Cobb, Gresalfi, & Hodge, 2009; Ellington, 2006; Hart, 2003; Jackson, 2009; Leonard, 2008; McGee, 2009; Spencer, 2009; Stinson, 2007, 2008; Taylor, 2005, 2009). Within those frameworks, mathematics socialization refers to the experiences that individuals and groups have within a variety of mathematical contexts, including schools, homes, and communities, and that legitimize or inhibit meaningful participation in mathematics. Mathematics identity refers to the dispositions and deeply held beliefs that individuals develop about their ability to participate and perform effectively in mathematical contexts and to use mathematics to change

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the conditions of their lives. It is a negotiated identity that encompasses a person's self-understandings and how others see them in the context of doing mathematics.

However, as implied by Schoenfeld earlier, a focus on *learning mathematics while Black* is itself incomplete without a meaningful integration of identity-related issues and *knowledge*-focused concerns. While the perspective advocated for in this paper sheds light on Black children's phenomenal realities and situates their math development within those realities, contextualizations of *why* Black children learn mathematics in particular contexts should not replace principled understandings of *how* Black children learn mathematics.

Integrating Micro-, Meso-, and Macro-Level Concerns

In light of Schoenfeld's call for melding theoretical perspectives, one possibility is an integration of socialization-identity and racialization frameworks with microlevel problem-solving frameworks. One advantage of this integration is being able to make a theoretical case for the inextricability of *learning mathematics and being Black*, showing that neither mainstream nor emergent research approaches, in isolation, will be sufficient to characterize and explain the mathematical development of Black children.

In the early 1980's, Schoenfeld, working within a cognitivist research orientation, developed his influential problem-solving framework (Schoenfeld, 1985). The framework originally consisted of four components—*knowledge base*, *heuristics*, *metacognition*, and *beliefs*—and allows for microanalytic studies of student learning. The knowledge base, for example, includes: informal and intuitive knowledge about mathematics; facts, definitions, and the like; algorithmic procedures; routine procedures; relevant competencies; and knowledge about the rules of discourse in mathematics classrooms (Schoenfeld, 1992).

Although the early framework had a very narrow focus, Schoenfeld updated it in the 1990s to include *practices* as a way to account for the mathematical communities in which students learn and the cultural practices that characterize those communities. This advance was significant because it merged micro-level and mesolevel concerns relative to mathematics development. Although the mesolevel in Schoenfeld's expanded framework focused on communities of practice, this level, more broadly, extends to a number of contexts that are relevant to researching *learning mathematics while Black*. As noted by Bruhn and Rebach (2007):

Mesolevel structures have in common the fact that they provide people with their everyday experiences. Mesolevel structures include a variety of organizations and social networks such as neighborhoods, neighborhood institutions, gangs, clubs, public agencies, corporate businesses, boards and even Internet chat rooms. They provide everyday roles that often become intricately linked with our identities and meet a variety of needs beyond those met by family . . . For example, a public school system within an identified district, a school within that system, and Mr. Brown's third grade class could all be characterized as mesolevel structures. The school and

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the class are subject to influences and constraints from the macrolevels, the larger society, the state, the state's educational setup and from the school district itself. As mesolevel structures, the school and the class affect each child—microlevel—in Mr. Brown's class. (p. 116)

Despite being widely used since its inception and despite the opportunities afforded by the mesolevel expansion, few, if any, researchers have attempted to apply Schoenfeld's framework with Black children. Schoenfeld's (1992) own commentary hinted at the theoretical and methodological issues that researchers will need to grapple with in working toward this integration:

[We] understand little about the interactions among [beliefs, knowledge base, heuristics, metacognition, and practices] and less about how they come to cohere—in particular how an individual's learning fits together to give the individual a sense of the mathematical enterprise.... My own bias is that the key to this problem lies in the study of enculturation [and socialization].... And if we are to understand how people develop their mathematical perspective, we must look at the issue in terms of the mathematical communities in which students live and the practices that underlie those communities.... [However, the] extant tools available to cognitivists have yet to encompass the kind of social issues clearly relevant for the study of enculturation [and socialization] such as how one picks up the biases and perspectives common to members of particular subcultures. On the other hand, extant theoretical means for discussing phenomena such as enculturation [and socialization] do not yet operate at the detailed level that results in productive discussions of what people learn (for example, about mathematics) and why (1992, pp. 363-365).

In closing this article, I offer a partial response to the challenges identified by Schoenfeld. My own approach to the study of *learning mathematics while Black* considers two key questions. The first question asks, *what does it mean to be a learner and doer of mathematics in the context of being Black?* The second question asks, *what does it mean to be Black in the contexts of learning and doing mathematics?* The first question gives primary attention to the ways that Black children develop as mathematics learners but takes into account their mathematics socializations and identity-shaping experiences and their phenomenal realities as Black children (See Figure 1). The second question foregrounds emerging understandings of *being Black* but takes into account the role of students' mathematical experiences and identities in shaping their emerging understandings. These experiences, in turn, are influenced by students' experiences with mathematical problem solving in a variety of contexts.

Returning to the earlier example of Marcus, this merging of frameworks demands that Marcus's beliefs, problem solving strategies, metacognitive awareness, knowledge base, and engagement in mathematics practices be explored in relation to his mathematics socialization experiences and mathematics identity development and that his socialization experiences and identity be explored in relation to his phenomenal Black reality as well as the structural, ideological, and material forces acting on that reality. A narrow focus on the knowledge base or strategies,

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Figure 1
Integrated Framework for Studying
“Learning Mathematics While Black”
 (micro-, meso-, and marco-levels)

Phenomenal Black Realities				
Mathematics Socialization and Identity Experiences ⁸				
Knowledge Base	Heuristics	Metacognition	Beliefs	Practices
What does it mean to be a learner and doer of mathematics in the context of being Black? What does it mean to be Black in the contexts of learning and doing mathematics?				

as in the hypothetical study present above, is limited without attention to the other components of the integrated framework depicted in Figure 1. Additional research is needed to further explore relationships among these components.

Where Do We Go from Here?

The research on Black child development with its consistent practice of defining black behavior exclusively in terms of white normative behavior perpetuates the mystification and idealization of the White norm. In doing so, very little can be said about variation among Black children within the phenomenal Black reality. What, for example, is normative Black development? What factors seem to account for deviations from this norm, both positive and negative, among Black children? (Myers, Rana, & Harris, 1979, p. xiv, as cited in McLoyd, 1991, p. 423)

In making my arguments for more complex and culturally sensitive approaches to studying Black children’s mathematical development, I am not claiming that the frameworks referenced above are the only frameworks that can be used to study Black children. Frameworks are helpful but any framework or theory can be misused and applied to confirm or reify deficit ideologies. Just as important as frameworks are the assumptions that inform researchers and that undergird their analyses. Frameworks must be accompanied by a deep commitment to understanding what it means to *learn mathematics while Black*. Reflective of that deep commitment, I believe the following assumption, at a minimum, should inform all future inquiry to the mathematical experiences of Black children:

Black children possess the intellectual capacity to learn mathematics as well any other child; researchers should not overly concern themselves with documenting how Black children differ from White children and reifying so-called racial achievement gaps but with how Black children can best attain and maintain excellence in mathematics.

This statement is not meant to romanticize Black children nor to ignore their struggles. However, attention is required to Black children’s social realities and how

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forces, discourses, and ideologies in the larger society influence those realities. I remain hopeful that mathematics education research and policy, if done right, can benefit these children. Clearly, what constitutes “right” is subject to much debate. Yet, little that constitutes right for these children will emerge from research approaches and assumptions that contribute to negative social constructions and representations of these children or that do not consider the realities of what it means to *learn mathematics while Black*.

Notes

¹ I wish to acknowledge Dr. Ebony O. McGee for giving me permission to use this title. An earlier version of this article was delivered as a plenary address at the 31st annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Atlanta, Georgia, 2009.

² There is a separate literature on Science, Technology, Engineering, and Mathematics (STEM) retention efforts. However, that literature typically focuses on *program* elements as the unit of analysis and is generally less concerned with generating theory on issues of learning.

³ I am not claiming that the researchers cited here have framed Black children in negative ways. However, the findings from such comparative studies often become the basis and evidence for such constructions more generally.

⁴ A similar description of Marcus appears in Martin, Gholson, and Leonard (2011). This hypothetical student is a compilation of students presented in Berry (2008), Ferguson (2000), Jackson (2009), Malloy and Jones (1998), Martin (2000), and Taylor (2005, 2009).

⁵ The historical, neighborhood, and school dynamics described below align with descriptions of Chicago and its public schools provided by scholars such as Lipman (2003, 2004) and Neckerman (2007).

⁶ Chicago Public Schools serve as a reference for the data that are presented below.

⁷ This is also manifested in many recent studies of identity among mainstream math education researchers. In some studies, these researchers fail to provide any identifying information about students beyond their (race, ethnicity, or gender) very specific mathematical behaviors. In some studies that I have reviewed, even the race and ethnic identity of the students were not mentioned, let alone other salient information.

⁸ See Martin (2000) for an expanded version of this framework.

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