Challenging Stock Stories of Mathematics Education: Meritocracy and Color-blindness Within Teachers' Beliefs

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Although mathematics is often described as race-neutral and color-blind, data on the achievement gap and lived experiences of marginalized populations indicates otherwise. This article problematizes widely held views of meritocracy and color-blindness in mathematics education, exploring the origins of these beliefs, and the potential to disrupt them. The author utilizes his own experience in evolving his classroom practice as a function of his beliefs of mathematics, and teaching and learning mathematics, to provide a specific context in which to situate the literature base. Critical race theory is incorporated as a lens to understand the power structures associated with these stock stories.

Introduction

Research on mathematics teachers' beliefs has a history more than four decades long, with a myriad of different foci. Thompson's (1992) summary of this body of research from 1916 to 1992 delineates the history of research into mathematics teachers' beliefs in parallel with the aspects of research in social psychology. The study of people's beliefs held strong interest among social psychologists in the early 20th century, which then faded in the 1930s, and then was revived with cognitive psychology in the 1970s (Thompson, 1992). Subsequently, "the 1980s witnessed a resurgence of interest in the beliefs and belief systems among scholars from disciplines as diverse as psychology, political science, anthropology, and education" (Thompson, 1992, p. 129). Thompson (1984) noted the connection between mathematics teachers' beliefs and their practices, although she indicated that the relationship was complex, involving many factors.

As the body of research in mathematics education focusing on

teachers' beliefs grew in these decades, so did the varying conceptualizations of belief, and commensurately definitions of the term (e.g. McLeod, 1992; Thompson, 1984). Pajares (1992) attempted to gather the variety of conceptualizations in the literature base to reduce confusion and clutter regarding varying definitions of beliefs, and has been cited in more than 5,000 scholarly works[1]. However, mathematics education in the 1990s occurred in an era that has become known as the Math Wars (Schoenfeld, 2004), in which academics fought over epistemology and pedagogy of mathematics. Teaching methodologies and mathematics curricula were central research topics in the last decade of the 20th century. The 2002 publication, *Beliefs: A Hidden Variable in Mathematics Education?* further opened the academic conversation to an aspect of research that has received less attention than more prominent mathematics topics at the end of the 1990s. Subsequently, the publication in 2009, *Beliefs and Attitudes in Mathematics Education: New Research Results* added to the body of knowledge, but did not address at least one critical aspect. Lacking from this work, and virtually all other mathematics education research on teachers' beliefs, is the study of race.

Mathematics is widely perceived as neutral and accessible to all (Battey & Franke, 2013; Nasir, Atukpawu, O'Connor, Davis, Wischnia, & Tsang, 2009; Tate, 1994), yet this perception is in direct contrast with the lived experiences of minority[2] students (Berry, 2005; Martin, 2006). The widely researched achievement gap (Leonard, 2009) is one indicator of inequitably structured education, consistently showing a drop in performance between white/Asian students and Black, Latina/o, American Indian, and Alaska Native students. However, merely noting the differences in performance on standardized tests can result in perpetuating inequity[3] through deficiting[4] minority students (Gutierrez, 2008; Gutierrez & Dixon-Roman, 2011), without significantly adding to the understanding of institutionalized barriers. The identification of the gap in performance between white and minority populations, without situating this aspect within the larger consideration of race in education, allows for the gap to be explained through deficits in minority groups (e.g. Herrnstein & Murray, 1994).

Deficit thinking in the United States has a substantial historical lineage, with social impacts that span the centuries from colonial America to the present day.

> In sum, the roots of deficit thinking are inextricably tied to racist discourses that evolved from the early 1600s to the late 1800s. Out of these discourses came beliefs that racial minorities were physically, cognitively or culturally inferior to whites… In the area of American education, most racial minorities were denied the privilege of being schooled until the early 1900s, and the rationales used to justify this practice ranged from ideological beliefs based upon racist assumptions to economic interests supported by whites (Menchaca, 1997, p. 37).

Specifically applied to education, deficit thinking is manifested in the development of intelligence testing through racist ideologies (Valencia, 1997b). Intelligence testing was utilized to restrict access to the highest quality of education on the basis of the purported credibility of measurable intelligence: "The alliance of intelligence testing, deficit thinking and curriculum differentiation helped to legitimize the meritocratic ideology of 'equality of opportunity' (one gets in curriculum what one deserves, based on innate ability)" (Valencia, 1997b, p. 82). The devastating impact of deficit thinking is relevant, especially when race is undertheorized in mathematics education research, and is instead reified as a categorical unit with causal implications.

Hence, research into aspects of how mathematics education impacts the lives of minority students is called for (Gutierrez, 2008; Martin, 2009), with particular attention to how race is conceptualized (Martin, 2013).

Personal Experiences as a Teacher Impact Belief Structures

I had been teaching secondary mathematics for fourteen years before my beliefs and teaching practices underwent significant transformation. In those initial years, I believed that mathematics was a discipline removed from questions concerning bias and subjectivity. Mathematics was a matter of thought, not a matter of interpretation, and if there were problems with accessibility to mathematics, I did not perceive them to be rooted in content or instruction. My beliefs in mathematics as a unique and pure discipline meshed with

my beliefs about education in general, and specifically about learning mathematics. I professed the values into which I was acculturated (Harro, 2000), and believed strongly in the majoritarian narrative[5] of rugged individualism and work ethic (Cammarota, 2006; Lawrence III, Matsuda, Delgado, & Williams Crenshaw, 1993), which "privileges Whites, men, the middle and/or upper class, and heterosexuals by naming these social positions as natural or normative points of reference" (Solorzano & Yosso, 2009, p. 135).

To provide insight into this story, I utilize critical race theory[6] to name my students, and myself and to provide context to understand the underlying structures of power that permeate my story (Ladson-Billings, 2009). I am white, male, and middle class, and I exist in a society that bestows privileges on people with these characteristics (Bell, 2010; Delgado & Stefancic, 2001). One of these privileges is that of majoritarian stories, which establish and reify norms based upon white privilege (Solozano & Yosso, 2009). "Stock stories are the tales told by the dominant group, passed on through historical and literary documents, and celebrated through public rituals, law, the arts, education and media" (Bell, 2010, p. 23). Two stock stories figure prominently in this discussion: meritocracy (Bell, 2010; Delgado & Stefancic, 2001) and colorblindness (Bell, 2010; Delgado & Stefancic, 2001; Kendall, 2006). I believed strongly in the majoritarian narrative that espoused "you can accomplish anything if you work hard enough at it." Two values emanate from this ideology: work ethic and individualism – one must work hard, and one must work alone to succeed, as anything else would be cheating. Although I have been greatly concerned about racism my entire life, I willingly embraced the narrative of colorblindness when it came to instruction and my classroom. I believed mathematics to be a race-neutral subject, and the learning of mathematics was not just imminently connected with the work one was willing to put in, but was inseparable from that.

I teach in a school district on the border with Mexico in which 95% of the students are Latina/o and 100% of the students receive free lunches, yet my adherence to colorblind and class-blind ideologies allowed me to alleviate myself of responsibility for their widespread failure in my classroom. As I reviewed the capabilities of my students, I freely engaged in deficit thinking (Valencia, 1997a), noting to myself and my colleagues that "if they would only do their homework/take notes during class/ask questions/pay attention/try harder,"

they would learn the material and their grades would be higher. I fully situated their acquisition of mathematics as *their responsibility*. Those students who excelled, I applauded; and those who failed, I blamed for a spectrum of faults (Valencia, 1997a). I decried their lack of effort, and their unwillingness to accept personal responsibility. I perceived their devaluing of individualism through their continual desire to work together and lamented that with group work I could not ensure who had actually earned the grade, and who was benefiting from others' knowledge without commensurate effort. By and large, the ways that my students wanted to learn in the classroom conflicted with my beliefs about learning mathematics. My colleagues in the mathematics department did not challenge my teaching methods, results, or construction of a race-neutral meritocratic identity as a teacher. Instead, as my colleagues historically held identical views, these were the norm for mathematics instruction at my school. "The story of meritocracy affirms an image of fairness and justifies positions of dominance as rightly earned, while simultaneously holding those who are not successful accountable for their own failure" (Bell, 2010, p. 34). Many of my students failed, and I applied the stock story of work ethic to shoulder them with the burden.

My beliefs in mathematics as a field accessible to all who were willing to put forth the effort were challenged by several personal experiences. After a decade and a half of teaching, I returned to school to earn my Master's degree and later began my doctorate. I continued to teach during graduate school, and courses in my Master's program focused on student-centered learning and inquiry-based instruction. As I began to explore how to implement these pedagogies, I saw students who had previously been rendered silent now more active in my classes. I continued to modify my practice, learning how my students wanted to engage in their own learning. Their renewed involvement in mathematics provided counterstories[7], contesting my previously unchallenged beliefs about mathematics – beliefs that until this point melded nicely with the majoritarian narrative.

Through these events, my beliefs about mathematics and teaching and learning mathematics changed forever. The foundations I had relied on for nearly a decade and a half had been cracked, and over the following years would be razed. I began to question my assumptions about accessibility to mathematical knowledge, with the burgeoning understanding that my belief in the unbiased nature of mathematics

was inherently flawed. I came to understand that access to mathematics was impeded by my practice, and that my belief system created unequal opportunities to learn, marginalizing students through deficiting. It was not a matter of effort – it was access!

I experienced cognitive and emotional dissonance as I considered how I had erected barriers that impeded the access of many of my students, and how social structures of race and power allowed me to do so with impunity. Kendall (2006) and Bell (2010) both discuss the methods that dominant groups implement to remain ambivalent to or unaware of their complicity in perpetuating inequities. "We anesthetize ourselves and dissociate, feeling as though we detach from both ourselves and the situation that we find unbearable" (Kendall, 2006, p. 34). Bell (2010) describes this as "the selective editing of reality that allows white people to disengage from the racial advantages we enjoy" (p. 19). Even now, I find it difficult to accept that I had not only perpetuated inequity in my practice, but that I did it through willful disregard. However, the foundation of my belief structure had been so damaged as to prevent its repair. Once I became aware of my complicity, I could "never not see it again" (Kendall, 2006, p. 13). My identity as a race-neutral teacher previously allowed me to perpetuate practices that ensured the continuance of poor performance of my students, supporting the stock stories that I held to tightly. Through this cognitive and emotional dissonance, I had two choices: (1) anesthetize myself and rejoin with my colleagues; or (2) recreate myself as a teacher engaged in anti-oppression and anti-racism within my own classroom.

As I explored the aspects of my teaching that privileged some of my students and disadvantaged others, I constructed a new set of beliefs of mathematics, and teaching and learning mathematics. My development of concern for social justice[8] and equity led to my evolution of beliefs of mathematics education encompassing anti-racist and anti-oppressive pedagogies. Over time, I began to comprehend how gender, race, ethnicity, fluency in English, socioeconomic status, and other factors were essential components in students' (in)accessibility to mathematics in my classroom and in the broader spectrum of public education in the United States. My students' lived experiences (silenced by oppressive practices, and later empowered by student-centered pedagogy) were the impetus of the change of my beliefs about mathematics and teaching and learning mathematics, and thus my practice, too.

Racialized Classrooms in Contrast to Race-neutral Perceptions of Mathematics

As counterstory to the race-neutral characterization of mathematics education that permeates the research base, Martin (2006) asked, "In what ways can mathematics learning, participation, and the struggle for mathematics literacy be conceptualized as *racialized forms of experience* – that is, as experiences where race and the meanings constructed around race become highly salient?" (p. 198). This overt stance is a necessary response to the resistance to change the status quo. The meritocratic view of mathematics education perpetuates a minimalistic conceptualization of race, rooted in deficit theory in which minority students are painted as deficient, often based on non-academic factors such as the ability to sit still during instruction (Berry, 2005). This deficit notion is pervasive, and research has not shied away from asserting a genetic basis (Herrnstein & Murray, 1994). Positioning Black, Latina/o, American Indian, and other minority students as inherently less intelligent and lacking the work ethic to succeed shifts the focus away from the schools and onto the students, their families, and their communities.

Countering this distraction is the focus on racialized classrooms—situating the research into mathematics classrooms in which the structure of the class is informed not only by mathematics content, but also by the social constructions of race:

> While the bulk of research on mathematics teaching and learning views it as largely a culture-neutral enterprise, mathematics classrooms (as students experience them) are not separate from the broader social worlds of schools, communities, and societies. In the United States, as elsewhere in the world, these social worlds and communities, and the social arrangements by which particular students arrive at them, are deeply informed by issues of race (Nasir et al., 2009, p. 231).

Race is a factor of schooling manifested in a number of ways, including teachers' expectations of students. Low expectations of the performance and capabilities of Black students is prevalent in American schools (Landsman, 2004), and is a factor in access to

advanced academic classes (Corra, Carter, & Carter, 2011; Thompson & Lewis, 2005). Pizarro found that "teachers use racial profiles to determine who will and will not benefit from opportunities to excel in school" (cited in Nieto & Bode, 2008, p. 80). These findings underscore the racial nature of education, in which access to knowledge is a function of color. Martin (2006) highlights this within mathematics education, noting, "African Americans do not readily identify with mathematics as 'ours'" (p. 213). Mathematics education exists in racialized contexts, with differentiated accessibilities.

The race-neutral perception of mathematics privileges the status quo, and marginalizes not only minority students, but also research into race. As a result of the positioning of mathematics as neutral, race has been excluded from research and from the national conversation on mathematics education (Martin, 2009). Similarly, Gutierrez (2008) notes that concerns about achievement gap research perpetuating deficit notions is largely a matter of faculty of color and those with a vested interest in equity. Berry (2005) summarizes these concepts, stating, "too often race, racism, and social justice are relegated as issues not appropriate for mathematics education, when actually these issues are central to the learning and teaching of mathematics for all students" (p. 18). The academic discourse on race in mathematics education is silenced as a result, extinguishing the potential of considerations of race (and especially the social construction of race) as a factor. The stock story of meritocracy, in which blaming the victim is central, is not only reified, but also amplified.

Notes

1. Determined through Google Scholar.

2. Minorities are defined as groups who have lower social and political status in society. Minority establishment can include, but is not limited to bases of race, class, and native language. Marginalization of minorities occurs not through these differences but through dominant societies' values of these differences (Ogbu cited in Nieto & Bode, 2008).

3. Inequity is framed within the discussion in critical race theory of

equality, and problematizes the notion of equal opportunity in lieu of equal results (Delgado & Stefancic, 2001). Equity in education is conceptualized as creating environments in which there is "*the real possibility of an equality of outcomes*" (Nieto & Bode, 2008, p. 11).

4. Deficiting students is the act of explaining failure or lower performance through negative perceptions and stereotypes, often associated with race, class, lack of fluency in English, or culture. Specifically, students are positioned as having internal deficiencies such as "limited intellectual abilities, linguistic shortcomings, lack of motivation to learn and immoral behavior" (Valencia, 1997a, p. 2).

5. Majoritarian narrative is one of many equivalent terms that refer to stories that are told by dominant society – demographically white, male, and middle/upper class – reflecting values and perpetuating privilege for the dominant group. Other terms include monovocals, master narratives, standard stories, and majoritarian stories (Solorzano & Yosso, 2009, p. 135), and stock stories (Bell, 2010).

6. Critical race theory is a theoretical lens, which evolved out of legal theory and has been used in education and other fields to explore race and power within social structures (Delgado & Stefancic, 2001).

7. Counterstories challenge "the validity of accepted premises or myths, especially ones held by the majority" (Delgado & Stefancic, 2001, p. 144).

8. Social justice "means affording each person the real—not simply stated or codified —opportunity to achieve their potential by giving them access to goods, services, and social and cultural capital of a society" (Nieto & Bode, 2008, p. 11).

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