TEACHING WITH RACE IN MIND: EXPLORING THE WORK OF ANTIRACISM IN LEADING WHOLE-CLASS MATHEMATICS DISCUSSIONS

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How might teachers of elementary mathematics pursue antiracism through everyday practices such as leading whole-class discussions? This paper reports on an exploratory study of one White woman teacher's efforts to challenge manifestations of structural racism in classroom interactions with students who are predominantly Black. The results include preliminary characterization of three areas of antiracist work: planned and routine practices, in-the-moment responses to student behavior, and ongoing interpretation of classroom events. Implications for research on mathematics teaching and for mathematics teacher education are discussed.

Keywords: Elementary School Education, Social Justice, Instructional Activities and Practices

Recent scholarship on the pursuit of equity in mathematics education has emphasized the importance of teacher and student identity, including racial identity, in supporting the learning of students from historically and currently marginalized groups (Aguirre, Mayfield-Ingram, & Martin, 2013; Bartell et al., 2017; de Freitas, 2008; Varelas, Martin, & Kane, 2012). Additionally, critical scholars emphasize the structural nature of educational inequities and call for broader interrogation of systems of power and social injustices (Gutiérrez, 2013; Gutstein, 2012; Martin, 2015). Mathematics educators often take up questions of identity and power and of race and racism through curricular innovations, developing mathematical investigations of sociopolitical issues like gentrification and housing displacement (Gutstein, 2012). However, there has been less attention paid to how mathematics teachers might teach with race in mind in their everyday practice, especially while working on conventional mathematics topics in elementary classrooms.

In this paper, I report on an exploratory study of one teacher's efforts to work against structural racism in her daily practice of leading whole-class mathematics discussions. I present preliminary findings pertaining to the following research question: *What does the teacher do in the context of day-to-day elementary mathematics teaching that could be considered antiracist work?* The purpose of the study is not to determine the effectiveness of the teacher's antiracist efforts nor to declare universal "best" practices. Instead, the objective is to describe and make sense of this teacher's work as she pursues antiracism in order to raise questions and considerations for the fields of mathematics education and mathematics teacher education.

Theoretical Perspectives

This project draws primarily on three theoretical perspectives: critical race theory, conceptions of teaching as complex and situated interaction, and positioning theory. I draw on critical race theory and particular conceptions of teaching to articulate foundational assumptions that undergird the project as a whole. I apply concepts from positioning theory more directly as tools in my analysis of empirical data.

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Premises for Studying Race and Racism from Critical Race Theory

My attention to race and racism is driven and informed by several core concepts in critical race theory (CRT). CRT emerged in the 1970s out of several legal scholars' dissatisfaction with traditional approaches to addressing racial inequality. In the 1990s, Ladson-Billings and Tate introduced CRT to the field of education (Ladson-Billings, 1999; Leonardo, 2013). CRT scholars understand race as a social construct that has real, material consequences (Ladson-Billings, 1999). Moreover, a central idea in CRT is that racism is endemic to U.S. society, so normalized that its presence and effects often go unrecognized, especially by White people (Leonardo, 2013; López, 2003). Given this, CRT helps make visible that racism is at work in familiar contexts and activities, such as a class discussion about a math problem. In addition, CRT scholars understand racism as a system of oppression that creates and maintains a racial structure, *not* just "willful act[s] of aggression against a person based on their skin color" (Parker & Lynn, 2002, p. 9). Thus, from a CRT perspective, being an antiracist teacher must mean more than calling out or avoiding blatant personal discrimination in the classroom; instead, antiracist teaching must strive toward dismantling racist ideas and systems that structure children's lives.

Conceptualizing Teaching: Complex Interaction in Social and Historical Context

A conception of teaching as interactive and situated work is foundational to this study. I adopt Cohen, Raudenbush, and Ball's (2003) instructional triangle, which represents teaching as mutually-influencing interactions among teachers, students, content, and environments. This conception has several important implications for my analysis of antiracist efforts in mathematics teaching. First, it suggests that teaching is not unilaterally determined by any single actor or influence; teachers' intentions depend on students and the environment to be realized. Second, teaching is a complex activity that can have multiple and varied effects upon participants. For instance, there is no guarantee that all students will similarly interpret or experience a teacher's words and actions. Finally, the instructional triangle implies that environments, including endemic racism, enter into teaching and learning in several ways. For one, the institution of schooling brings a long history of social norms and expectations (Tye, 2000). Drawing again on CRT, the social and historical context of schooling includes nominally colorblind policies that disproportionately impact people of color, as well as assumptions of Whiteness as the norm (Bonilla-Silva, 2015; Yoon, 2012). Thus, by highlighting interactions between environments and teachers, students, and content, the instructional triangle model can support serious consideration of social and historical contexts in analyses of teaching and learning.

Positioning: A Conceptual Tool for Bridging the Macro and the Micro

Given CRT's emphasis on the structural nature of racism, applications of CRT in education often focus on school- and district-level issues like tracking, discipline, and funding (e.g., Blaisdell, 2016; Chapman, 2013). To bring consideration of race and racism to the level of classroom interactions, I draw on the concept of *positioning.* As conceived by Davies and Harré (1990), positioning, in part, encompasses the ways that speakers metaphorically locate each other in conversations and jointly construct *storylines*. In a mathematics classroom setting, for example, students may be positioned by themselves and others as more or less mathematically competent. Scholars of mathematics education have used the concept of positioning to examine both micro-level moment-to-moment interactions (e.g., Wood, 2013) and patterns of interaction over time (e.g., Langer-Osuna, 2011). Such studies suggest that teachers' practices have the potential to affirm or challenge storylines of students' mathematical competence. Furthermore, scholars have linked storylines being constructed in classrooms to broader societal discourses and stereotypes. For example, Shah and Leonardo (2016), Nasir et al. (2009), and Martin (2006)

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demonstrate that students in mathematics classrooms actively navigate racialized discourses and stereotypes about mathematical ability based on race. Such discourses and stereotypes function as possible storylines that teachers and students may contribute to or resist through classroom interaction (cf. Davies & Harré, 1990). In terms of antiracism, I explore the question of whether the storylines the teacher contributes to reflect or challenge broader racist narratives and patterns of mathematics learning experiences. Thus, I use the concepts of storylines and positioning to begin bridging the issues and identities at play in micro-level classroom interactions to macro-level narratives and patterns.

Research Questions

The purpose of this inquiry is to offer a description and exploratory analysis of one teacher's efforts to counter racist narratives and patterns of experience through her teaching of elementary mathematics. In a larger study of a teacher in a two-week summer mathematics class for rising fifth graders, I pursue three research questions:

1. How does the teacher describe her efforts to combat racism?
2. What does the teacher do in the context of day-to-day elementary mathematics teaching that could be considered antiracist work (as defined below)?
3. What tensions and challenges arise in the teacher's efforts to combat racism?

For this paper, I focus on the second research question. I use the following working definition of *antiracist work* in teaching: deliberate efforts to position students in ways that counteract racist ideas (e.g., discourses about the intellectual deficiency of Black children described by Martin, 2009) as well as efforts to disrupt racialized patterns in students' learning experiences, such as having limited access to challenging mathematics instruction (Battey & Leyva, 2018). This is not meant to be an exhaustive or exclusive definition of antiracist work, and I recognize that acting on antiracist intentions in no way guarantees that a teacher's practice is not harmful or problematic. With these limitations in mind, I use this working definition as an entry point for describing and making sense of the focal teacher's practice. In the following section, I describe the research context and methods.

Methods

This project is an interpretive qualitative study. Therefore, the perspectives I bring as a researcher necessarily inform my selection of data, analytical process, and conclusions (Hesse-Biber & Leavy, 2011; Ladson-Billings, 2000). I share my approach and rationale below.

Context and Participants

This study focuses on a two-week summer mathematics class held at a large public university in 2017 for rising fifth grade students. The mathematics class was framed as a laboratory for the study of teaching and included opportunities for adult observers to attend daily pre-brief sessions with the classroom teacher, in-person or remote viewing of the math class, and debrief sessions. All pre-brief, math class, and debrief sessions were video-recorded. Students were recruited by the program director from a neighboring school district. There were 20 students, 10 boys and 10 girls. There were 16 students of color, most of whom were Black, and 4 White students. The math class lasted about 2 hours a day and included a 15-minute break. The teacher of the math class is the focus of this study. The teacher is a White woman with extensive experience teaching elementary mathematics. She is also a prominent scholar of education who has publicly

expressed her commitment to challenging racism and other forms of oppression through everyday teaching practices; I chose to study this context because of that commitment.

Data Sources

Data for this analysis were drawn from a larger collection, including video records of the 2017 mathematics class from two cameras capturing different angles of activity, daily lesson plans, and scanned classroom artifacts, such as student notebooks. I attended the 2017 program as a participant observer in a remote viewing room. I took daily field notes including descriptions of events as well as my questions and reactions for the pre-brief, math class, and debrief. I also wrote daily reflective memos. In addition, several months after the summer program, I conducted two 30-minute semi-structured interviews with the teacher about her approach to challenging racism through teaching. Both interviews were audio-recorded and transcribed.

Analytical Approach

Data reduction. I focus my analysis on whole-class discussions because that was the predominant activity structure for Days 1 through 6 of the 2017 class. I was particularly interested in discussions that surfaced tensions and complexities in the teacher's efforts to enact her antiracist commitments. To locate video segments of whole-class discussions and begin identifying particular moments of interest, I watched videos of the class in chronological order and created content logs. I selected one segment of whole-class discussion from each day of instruction, using shifts in classroom activities to bound each episode (Jordan & Henderson, 1995). I transcribed six classroom episodes, parsing discourse into one *message unit* per transcript line (Bloome, Carter, Christian, Otto, & Shuart-Faris, 2010). As defined by Bloome et al. (2010), a message unit is "the smallest unit of conversational meaning" (p. 19). Within a given talk turn, a speaker might impart multiple messages (e.g., thanking a student for contributing and then posing a question to the class). I separated such message units when transcribing to enable more nuanced coding.

Coding. Given that this paper focuses on findings related to my second research question, here I detail my process for coding classroom transcripts. I used *process coding*, or descriptive codes in the form of gerunds (Saldaña, 2016), to characterize the teacher's moves and practices in classroom interactions. I generated one process code for each line of classroom transcript. I also selectively used *versus codes*, such as "addressing distractions vs. maintaining momentum in discussion," to flag tensions and conflicts within the teacher's efforts (Saldaña, 2016). While coding, I iteratively consulted literature on teaching to inform my interpretations (e.g., Ball & Wilson, 1996; Hammerness & Kennedy, 2018; Noblit, 1993), considered insights from interviews with the teacher, and drafted analytic memos (Hesse-Biber & Leavy, 2011; Saldaña, 2016). I sorted all process and versus codes into categories to notice patterns and incongruities (Saldaña, 2016). Finally, I re-watched videos of the six classroom episodes and reread my field notes, reflective memos, and video content logs to recall relevant context, refine analytic claims, and bolster reliability (Cho & Trent, 2006).

Researcher Positionality. Recognizing that my positionality and subjectivity as a researcher inevitably shape the meanings I construct, I aim to transparently name my stances. I am a White woman and former elementary teacher who struggled to conceptualize and enact mathematics teaching that simultaneously supported student learning and challenged racism. Moreover, as a mathematics teacher educator, I am committed to describing and analyzing the complex work of teaching in ways that are pragmatically useful for supporting novice teachers to take on antiracist commitments. I am particularly invested in unpacking the tensions and challenges of antiracist work for White women, as White women make up the overwhelming majority of preservice

teachers I work with and over 80% of the U.S. educator workforce is White (U.S. Department of Education, 2016). In addition, I recognize the problematic tropes and histories of well-meaning White women adopting a "savior" mentality (Matias, 2013) as well as liberal, colorblind frames in teaching children of color (Brown & Reed, 2017; Warren & Talley, 2017). To complicate and unsettle my own assumptions and inclinations as a White woman, I deliberately looked to perspectives of scholars of color. I also sought out alternate interpretations of data through discussion with critical colleagues (Jordan & Henderson, 1995).

Summary of Preliminary Results

What did the focal teacher do in the context of leading whole-class mathematics discussions that could be considered antiracist work? Based on my analysis of classroom episodes, I argue that the teacher in question engaged in antiracist work in three domains: (a) planned and routine moves and practices; (b) in-the-moment responses to student behavior; and (c) ongoing interpretation of classroom events. These results are preliminary in that they reflect initial, high-level analytic claims that will be further refined and evidenced when presented with specific classroom episodes. Given the brevity of this report, I summarize categories of the teacher's efforts rather than provide detailed illustrations of particular moves in practice. Brief examples and explanations are included to illustrate the kind of classroom interactions that led to these categorizations. I now turn to describing each domain.

Planned and Routine Work: Broadening Participation and Competence in Mathematics

One area of the teacher's work that challenged racist ideas and structures consisted of the pre-emptive, deliberate moves the teacher made to shape the learning environment and create spaces for students to engage productively with each other and the mathematics. This domain reflects the goals and considerations the teacher put forward in lesson plans, shared with adult observers during pre-brief sessions, and described in interviews. Practices in this domain include efforts to build relationships with students, such as taking care to learn and use students' preferred names, and efforts to depart from seemingly-arbitrary school rules, as with discussions of student and teacher contracts. This domain also includes the teacher's efforts to expand notions of what constitutes mathematics and mathematical smartness and to support broad participation in mathematical discourse. The teacher shared in interviews that she tries to challenge the idea that "Black children don't make mathematics" and to disrupt patterns of "experience[s] that I'm imagining that they may have had with White teachers," including not being seen as smart (Interview 2). Thus, the teacher's proactive practices are premised upon recognizing and deliberately countering racist stereotypes that link children's race with their mathematical ability and perceived smartness.

The teacher engaged in numerous practices that reflect her efforts to broaden the meaning of mathematics and mathematical smartness for her students. For example, the teacher used challenging mathematical tasks with multiple entry points and varying solution spaces, including problems with infinitely many solutions and problems with no solutions. She also emphasized constructing sound mathematical explanations over finding correct answers and invested considerable time in scaffolding and supporting mathematical explanations from students who might have otherwise been positioned by their peers as less mathematically capable. The teacher consistently positioned students of color as making important mathematical contributions, saying things like, "Can you say that again? What you said was really important and I want to make sure everyone hears it." The teacher also highlighted students' agency in deciding what made mathematical sense and how they might participate. She routinely offered multiple ways for

students to participate in whole-class discussions, including the options of reading problems, interpreting tasks, posing a new problem, calling on peers, presenting solutions, explaining solutions, and restating ideas. Following my working definition of antiracist work, the teacher's planned and routine practices reflect attempts to counter racist stereotypes and depart from entrenched racial patterns in school mathematics.

Responding to Tensions and Challenges in the Moment

The previous domain consisted of things the teacher could plan for and intentionally construct over time in the classroom space. I now turn to more immediate and unanticipated interactions — how the teacher responded in the moment when student behavior posed challenges and raised tensions. Drawing from my process and versus codes, I separated tensions and challenges into two broad categories: (a) situations involving minor disruptions which the teacher generally handled using commonplace redirection strategies, and (b) situations involving more persistent or egregious disruptions that occasioned novel responses from the teacher. For both categories, I consider the teacher's responses a space for antiracist work because of the well-documented pattern of disproportionate discipline of children of color (Darby & Rury, 2018; Girvan, Gion, McIntosh, & Smolkowski, 2017; Skiba, Michael, Nardo, & Peterson, 2002; Smolkowski, Girvan, McIntosh, Nese, & Horner, 2016). Teacher-student interactions around behavior and discipline carry weighty implications for questions of racial bias and the perpetuation of racial inequalities. Through her momentary responses to challenges, the teacher had the potential to feed into or actively counter negative stereotypes of children of color as being out of control (Milner, Cunningham, Delale-O'Connor, & Kestenberg, 2019) or incapable of discussion-based, challenging mathematical work (Battey & Leyva, 2018).

Routine redirection. When students engaged in commonplace, minorly distracting behaviors like talking with peers, laughing, or commenting out of turn, the teacher responded using strategies suggestive of student-centered and culturally responsive classroom management approaches. For example, the teacher often used physical proximity to students, whole-class reminders to look at the speaker or to listen carefully, and mathematical questions to refocus students on the discussion. These strategies focus on what students should do*,* operating on the assumption that students want to participate successfully, rather than taking an accusatory or punitive tone. This is consistent with the student-centered *Responsive Classroom* approach to classroom management (e.g., Charney, 2002). Such redirection strategies avoid publicly reprimanding or punishing students for misbehavior, thereby protecting children's dignity (Darby & Rury, 2018). In addition, the teacher's comments in debrief sessions revealed that she consciously chose not to address behaviors if they did not interfere with other students' learning and were solely matters of teacher preference. Choices to ignore certain student behaviors, such as wearing a hood in math class, evoke the culturally responsive classroom management stance that teachers' behavior preferences reflect specific racial and cultural assumptions (Weinstein, Curran, & Tomlinson-Clarke, 2003). Thus, the teacher worked to prevent manifestations of racial bias through her routine responses to minor challenges.

More pressing challenges and complex tensions. Aside from commonplace distractions and minor disruptions, the teacher had to navigate several more complex challenges while orchestrating class discussions. For instance, at times students' side commentary positioned the student who was presenting as lacking mathematical competence, which may have caused emotional harm. Other times, the level of background noise was persistent and distracting enough to make a coherent mathematics discussion untenable. In each of these situations, the teacher's routine redirection strategies were insufficient for returning to or bringing about a

productive mathematical discussion. Given that these are the sort of behavior issues that could easily escalate and contribute to racist patterns of disproportionate discipline, I think the teacher's ways of responding constitute a particularly important space for antiracist work.

One of the teacher's responses to these non-routine challenges was giving the class an impromptu task so she could speak privately with an individual student. This approach again protected the dignity of the student being addressed (Darby & Rury, 2018). Another two teacher responses were having students write a "note to self" about goals related to the student contract and making meta-comments about how the class discussion was going. When the teacher responded in these ways, she recognized students' positive contributions, such as doing "amazing thinking," alongside things students needed to work on, such as listening carefully to each other. While the teacher's responses sometimes had the potential to position individual children as troublemakers, the teacher's commentary in debriefs indicated that she was determined not to conflate students' actions in a particular moment with their mathematical abilities, effort, or overall character; she saw each interaction as just one window into students as growing, multidimensional people. This suggests a commitment to countering deficit perspectives about students of color throughout tense, challenging classroom situations.

Ongoing Interpretive Work

A third category of antiracist work was the teacher's ongoing interpretation of classroom events. As scholars of reflective teaching (e.g., Zeichner & Liston, 2014) have documented, teachers often engage in analysis and sensemaking of how lessons and activities unfold, including framing and reframing problems. Given that the focal teacher worked in a context with many adult observers, she routinely made public many of her reflections and analyses. I consider the teacher's ongoing interpretation of classroom events a space for antiracist work because of the potential for deficit framing to bring about damaging patterns in teaching and learning. Teachers' framing of problems such as why students are not volunteering to participate in a discussion, delimits the range of pedagogical solutions they consider and can have profound implications for students' learning opportunities (Horn, 2007). Thus, I argue that framing and explaining classroom events is a space where the teacher engages in antiracist work at an ideological level, but with material implications for student learning and identity development.

The teacher's navigation of racial ideologies in relation to classroom events was particularly evident in her comments during pre-brief and debrief sessions. For instance, when adult observers made suggestions or posed questions that called attention to gaps in students' mathematical understanding or concerns about student behavior, the teacher actively resisted characterizing students in deficit terms. Instead, the teacher regularly pointed to students' mathematical strengths and offered explanations for student behavior that were external to the students themselves. Specifically, the teacher spoke about conflicts between students and disruptions to whole-class discussions as instances where "the social channel" was temporarily louder than the mathematics. The teacher saw students' behavior as understandable given their prior relationships with each other, and she strategized about how to restructure class activities to tap into students' genuine interest and strengths in mathematics. The possibility that the problem was inherent to the students themselves was never entertained. This interpretation of classroom challenges notably departs from deficit ideologies that would frame children of color as lacking in intellectual ability or moral character (Darby & Rury, 2018) and suggests that part of the work of antiracism in mathematics teaching is leveraging an unyielding commitment to seeing and building on the strengths of students of color.

Discussion and Conclusions

This preliminary characterization of one teacher's antiracist efforts while leading whole-class mathematics discussions raises several issues for research on antiracism and mathematics teaching practices. One question is how to think about implications of the teacher's positionality in doing antiracist work. In other words, how does it matter that in this case the teacher is a White woman and that most of the students are Black? This is a question that many texts on equitable mathematics teaching or student-centered classroom management fail to tackle (cf. Boaler, 2016; Charney, 2002; Featherstone et al., 2011; Smith & Stein, 2018). Yet, the identities of the teacher and students invoke particular narratives, stereotypes, and societal injustices that complicate interpretations of classroom interactions, especially with regard to uses of power and authority. For example, there are widely recognized patterns of White women teachers being overly punitive and controlling of Black children's bodies (Battey & Leyva, 2018; Brown & Reed, 2017; Epstein, Blake, & González, 2017; Ferguson, 2001; Smolkowski et al., 2016). If the teacher being studied here were Black rather than White, that particular macro-level pattern would not be invoked in the same way. At the same time, stereotypes that are rooted in narrow, Eurocentric conceptions of mathematics and intelligence (Davis & Martin, 2008) could be reinforced by teachers of any race or gender. In interviews, the focal teacher explicitly described making efforts not to fall into the same patterns that many White women teachers perpetuate. Thus, the teacher's awareness of the relevance of broader patterns of injustice to the identities of herself and her students seemed to inform the particular ways she exercised power and authority in her mathematics teaching. That is, the teacher's identity mattered in her navigation of the line between oppressive and non-oppressive uses of power. Future research could explore how the tensions of antiracist mathematics teaching shift or persist in relation to teachers' identities.

In addition, considering various conceptions of power suggests different ways of navigating tensions stemming from social identities and societal patterns. Bloome et al. (2010) describe three perspectives on power: power as a product, power as a process, and power as caring relations. If exercising power includes centering care for students' well-being, then a teacher might pursue antiracist uses of power through caring. Yet, as Thompson (1998) and Rolón-Dow (2005) demonstrate, notions of care also stem from racialized assumptions and perspectives, namely, White feminist interpretations of care are often colorblind and emphasize niceness, varying significantly from Black feminist interpretations which highlight honesty and authenticity in making sense of racial realities. Thus, there is tension in figuring out how to exercise power and demonstrate care for children of color as a White woman in ways that do not reinforce Whiteness and perpetuate racism. Therefore, teachers' interrogation of their own social identities and assumptions seems central to navigating inherent tensions in pursuit of antiracism.

This exploratory study of one teacher's efforts to pursue antiracism through leading whole-class mathematics discussions suggests that there is great complexity to analyzing race and racism in everyday classroom interactions. Existing literature on mathematics teaching and on antiracism offers little support for teachers in recognizing and navigating these complexities and tensions at the level of day-to-day classroom practice. My findings suggest that additional work is needed to identify and analyze specific mathematics teaching moves and practices in relation to broader antiracist projects. Research that explores challenges that novice elementary teachers face in taking up antiracism, as well as how teaching considerations change in light of different teacher and student identities could inform justice-oriented, race-conscious approaches to mathematics teacher education. To avoid the pitfall of turning studies of teaching practice into superficial prescriptive checklists (Philip et al., 2018), researchers must continually attend to

complexity and tensions stemming from identity and power structures. Furthermore, mathematics teacher educators must endeavor to support teachers in the critical analytical and interpretive work of considering how everyday teaching practices relate to macro-level narratives and patterns. The work of antiracism in leading whole-class mathematics discussions and teaching elementary mathematics is not simple; it is ongoing, socially-situated work.

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