**Toward Increasing Equity and Inclusion in Mathematics Classrooms:
Exploring the Potential of Proactive Confrontation in Teacher-Education**

Kathryn M. Kroeper and Mary C. Murphy

Indiana University, Bloomington

Author Note

This manuscript is based upon work supported by the Mindset Scholars Network's Inclusive Mathematics Environments Early Career Fellowship, with funding provided by a grant from the Bill & Melinda Gates Foundation. The content is solely the responsibility of the authors and does not necessarily represent the views of the Mindset Scholars Network or the Bill & Melinda Gates Foundation.

We thank the leadership team of the Inclusive Mathematics Environments Early Career Fellowship for their support and feedback throughout the writing process: Shanette Porter, Tanner LeBaron Wallace, Haley McNamara, Luis Levya, and Maisie Gholson. Additionally, we thank Tessa Benson-Greenwald, Amanda Diekman, Dorainne Green, Caitlyn Jones, Mansi Joshi, Jennifer LaCosse, Elise Ozier, Stephanie Reeves, Tennisha Riley, Heidi Vuletich, and Heidi Williams for feedback on an earlier draft of this manuscript. We believe the manuscript has been greatly improved by your comments and we are grateful to work with such supportive colleagues.

Abstract

Expressions of racial bias in middle grades math classrooms pose a threat to the full inclusion and equitable treatment of students of color. To combat these biased expressions, mathematics education scholars have recommended that math teachers undergo special training to employ *culturally relevant* practices as part of their teacher education. According to teacher-educators, however, motivating and helping their teacher-pupils implement culturally relevant classroom strategies has proven somewhat challenging. This is in part due to *reluctance* among teachers to adopt culturally relevant practices in their own teaching and *a lack of fidelity* when attempting to enact culturally relevant strategies. To overcome the challenges of reluctance and fidelity and to support teacher-educators as they train their teacher-pupils to adopt culturally relevant strategies in math classrooms, we propose that teacher-educators employ a *proactive confrontation approach*. We view proactive confrontation as a practical and useful tool for math teacher-educators to challenge racial bias expression and to create more equitable and inclusive math learning environments that inspire and motivate learning and performance among all students. By using proactive confrontations, teacher-educators can raise their teacher-pupils' self-awareness that engaging in biased expression is common (but not inevitable) in math classrooms and raise their concern that bias expression is harmful to students of color and, therefore, deserves proactive attention and action. Lastly, teacher-educators can provide examples of culturally relevant classroom activities to their teacher-pupils and help them to develop and implement such practices on their own. In the present synthesis, we provide examples of how the proactive confrontation approach can be integrated with math teacher-education programs and discuss some of the persisting challenges facing math teacher-educators who choose to proactively confront racial bias.

Keywords: proactive confrontation, racial bias, mathematics, teacher education, culturally relevant teaching

Toward Increasing Equity and Inclusion in Mathematics Classrooms:

Exploring the Potential of Proactive Confrontation in Teacher-Education

“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. Access to advanced mathematics curricula in the middle grades determines whether students will have the opportunities to study advanced mathematics...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,” – Robert Q. Berry III (2008, p. 465)

“[In education scholarship,] Black children and their competencies, more often than not, continue to be framed in negative and detrimental ways...underachievement and failure in mathematics have been emphasized over success and resilience...these meanings are relevant in the ways Black children are socialized with respect to mathematics...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,” – Danny Bernard Martin (2012, pp. 48–51)

Unfortunately, expressions of implicit and explicit racial bias such as these are all too common in middle grades mathematics classrooms. These biases can take many forms including racially biased statements made by teachers, staff, administrators, and students; classroom norms and racial hierarchies that influence teachers’ expectations and students’ participation in class; as well as other classroom policies and practices that (either intentionally or unintentionally) have the effect of disadvantaging underrepresented students of color relative to their more advantaged majority group peers (e.g., Aikenhead, 2017; Barajas-López, 2014; Battey & Leyva, 2016; Boysen & Vogel, 2009; Jackson, 2009; D. B. Martin, 2009; McKown & Weinstein, 2008; Tate, 1995a). Indeed, as the quotes above show, expressions of bias in the classroom pose a threat to the full inclusion and equitable treatment of students of color (Murphy & Taylor, 2012; C. M. Steele et al., 2002).

To increase awareness of the many ways in which racial bias can emerge in math classrooms—and to learn how to combat these biased expressions—mathematics education scholars have recommended (among other approaches) that math teachers undergo special training to employ *culturally relevant* practices in their classrooms (Harmon, 2012; Ladson-

Billings, 1995, 2014; Tate, 1995a).¹ Culturally relevant practices are teaching practices that acknowledge, value, and respect the experiences and sociocultural backgrounds of all students and that treat these differences as strengths that contribute to the success of the entire class (Benson, 2003; Lipman, 1995). When culturally relevant practices are used by teachers, students feel valued, respected, and that they can be successful in school while being authentically themselves (Byrd, 2016; Garza, 2008; Howard, 2001; Ladson-Billings, 2014). Each math classroom is unique, comprised of a different set of students who bring with them their own personal, family, and cultural experiences. As a result, there is no one-size fits all approach to culturally relevant teaching (Gay, 2009; Hammond, 2014). Trainings instead show teachers how to seek out the experiences and perspectives of the minoritized students in their classrooms (Gay, 2002, 2009; Villegas & Lucas, 2002). From there, teachers use their enhanced understanding to affirm (through words and action) that *all* students' racial and cultural identities are compatible with their burgeoning math identities (T. G. Bartell et al., 2017; Morrison et al., 2008).

The proponents of culturally relevant teaching have identified three guiding ideals for creating inclusive classroom environments where students from diverse backgrounds thrive: (1) holding high expectations for all students' intellectual growth, (2) valuing and encouraging the development of students' cultural knowledge, and (3) adopting a social justice stance that encourages students to apply their classroom learning to identify, critique, and address real-world social issues (Ladson-Billings, 1995). There are many ways that math teachers can embody these ideals in their practice. For example, a teacher can encourage their students to identify a social issue in the community and then support them as they apply mathematical

¹ In this article, we use the term "culturally relevant pedagogy" for simplicity; however, many of our arguments also apply to the other, closely related pedagogical practices (variously termed culturally responsive pedagogy, culturally sustaining pedagogy, and mathematics for social justice; Greer, Mukhopadhyay, Powell, & Nelson-Barber, 2009; Larnell, Bullock, & Jett, 2016; Paris, 2012).

reasoning to research and devise solutions to address the issue. A teacher might draw students' attention to school funding inequalities that occur along racial and social class lines, for example (Meckler, 2019; Morgan & Amerikaner, 2018; Mosenkis, 2014; White, 2015), and support students as they reason with ratios, interpret/create illustrative graphs, and use statistics to make claims and offer solutions for making school funding more equitable (Tate, 1995a, p. 171). In doing so, a math teacher would foster students' intellectual growth, demonstrate their own cultural competence and sociopolitical consciousness, and encourage these qualities in their students.

In theory, culturally relevant pedagogical approaches show great promise for reducing racial bias expression in the classroom and, in turn, raising the academic success (e.g., Dee & Penner, 2016; Leonard et al., 2010; Sleeter, 2011, 2012) and critical consciousness of *all* students (Cammarota & Romero, 2009; Gutstein, 2003; Ladson-Billings, 2014). In practice, however, motivating teachers and helping them implement culturally relevant classroom strategies has proven somewhat challenging. Researchers who examine teachers' responses to culturally relevant pedagogy have identified at least two implementation issues: (1) reluctance among teachers to incorporate the guiding principles of culturally relevant pedagogy in their own teaching; and (2) a lack of fidelity when putting culturally relevant strategies into practice.

Reluctance: The motivation-to-behavior problem. According to teacher-educators ² who have attempted to train pre-service and in-service teachers to use culturally relevant teaching practices, a substantive portion of their (often White) teacher-pupils are reluctant to learn about and adopt this pedagogical approach (Brewley-Kennedy, 2005; Buehler et al., 2009; Gay, 2009; Leland & Harste, 2005; R. J. Martin & Van Gunten, 2002; Picower, 2009; Sleeter,

² *Teacher-educators* are teachers who train other teachers (Lunenberg, 2010). They teach the practice of teaching. Their students are *teacher-pupils*, or teachers-in-training. Some teacher-pupils may be entirely pre-service, not yet having a classroom of their own. Others may be in-service teachers, with their own classrooms and students, who may be attending teacher-education classes to continue improving their skills.

2001; Ullucci & Battey, 2011; Valli, 1995). Some teacher-pupils are reluctant to adopt this pedagogical approach because they are uncertain about what to say or do and they do not want to make a mistake and risk unintentionally saying the wrong thing or inadvertently harming students (L. A. Bell et al., 1997; Karataş & Oral, 2015; Lambeth & Smith, 2016; Linder, 2015; Tatum, 1999). Other teacher-pupils purport to not need culturally relevant teaching strategies in their classrooms because they “do not see color” or they outright reject the idea that they could be treating students of color differently from White students (Gordon, 2005; Milner, 2009; Ullucci & Battey, 2011).

For math teachers specifically, some of the reluctance may be due to the pervasive (yet false) belief that mathematics is an objective, acultural discipline (Fyhn et al., 2011; Gutstein et al., 1997). Math teachers can sometimes perceive culturally relevant teaching practices as better suited for the humanities (vs. math), because that is where ideas of culture and society supposedly belong. To these teachers, culturally relevant pedagogy may seem unnecessary in the math classroom and, therefore, not worth the added effort. Contrary to this popular view, math settings *are* cultural spaces (e.g., D. B. Martin, 2009). Teachers do not leave racially biased societal structures, hierarchies, and interaction norms at the math class door. Teachers (and students) are shaped by the society in which they live, and they bring those patterns into every space they embody (Markus & Kitayama, 2003). The existing racial hierarchies in U.S./American mathematics position White and Asian students at the top, while Black, Latinx, and Native students are positioned at the bottom (D. B. Martin, 2009) and this hierarchy has consequences for students of color in the classroom. As illustrated in the opening quotes, math teachers are “gatekeepers of power” (Berry, 2008) and they can wield that power, intentionally or not, in ways that systematically advantage White and Asian students over underrepresented students of color (D. B. Martin, 2009, 2012). For example, the hierarchy can shape teachers’ expectations about who is likely to be ‘mathematically gifted’ (and who is not) and influence their actions, like who they recommend for advanced placement testing (Campbell, 2012; Grissom &

Redding, 2016; Whiting & Ford, 2009). To reduce teacher-pupils' fear and reluctance to employ culturally relevant practices in their classrooms, teacher-educators may need to provide teacher-pupils with illustrative examples of how mathematics is (and has always been) shaped by society and, as such, has often tolerated racial bias expression. The first step to eliciting change requires that math teachers recognize how their own classroom behaviors and structures can perpetuate racial inequity—they must develop *self-awareness*.

Achieving this is easier said than done. The impulse to 'dodge,' 'suppress,' and 'ignore' matters of race when they arise in teacher-education classrooms is strong (Gordon, 2005, p. 137). Dismissing the notion that they, as math teachers, contribute to (or are subtly complicit with) racially biased classroom structures may be a coping strategy to deal with the self-threat that stems from recognizing often pervasive racial disparities in math classrooms (Buehler et al., 2009; Trainor, 2005). It is often uncomfortable (painful, even) to reflect and recognize the ways in which our statements, actions, values, and policies may have the effect of marginalizing people of color and, in consequence, perpetuate racial inequity (Augoustinos & Every, 2007; DiAngelo, 2018; Linder, 2015). Rather than try to incorporate culturally relevant strategies (and aim to learn from those experiences, regardless of whether they go well or poorly), teachers may instead choose inaction. For these reasons, simply educating teachers about racial bias expression in math settings may not be enough to prompt change. Thus, the second step to eliciting change requires that math teachers' *concern* for their minoritized students' well-being and inclusion outweigh the conflicting desire to avoid race-related discomfort. To achieve this, it is necessary that math teachers understand the harms of racial bias for students of color—harm to their academic growth, their sense of inclusion, and, ultimately, their retention in mathematics. By understanding the harm that racial bias in math can cause students of color, teachers may be more motivated to interrupt these biases and engage in more culturally relevant practices.

To overcome math teachers' reluctance, whether it stems from fear or dismissiveness, two aspects of the motivation-to-behavior gap are important to address: *self-awareness* (i.e., how math teachers express racial bias and/or are complicit with biased structures) and *concern* for how these biased expressions disadvantage their students of color. By increasing both self-awareness and concern in a context that is learning and growth oriented (Walton & Brady, 2019), teacher-educators can better persuade their math teacher-pupils to accept culturally relevant pedagogical practices and strategies.

Lack of Fidelity: A problem of skill and ability. Even in situations where teachers recognize racial bias expression and are motivated to challenge it through culturally relevant practice, many well-intentioned teachers employ these teaching tactics in watered-down, shallow ways that “celebrate”—but ultimately essentialize—their students' cultural backgrounds. For example, it is quite common for teachers to “address diversity issues” by embedding superficial references to ‘ethnic foods’ into word problems or by hosting a ‘Kwanzaa-themed’ classroom party (Ishimaru et al., 2015; Ladson-Billings, 2014; Sleeter, 2012). At best, substituting culturally relevant teaching with trivial “food and festivals” cultural celebrations serve to “check the cultural diversity box” (Sleeter, 2011, 2012), so that practices *seem* culturally relevant without actually *being* culturally relevant with respect to the three guiding principles (academic success, cultural competence, and sociopolitical consciousness; Ladson-Billings, 1995). At worst, “foods and festivals” practices can have the unintended and harmful effect of reifying racial and ethnic stereotypes and *increasing* bias expression, stereotyping, and discrimination in the classroom. Further, to the extent that students of color see these practices as disingenuous, these practices may actually heighten students' concerns about being marginalized in math settings (Kroeper et al., in prep; Wilton et al., 2020). Therefore, the third step to increase the adoption of culturally relevant practice requires that math teachers be practiced and prepared with effective *strategies* for employing the principles of culturally relevant teaching. To this aim, math teacher-educators must point out the problems of using

surface-level “food and festivals” diversity practices to their teacher-pupils and offer alternative strategies that they can use in the classroom to better support their students’ motivation, learning, and performance in ways that affirm students’ racial and mathematic identities.

Overview of the Present Synthesis

In our own experience working with teachers, the vast majority are well-intentioned and motivated to adopt the best-available practices to help students succeed. As we have suggested, employing culturally relevant practices is one such way to make their classrooms more inclusive and equitable. Still, at least two implementation challenges prevent math teachers from adopting culturally relevant practices in their classrooms. The first is a problem of **reluctance**, such that teachers’ ***motivation to enact culturally relevant pedagogy is not translated into behavior***. Some math teachers are reluctant to recognize racial bias as a problem that affects their own classrooms and lack the motivation to enact culturally relevant practice (e.g., Buehler et al., 2009; Ullucci & Battey, 2011); others are motivated to employ culturally relevant practices but are hesitant to enact behaviors that could backfire (e.g., Cho & DeCastro-Ambrosetti, 2005). To overcome this motivation-to-behavior challenge, teacher-educators must raise their teacher-pupils’ self-awareness about racial bias expression in math classrooms, while also raising their concern about its harmful consequences for students of color. Together, these tactics can reshape math teachers’ motivation and promote their receptivity to culturally relevant practice as a way to mitigate bias expression. The second problem is one of **skill and ability to enact culturally relevant practices with fidelity**. Even when racial bias is recognized as a problem and teachers intend to mitigate it, many math teachers struggle to put the guiding ideals of culturally relevant teaching into practice (Sleeter, 2011, 2012). To increase teachers’ ability to use culturally relevant practice, teacher-educators must clarify the guiding ideals of culturally relevant pedagogy (i.e., academic success, cultural competence, and sociopolitical consciousness; Ladson-Billings, 1995), while providing

examples of culturally relevant classroom activities and scaffolding as teachers learn to develop and implement such practices on their own.

To support teacher-educators as they help their teacher-pupils increase self-awareness of racial bias and concern for students of color as well as develop a set of practical culturally relevant strategies, we have drawn on the social psychological literature—the branch of psychology concerned with bridging the motivation-to-behavior gap in interpersonal interactions—and the culturally relevant teaching literature. In so doing, we propose that teacher-educators employ *proactive confrontation* with their teacher-pupils in order to model and overcome the challenges of reluctance and fidelity that are common among teacher-pupils (Cox & Devine, 2019; Devine et al., 2012; Forscher et al., 2017).³ As we will lay out in the following sections, by engaging in proactive confrontation, teacher-educators can help their teacher-pupils to recognize varied forms of racial bias expression in math classrooms (raise *self-awareness* and *concern for students of color*) and solve the motivation-to-behavior problem by equipping them to implement culturally relevant teaching practices with fidelity (*offer strategies*). Our hope is that this synthesis will provide teacher-educators with a new lens and specific strategies to enhance their teaching practice and the practice of those they instruct.

Context of This Report

This synthesis is written primarily for teacher-educators and math education researchers interested in middle grades math instruction. We hope that by reviewing research and providing evidence-based strategies for proactive confrontation, teacher-educators can better structure their trainings in culturally relevant pedagogy by taking into account the psychological experience of their teacher-pupils and being responsive to their concerns. Moreover, we hope

³ Although the present synthesis chapter focuses on challenging racial bias expression in math contexts, much of the content also applies to bias expression directed toward girls, students from families experiencing economic disadvantage, and other minoritized groups in these contexts. Confrontation is a flexible prejudice reduction tool that has proven effective for reducing bias expressed toward a variety of socially stigmatized groups (Mallett & Monteith, 2019b).

that this work will encourage math education researchers (possibly in collaboration with social psychologists) to empirically investigate proactive confrontation as a way to promote the adoption of culturally relevant practices in math settings.

A Primer on ‘*Proactive Confrontation*’

To psychologists, *confronting* simply refers to the practice of identifying how individuals have expressed (or are capable of expressing) bias and communicating disapproval of such expression (Shelton et al., 2006). To be classified as a confrontation, one or more confronters must point out how a statement, norm, policy, or practice is racially biased and express their disapproval, either verbally or non-verbally, to the individual(s) responsible for the offensive statement or behavior (Mallett & Monteith, 2019a; Shelton et al., 2006). The tone need not be hostile; it can be friendly, informative, or just matter of fact (Monteith et al., 2019). In the context of a teacher-education classroom, the *confronter* would likely be the math teacher-educator and the *confrontees* would likely be his or her teacher-pupil(s) who have engaged in (or could engage in) some biased behavior.

Traditionally in the academic literature, the term *confronting* referred primarily to *reactive confrontations* that directly responded to a specific instance of bias expression that occurred in a context (e.g., Czopp et al., 2006; Shelton et al., 2006). More recently, the efficacy of *proactive confrontations* has also been explored. Proactive confrontations (also termed *empowerment-based confrontations*; Cox & Devine, 2019), are those that raise people’s self-awareness that engaging in biased expression is common (but not inevitable) and raise their concern that bias expression is harmful to people of color and, therefore, deserves proactive attention and action. Critically, these proactive confrontations anticipate biased statements and behaviors before they have been expressed. Proactive (rather than reactive) confrontations may be especially well-suited for the math teacher-education classroom context because a proactive teacher-educator can deliberately identify and plan for the places where biased speech and behaviors are likely and plan their proactive confrontations accordingly, rather than wait for an expression of racial

bias to occur and then decide whether and how to react to it in the moment.⁴ Teacher-educators who engage in proactive confrontation can center a classroom discussion on how a particular form racial bias often manifests in math classrooms (e.g., implicit bias often influences who is called on to respond to questions), point out its harmful consequences for increasing inequity, and, finally, offer their teacher-pupils a culturally relevant teaching strategy to override such racial bias in the classroom (e.g., keeping track of who responds to questions and making a plan to call on all students).

To illustrate, let's ponder two examples. Imagine that a teacher-educator learned of social science research showing math teachers often accept deficit views of students of color—i.e., viewing students of color as less mathematically capable—and, in consequence, tend to provide rote and oversimplified math instruction to these students (e.g., Jackson, 2009; see Table 1, Problem 1). To proactively confront this biased behavior, the teacher-educator could raise teacher-pupils' awareness by explaining this finding and indicating that, because they are all members of a culture where deficit views are common and 'in the air' at a societal level (C. M. Steele, 2011), they are vulnerable to letting these views influence their teaching practices. To raise concern about how such biases harm their students, the teacher-educator could highlight that, over time, this form of watered-down math instruction compounds educational disparities. It can cause students of color to fall behind their White peers in math. Then, to make clear that this form of bias is not inevitable, teacher-educators can suggest practices to avoid this form of

⁴ It is possible for teacher-educators to use a combination of reactive and proactive confrontation strategies in their teacher trainings. Proactive confrontations can start critical conversations about race, whereas reactive confrontations can be used by teacher-educators, as needed, to point out teacher-pupils' cultural blind spots. However, we want to caution teacher-educators about using reactive confrontations in their classrooms. Whereas proactive confrontation research has been conducted in applied field settings such as classrooms (e.g., Carnes et al., 2015; Devine et al., 2017), much of the research demonstrating reactive confrontation as an effective bias reduction technique has only been conducted in laboratory settings among strangers who will likely not interact again (e.g., Burns & Monteith, 2018; Chaney & Sanchez, 2018; Czopp & Monteith, 2003; Czopp et al., 2006; Mallett & Wagner, 2011; Parker, Monteith, Moss-Racusin, & Van Camp, 2018; Son Hing, Li, & Zanna, 2002) and it is uncertain whether reactive confrontation will be as effective in the real-world classrooms settings.

bias. For example, teacher-educators can teach their pupils to be explicit in communicating their high academic expectations for *all* students (Cohen et al., 1999). They can also ensure that their

Table 1. Examples of proactive confrontation in mathematics education

	Example Problem 1	Example Problem 2	Example Problem 3
Description	Math teachers often accept deficit views of students of color and, as a result, tend to provide rote and oversimplified math instruction for these students (e.g., Jackson, 2009).	Some teachers express racial bias by treating “standard American English” as the only valid language of mathematics and correct their students when they use “non-standard” linguistic forms (Bartell et al., 2017; Brenner, 1998).	Black, Latinx, and Native American students are less likely than their White and Asian peers to be recommended by teachers for advanced placement math courses, even when controlling for past achievement (Campbell, 2012; Whiting & Ford, 2009).
Raise Self-Awareness	Inform teacher-pupils of the problem and explain that, because they are all members of a culture where deficit views are commonly ‘in the air’ (C. M. Steele, 2011), they are vulnerable to letting these views influence their teaching practices.	Describe this type of teacher-student interaction to teacher-pupils and label it as racially (or culturally) biased.	Explain to teacher-pupils that opportunity gaps in advanced placement math courses are, in part, due to racial biases (intentionally or unintentionally) in teacher recommendations.
Raise Concern for Students of Color	Highlight that, over time, this form of watered-down math instruction compounds educational disparities, causing students of color to fall behind relative to their White peers.	This teacher-student interaction can suggest to students who use other English dialects or who are English language learners that they do not belong in math. Feeling as though one does not belong contributes to academic underperformance (Walton & Cohen, 2007).	These racial barriers in the mathematics pipeline contribute to the underrepresentation of people of color in math-focused college majors and in lucrative industries that require mathematical knowledge (National Science Foundation, 2019).

Offer Culturally Relevant Strategies	Explicitly communicate their high academic expectations for <i>all</i> students. Ensure that course material is challenging and offer supportive instruction to help students that struggle grow their mathematical skills.	Explicitly acknowledge students' home language as a valid language for math. Encourage and enforce respect for different linguistic backgrounds.	Attend to all students' mathematical thinking and build on it. Evaluate (and re-evaluate) methods of recruiting students for advanced placement, to ensure that testing and selection practices are equitable. When opportunity gaps are discovered, explore other selection methods.
---	---	--	---

course material is challenging and offers supportive instruction to help struggling students grow their mathematical abilities (Bartell et al., 2017).

Let's consider another example (see Table 1, Problem 2). Some teachers (often unintentionally) express racial bias by treating "standard American English" as the only valid language of mathematics and they correct their students when they use "non-standard" linguistic forms, like using other languages or regional/culturally-specific dialects (Bartell et al., 2017; Brenner, 1998; Morrison et al., 2008; Moschkovich, 2013). A teacher-educator could proactively confront this biased practice by describing this type of teacher-student interaction and explicitly labeling it as racially biased. This proactive confrontation raises teacher-pupils' awareness of bias by explaining how this teacher-student interaction can suggest to students who use other English dialects or who are English language learners that they do not belong in math—demonstrating inequitable consequences that should raise teacher-pupils' concern about perpetrating bias toward their students. Finally, teacher-educators can plan to suggest one or more culturally relevant strategies to use in place of these problematic teacher-student interactions, like explicitly acknowledging students' home language as a valid language for math and encouraging and enforcing respect for different linguistic backgrounds.

Social psychological laboratory and field experiments have evaluated the effectiveness of confronting to reduce the expression of bias. These studies show that confrontation can have at least two salutary effects: causing people to suppress the expression of bias (creating more inclusive and equitable environments free from biased expression) and motivating people to reflect on and shift their attitudes and behavior in the future (causing people to become less biased as a result; e.g., Carnes et al., 2015; Chaney & Sanchez, 2018; Czopp et al., 2006; Devine et al., 2012, 2017; Forscher et al., 2017).

Why is confrontation an effective bias reduction strategy? Research reveals that confrontation shapes individuals' emotional responses which in turn affects their behavior. In particular, people who have been confronted tend to feel guilt and remorse for expressing racial

bias. This is especially true when people are *internally motivated* to be and behave in non-prejudiced ways. These individuals believe that racial bias expression is morally wrong and, in turn, develop egalitarian self-concepts and goals (Moskowitz & Li, 2011; Plant & Devine, 1998). Such individuals genuinely want to be and behave in non-racially biased ways because they value equity (Devine et al., 1991), but occasionally, they “slip up” and express racial bias (Dovidio & Gaertner, 2000, 2004; Perry et al., 2015). Social psychologists refer to these common “slip-ups” as *prejudice-related discrepancies*—that is, people’s actual behavior (like a biased statement or practice) is inconsistent with their desired, non-prejudiced self (Devine et al., 1991; Monteith, 1993). People are motivated to act in accordance with their personal standards for behavior, so when they realize that they are not meeting their own standards (or that they could fall short of those standards in the future), they tend to feel badly about themselves (Devine et al., 1991; Monteith, 1993; Monteith et al., 1993; Monteith & Voils, 1998; Zuwerink et al., 1996). Indeed, some researchers suggest that these negative, self-directed feelings are essential to motivate people to reflect on the self and actually change one’s behavior (Monteith, 1993). Specifically, the desire to alleviate these negative, self-directed feelings drives attention to one’s behavior and behavioral self-regulation (Baumeister et al., 1994; Ellsworth & Smith, 1988; Frijda et al., 1989). To better live up to their egalitarian self-standards, internally motivated individuals use behavioral strategies to monitor their words and actions more closely. For example, they slow down and engage in more controlled behavioral responding, which, in turn, results in measurable reductions in biased expression (Amodio et al., 2007; Monteith, 1993; Monteith et al., 2002).

Consistent with these mechanisms, we expect that when math teachers become aware of racial bias that could result from their classroom policies, practices, and interactions, most will endeavor to address these racial inequities. However, without proactive confrontation, it is unrealistic to expect that math teachers will engage in this critical self-reflection spontaneously. We are often blind to our own biases (A. C. Bell et al., 2018; Lawrence, 1987; Pronin et al.,

2002; Tate, 1997) and underestimate our complicity in prejudiced structures (Murphy et al., 2018). Without awareness of how prejudice-related discrepancies (and their consequences for inequity) can be present in our teaching policies and practices, emotional experiences such as guilt and shame—and the consequent behavioral self-regulation—are unlikely to occur. For these reasons, proactive confrontations can be a helpful teaching tool to activate self-awareness and behavior change among teacher-pupils. Proactive confrontations prompt internally motivated individuals to become aware of potential prejudice-related discrepancies in their teaching practices and policies (Cox & Devine, 2019; Czopp et al., 2006) and heightens their concerns about expressing racial bias.⁵ By raising self-awareness and concern for students of color among their teacher-pupils, proactive confrontations set the stage for teacher-educators to provide the necessary expert training and support in culturally relevant teaching strategies—motivating math teacher-pupils to understand and implement culturally relevant pedagogy with fidelity (Devine et al., 2012; Morrison et al., 2008; Muñoz, 2019; Sleeter, 2012).

In the next sections of this article, we will provide examples of how the proactive confrontation approach can be integrated with math teacher-education programs. To model *raising self-awareness*, we will provide examples of how racial bias is expressed in mathematics classrooms—in its interactions, norms, policies, and practices. To model *raising concern for students of color*, we overview some of the ways racial bias expression undermines the

⁵ The psychological processes involved when confronting those who lack internal motivation to control their bias expression may be different. People who are primarily *externally motivated* typically avoid racial bias expression out of social awareness that outwardly biased statements and behaviors are considered inappropriate and non-normative (at least, in principle). These individuals are wary of violating social norms because they do not want to be perceived negatively by others (Plant & Devine, 1998). For these individuals, awareness of their own racial bias expression, in and of itself, is unlikely to prompt negative self-directed affect because there is no prejudice-related discrepancy between their actual and desired behavior (Devine et al., 1991). Still, confrontation appears to encourage the behavioral self-regulation of externally motivated people by capitalizing on normative pressures. Externally motivated people are likely to suppress racial bias when they perceive that prejudice expression is non-normative in the local setting (Bennett & Sekaquaptewa, 2014; Blanchard et al., 1991, 1994; Crandall et al., 2002; Crandall & Eshleman, 2003; Hyers, 2010; Monteith et al., 1996; Salmivalli et al., 2011). All of this suggests that proactive confrontation may be an effective tool for teacher-educators, regardless of whether their teacher-pupils are primarily internally or externally motivated—albeit for different reasons.

inclusion of minoritized students in mathematics contexts. Finally, to model *providing evidence-based behavioral strategies*, we offer suggestions for how mathematics teacher-educators can present culturally relevant practices to their teacher-pupils. In closing, we will discuss some of the persisting challenges facing mathematics teacher-educators who proactively confront racial bias in their classrooms and highlight areas that require further investigation.

Raising Self-Awareness: Making Visible Racial Bias Expression in Math Environments

The first step of a proactive confrontation is to raise teachers' self-awareness. This involves increasing their recognition of how they *have expressed* (or are *capable of expressing*) racial bias in their teaching. To start, we recommend that teacher-educators define 'racial bias expression' for their teacher-pupils. Many teachers, especially White teachers, may have little experience explicitly discussing racial bias *at all* (DiAngelo, 2018), let alone how it may manifest in their own classrooms. Making matters more complicated, racial groups often have different lay intuitions about which statements and behaviors 'count' as examples of racial bias (Carter & Murphy, 2015). White people tend to endorse restrictive definitions, counting only blatant bias perpetrated by 'bad' people (e.g., racial slurs) as instances of bias; however, people of color tend to endorse more expansive definitions, counting both blatant and subtler bias (e.g., avoidance and reluctance to interact). By defining racial bias expression for teacher-pupils, teacher-educators create a shared understanding in their classrooms. Their definition provides a starting place that all teachers can build upon throughout their training and in their own practice. Here, we define *racial bias expression* broadly, as the many ways that negative attitudes and stereotypes about students of color are given voice in mathematics—including blatant and subtle statements, values, norms, hierarchies, policies, and practices that are communicated (whether intentionally or unintentionally).⁶

⁶ A comprehensive review of racial prejudice expression in mathematics environments is beyond the scope of this chapter; however, we encourage interested readers to review the following papers: Battey & Leyva, 2016; Gholson & Wilkes, 2017; D. B. Martin, 2009, 2012; McGee & Martin, 2011.

Once defined, teacher-educators should share varied examples of how racial bias is expressed in math settings. Just like we would use concrete examples to illustrate mathematical concepts to our students (Rowland, 2008), it is similarly important to use specific examples to illustrate to teachers *how* racial bias can emerge in the classroom. Only then can teachers identify its presence and begin to combat it.

Racial bias takes varied forms in math classrooms. In explicit statements to students, racial bias expression can be blatant. For example, others might use slurs or bully students of color due to their race (Benner et al., 2015; Fisher et al., 2000; Peguero & Williams, 2011; Simons et al., 2002; Wong et al., 2003) or make offensive “jokes” that impugn students of color (Boysen et al., 2009; Boysen & Vogel, 2009; Cross, 2003; Gholson & Wilkes, 2017; McGee & Martin, 2011; Terrill & Mark, 2000). Biased statements can also take subtler forms. For instance, even statements intended to compliment a student’s math abilities, if expressed with a degree of surprise, can reinforce troubling norms and racial hierarchies that signal who is (and is not) expected to be “mathematically gifted” (Czopp, 2008; Czopp et al., 2015; Kohli et al., 2018; McGee & Martin, 2011; Nasir & Shah, 2011). In describing her experience in an upper level science course, Anita, who identifies as Black, articulated the interpersonal complexity of navigating these sorts of backhanded compliments:

“So nobody would pick me [to work with] ‘cause I’m like the only Black one, right? So as soon as the first exam would come back and I got 100 on mine [and the other students in the class said] ‘Oh, how did you do that? How did you do that first problem? Here, could you show me how to—do did you get that beaker to—how did you set your lab up?’ And I would just be looking like, ‘Yeah [laughing].’ It would just be funny because I would be like, ‘Wow, these people are shallow.’ I mean I would just be looking like, ‘Well, whatever.’ I would help them, you know. If they asked me, I would help them. ‘Cause you know, I felt like that was a way for people to know that, you know, I am smart” (McGee & Martin, 2011, pp. 1372–1373).

Initially, peers underestimated Anita's mathematical and scientific knowledge and marginalized her—preferring not to work with her. She was well aware of this fact. However, when her intelligence and skills were made evident, the students flocked to Anita for help. Though upset by the hypocrisy, she still felt compelled to help them, at least partly because she wanted them to know that, as a Black woman, she was mathematically able.

Much of the racial bias expressed in math classrooms is not clearly perpetrated by individuals but instead can stem from places, practices, and systems (Murphy et al., 2018; Murphy & Walton, 2013). It may be challenging for teachers (at least at first) to identify the ways that places, practices, and systems can be racially biased. We tend to explain it in this way: A place becomes racially biased when features of the setting (e.g., the way that students are chosen for praise or punishment; or the way they are put into groups for group work) predictably and systematically advantage people from one racial group over people from another—as evidenced by the settings' values, hierarchies, norms, policies, and common practices (Murphy et al., 2018; Murphy & Walton, 2013). Of course, *people* take part in constructing and perpetuating these aspects of settings; but, given time, these situational features and norms can take on a life of their own—becoming “just the way we do things here”.

Consider, for example, the culturally dominant narratives that depict math curricula as an objective and acultural domain (D. B. Martin, 2009)—as ‘mechanical,’ ‘value-free,’ and ‘morally neutral’ (Fyhn et al., 2011, p. 186). Keeping mathematics ‘objective’ and ‘acultural’ has even been positioned as a *valued goal*, something that math scholars are encouraged to strive toward (D. B. Martin et al., 2010). Despite this narrative positioning, math curricula in the U.S. is in many ways culturally biased toward the White, middle class American perspective (Aikenhead, 2017; Battey & Leyva, 2016; Civil, 2007; Ernest et al., 2016; Gay, 2009; González et al., 2001; Gutiérrez, 2008, 2013; Ishimaru et al., 2015; Jackson, 2009; Lipka et al., 2005; B. Martin, 1988; D. B. Martin, 2009; D. B. Martin et al., 2010; Nasir et al., 2008; Tate, 1995b; Turner et al., 2012). For example, supposedly ‘universal’ mathematical truths, like the ‘value of

quantification' (that we can strip people and objects of their qualitative, subjective, and spiritual attributes by numbering and ordering them in particular ways—so much that their personal characteristics fall away and they become “just a number” in the eyes of administrators and systems) or the ‘belief in a right answer’ (that there is a single right answer and we *should* find it by applying particular steps) are much more culturally aligned for White students than their Native American peers who value roles, relationships, and interconnectedness as well as multiple ways of being and problem solving with their community (Aikenhead, 2017). In such ways, White students enjoy distinct, often unacknowledged, advantages over students of color in math environments (Gay, 2002; Leonard, 2018; Nasir et al., 2008; Terrill & Mark, 2000).

At the policy level, we see racial biases that confer White advantage in educational funding—which is notoriously unequal across schools in the U.S. (Baker & Corcoran, 2012). Schools primarily serving students of color tend to have the lowest levels of funding (Meckler, 2019; Morgan & Amerikaner, 2018; Mosenkis, 2014). When schools are underfunded, structural materials, like building conditions, instructional resources, and achievement test scores all suffer (Battey & Leyva, 2016, p. 59). As a result, Black, Latinx, and Native students are frequently positioned as lacking in math ability, relative to their White peers, when the structural and social policies and systems are responsible for perpetuating and exacerbating inequality. In the words of Battey and Levya (2016, p. 53):

“These frames serve to position African American students [as well as Latinx and Native students] as deficient and as needing to ‘live up,’ so to speak, to White norms of behavior and achievement. The flip side to these frames is the assumed privilege that they bestow to White students. Assumptions of Whites’ high ability in mathematics and avoidance of pathologizing Whites serve to privilege them as a group...Whiteness here serves as a means to resist attaching deficient frames to White students.”

These pervasive frames can bias the perceptions and behavior of even the most well-meaning teachers. For example, racialized patterns in how teachers view the classroom antsy-ness of

Black boys as disruptive while viewing similar behavior in White boys as indicative of boredom and precocity, can perpetuate racial disparities in who is admitted into the mathematically gifted program (Grissom & Redding, 2016) and who, instead, winds up in the principal's office (Monroe, 2005; Okonofua et al., 2016; Okonofua & Eberhardt, 2015; Skiba et al., 2002).

In a 14-month ethnographic observation of a predominantly Black-serving middle school, Jackson (2009) found that (majority White) administrators, teachers, and staff openly talked about the incoming (mostly Black) students as a monolith who lacked basic math skills and needed an entire year of remediation—a pattern we have seen among faculty in higher education as they speak of underrepresented racial/ethnic minority students, first-generation students, and students from lower socio-economic backgrounds (Gutiérrez, 2008). In this case, these practices resulted in a watered-down form of mathematics instruction that:

“...emphasized speed and accuracy over process and involved completing procedures that were absent of mathematical meaning. [Students of color] were denied access to challenging and academically purposeful mathematics” (Jackson, 2009, p. 195).

In this way, mathematical racial hierarchies that privilege whiteness have a way of reproducing themselves, instigating a vicious cycle of lowered expectations for minoritized learners (relative to Whites) which, in turn, prompt fewer opportunities for success and poorer quality instruction for these students (Battey, 2013; Battey & Leyva, 2016, 2018).

Another clear example of how math classrooms can be racially biased places, is the cultural embeddedness of mathematical word problems that students routinely encounter and must solve in order to succeed in their math classes (Leonard et al., 2009). Teachers ostensibly use everyday sorts of examples when framing math exercises, in order to make these otherwise abstract mathematical principles more concrete for students (Koedinger & Nathan, 2004; Rowland, 2008). Grounding math concepts to students' own lives—to their own cultural and linguistic experiences, knowledge, and skills—helps them encode and understand the content (i.e., termed *cultural funds of knowledge*; Aguirre et al., 2013). Indeed, the grounding of abstract

concepts to concrete culturally meaningful instantiations is often recommended by proponents of culturally relevant pedagogy (e.g., Gay, 2009). However, this practice can be executed in a racially biased manner, by either including examples and lived experiences disproportionately available to middle-class White students (e.g., expensive sports and extracurricular examples like golf, hockey, or summer camp) or, alternatively, including only surface-level “food and festivals” cultural references (Sleeter, 2011). To the extent that the math examples students encounter in their textbooks more frequently reflect the experiences of White learners over and above the experiences of Black, Latinx, and Native learners, the curriculum becomes racially biased and suggests that minoritized students do not belong in math (Aguirre et al., 2013; Aikenhead, 2017; Gay, 2009; González et al., 2001). Put succinctly by Gutiérrez (2008):

“A single curricular activity might serve as a ‘mirror’ for some students while opening up a ‘window’ to a different world for others...The goal should not be finding those activities that best fit the identities of a given student population in an essentialistic way but rather striking a balance between the number of windows and mirrors provided to a student” (p. 360).

That is, White students tend to experience examples a mirror in their math classes—the examples reflect themselves and their experiences—and so they feel at home in math environments; whereas, Black, Latino, and Native students tend to experience those examples as a window through which they see the experiences of their White peers. This poses obvious problems for students of color. They are removed from the central, personal experience of math as a discipline meant for them and this can result in lower feelings of belonging and marginalization within math. But this practice also poses problems for White students. Insofar as White students are presented with more ‘mirrors than ‘windows’, they are thus denied opportunities to take others’ perspectives, and to develop skills to critically challenge and expand their own worldviews.

The examples chosen for math textbooks are not the conscious decision of a single teacher—these textbooks pass through the hands of countless curriculum creators, editors, and

publishers before ever hitting the market. But once a teacher becomes aware of these disparities in example choice and becomes concerned about their negative consequences for students of color (perhaps through proactive confrontation), they are better positioned to question their own practice and make their own in-class examples more equitable. Without defaulting to cultural stereotypes regarding “food and festivals” diversity, math teachers can ask their students questions about their own lives and interests; from that, they can create word problems that draw directly on their students’ diverse range of experiences.

The racial bias expressed in math spaces by people (students, staff, teachers, and administrators) and by places (via norms, values, hierarchies, policies, and practices) create mathematics environments that are far from culturally neutral. Teacher-educators can use proactive confrontation to start discussions that illuminate racial bias expression in math classrooms. The self-awareness these reflections generate is necessary, but not sufficient to motivate teacher-pupils to self-regulate racial bias expression. Teacher-pupils must also be concerned about the consequences of bias. In the next section, we turn our attention to how teacher-educators can raise concern for students of color, by highlighting how bias expression in math contexts negatively affects minoritized learners.

Raising Concern for Students of Color: Highlighting the Troubling Effects of Racial Bias in Math Settings

Once teachers are made self-aware—cognizant of the ways they could express racial bias in math classrooms and the ways they may be complicit with racially biased structures—they are ready to learn about the consequences of racial bias expression for their students. There are many ways that teacher-educators can approach raising concern. For example, teacher-educators might facilitate peer discussions on the topic, ask students to bring in and discuss relevant social science research, share readings and/or audio-visual media that discusses these issues from the perspective minoritized learners. The content of these conversations should center on the consequences of racial bias expression for students of

color—how it can make them feel and how it can restrict their opportunities to be successful in the math classroom and excel.

When racial bias infiltrates math environments—whether the bias stems from people or from places—the exact same learning environment can unequally tax the emotions, physiology, cognitive function, and performance of minoritized students relative to White students. Racial bias expression can signal to students of color that their racial identity is a liability for them in math settings, in turn, prompting a state of threatened cognitive and physiological arousal (G. Adams et al., 2006; Chang et al., 2019; Logel et al., 2009; Major et al., 2003; Major & O'Brien, 2005). Social psychologists typically refer to this experience as *social identity threat*—it's the creeping sense that one's social identity may be unfairly devalued or disrespected in a context (C. M. Steele et al., 2002).

Experiencing racial bias (and seeing others tolerate its expression) in the classroom triggers justifiable concerns about whether math is a discipline where students of color will be stereotyped, where others will believe that they do not belong, and where they will be marginalized, ghettoized, or otherwise pressured to acculturate to the “default” (White) ways of being (Lewis et al., 2019; Murphy & Taylor, 2012). Unsurprisingly, contending with these types of concerns can increase minoritized learners' vigilance for other threatening situational cues (McGee & Martin, 2011; Murphy et al., 2007), heighten their anxiety (Forbes et al., 2015; Schmader et al., 2009), and foment distrust (Cohen & Steele, 2002). In the mathematics education literature, scholars have used the term *emotional labor* to describe the exertion and self-regulation needed to cope with the day-to-day racial bias expression that can be present in math environments. It is emotionally draining for students to regulate feelings of anxiety, frustration, and dismay brought about by racial bias (Battey & Leyva, 2016; Evans & Moore, 2015). Beyond being emotionally costly, identity-related worries about whether others believe in their abilities to do well and working hard to disprove societal stereotypes can also be cognitively distracting (Rydell et al., 2014; Schmader et al., 2008). They can impair learning

(Appel et al., 2011; Rydell, Rydell, et al., 2010; Rydell, Shiffrin, et al., 2010) and ironically produce underperformance in academic testing situations due to divided attention on these identity-based concerns and the math material at hand (Forbes et al., 2015; Spencer et al., 1999; C. M. Steele & Aronson, 1995).

Moreover, racial bias expression may make the positive co-construction of racial and mathematics identities more challenging for Black, Latinx, and Native students than for White students (D. B. Martin, 2009; McGee & Martin, 2011). Racially biased experiences may pressure minoritized students to disengage and disidentify from mathematics (Casad et al., 2019; Davies et al., 2005; Major & Schmader, 1998) on the one hand, or, from their threatened racial identity on the other (Battey & Leyva, 2016; Cheryan & Monin, 2005; Fordham & Ogbu, 1986; Pronin et al., 2004; C. M. Steele & Aronson, 1995)—a dilemma that White students largely need not contend with in math environments. Of course, this is not to say that minoritized learners unquestioningly buy into false ‘racial inferiority’ and ‘cultural deficit’ narratives about their group—many minoritized students develop counternarratives and other stereotype management strategies to help them successfully cope with bias-related threats in math contexts (Berry, 2005; Berry et al., 2011; McGee & Martin, 2011; Nasir & Shah, 2011; Terry, 2011). Our point, however, is that truly equitable environments would render these coping strategies unnecessary, because the primary narrative would be that *all* students—students of color and White students—are capable of mathematical learning and deserve full inclusion, value, and belonging in mathematics environments.

When math teachers learn about these negative consequences of racial bias for their students of color, we expect that they will be more motivated to interrupt these biases and enact culturally relevant teaching practices. Given the pervasiveness of bias expression in mathematics classrooms, coupled with the deleterious physiological, cognitive, and emotional effects experienced by the targets of bias, it is clear that *before* mathematics classrooms can be considered inclusive spaces, racial bias expression (stemming from people and places) must be

addressed. Mathematics classrooms where bias expression goes unchecked are, by definition, *not* inclusive because they unequally and systematically limit minoritized students' ability to engage authentically, meaningfully, and productively in classrooms relative to White students. To ensure that *all* learners have equal opportunity to engage fully in mathematics classrooms, expressions of racial bias must be challenged.

Offering Strategies: Culturally Relevant Teaching as a Way Forward

Once teacher-educators raise self-awareness of bias expression and concern for students of color by proactively discussing these issues in their classrooms, their teacher-pupils enter a problem-solving mindset, where they are motivated to override bias expression. This productive mindset can be squandered, however, if there is not an obvious channel for teachers to direct their problem-solving energy. Recognizing the sheer pervasiveness of racial bias expression in math settings and trying to identify ways to challenge that expression can be daunting—as we see in the motivation-to-behavior work, cited above. Without clear next steps, teachers may feel overwhelmed and uncertain about what to do and may worry about making a mistake that could harm the very students they hope to support (Cox & Devine, 2019; Perry et al., 2015; Plant & Devine, 2003; Stephan & Stephan, 1985; Teal et al., 2010).

At this juncture, it is critical that teacher-educators empower their teacher-pupils with a range of evidence-based strategies that teacher-pupils can authentically employ in the classroom. They can empower teacher-pupils by reminding them of their situational power as leaders in the classroom. A teacher's role affords an abundance of opportunities to influence (and, in many cases, outright change) racially biased classroom norms, policies, and practices (Carr, 2017; Murphy et al., 2018; Troop-Gordon, 2015). Teacher-educators can also remind teacher-pupils that adopting culturally relevant classroom practices is generally experienced positively by students, increasing their engagement and efficacy and strengthening their classroom relationships (e.g., Berry et al., 2011; Howard, 2001; Shaw, 2016). Moreover, teacher-educators can show teacher-pupils evidence that students can tell the difference

between teachers who engage in truly culturally relevant pedagogy—and they prefer it (Oppland-Cordell, 2013; Sampson & Garrison-Wade, 2011; Shaw, 2016). Even if at first, these practices are effortful and mistakes are made, students appreciate and prefer teachers' efforts to include culturally relevant teaching practices.

As described in the opening of this article, the guiding principles of culturally relevant teaching involve *academic success*, *cultural competence*, and *sociopolitical consciousness* (Ladson-Billings, 1995, 2014). Within each guiding principle are a set of evidence-based strategies that teachers can use to challenge racial bias expression. Before proceeding, we note that these three guiding principles overlap and complement each other. In combination, these techniques can help teachers create racially inclusive math environments (Bartell et al., 2017; Morrison et al., 2008; D. M. Steele & Cohn-Vargas, 2013):

- The *academic success principle* involves holding *all* students to high standards for intellectual growth. By explicitly recognizing the potential of all students, teachers who embody this principle are directly challenging racially biased narratives that hold downward expectations for students of color. To enact the academic success principle in their classrooms, teachers can clearly state their high academic expectations for all students (e.g., reassuring them that, by practicing and seeking help, they are all capable of mastering the material; Cohen et al., 1999; Fried et al., in prep; Muenks et al., in prep). Teachers can also communicate that it is their job as teachers to promote student success and they can back up that claim by offering consistent feedback and instructional support (e.g., clearly outlining academic and behavioral expectations, closely monitoring students' mathematical learning, clarifying challenging material, and modeling 'unseen' mathematical thinking by talking through example problems aloud; Fried et al., in prep; Morrison et al., 2008; Muenks et al., in prep).

- The *cultural competency principle* involves valuing and encouraging the development of students' cultural knowledge. This principle directly challenges racially biased norms, values, and hierarchies that prioritize the White, middle class American perspective over all others. As we have mentioned, these cultural integrations must go beyond a "food and festivals" diversity mentality—teachers must strive to make cultural diversity an integral part of the curriculum and not simply a 'decorative' add-on (Sleeter, 2011). For instance, teachers can enact the cultural competency principle by increasing their own mathematical knowledge, so that it includes histories of non-western mathematics (e.g., Ascher, 1984; Powell, 2002; Selin, 2001). From that knowledge, teachers can reshape their curricula to deliberately highlight the contributions of a diverse pool of mathematicians and ways of understanding, learning, and solving math problems (e.g., Aikenhead, 2017; Gay, 2009). Teachers can also validate multiple forms of discourse, signaling that all students belong in math settings, by affirming that students' home language is a legitimate way to understand and communicate mathematical concepts (Aguirre et al., 2013; Bartell et al., 2017; Morrison et al., 2008). Additionally, math teachers can design classroom activities that actively incorporate cultural values of *interdependence*—the importance of familial, community, and societal relationships and ties—common in Black, Latinx, and Native cultures (Covarrubias et al., 2016; Gray et al., 2019). For example, teachers can encourage students to identify and devise solutions to mathematical problems that are found in their home-life and cultural communities (Morrison et al., 2008).
- The *sociopolitical consciousness principle* involves adopting a social justice stance. By enacting this principle, teachers can combat racial bias by disrupting the unspoken racial hierarchies of mathematics and critically evaluating racially

biased policies and practices in (and beyond) the math context. To do this, teachers can purposefully integrate critical texts and invite discussion of controversial topics (Bartell et al., 2017; Taylor et al., 2019). Or, as we suggested in the opening of this article, teachers might devise assignments that require students to identify a meaningful social issue and apply their mathematical learning to critique and address it (Ladson-Billings, 2014; Tate, 1995a). Students can also identify social problems and situations where various forms of mathematical thinking are relevant and teachers can use those insights to augment classroom activities (Bartell et al., 2017). By forming relationships with students, teachers can get to know them and their cultural community—in doing so, the examples teachers use can better reflect students' actual experiences, rather than societal stereotypes that may be incongruent with students' specific life experiences.

Of course, this list is far from exhaustive. There are numerous ways teachers can make their lessons and interactions with students more culturally relevant. As teacher-pupils become more comfortable with these guiding principles, teacher-educators can encourage them to generate their own ideas about enacting culturally relevant practice, giving them practice for applying these ideas in their own classrooms.

Practical Tips for Framing a Proactive Confrontation

Even though proactively confronting racial bias can motivate people to reflect on and shift their attitudes and behavior to express less bias (e.g., Devine et al., 2012), teacher-educators may still have practical concerns about the confronting process as they instruct their teacher-pupils. There is often hesitancy because confronters aren't sure *what* to say or *how* to say it (Ashburn-Nardo et al., 2008; Ashburn-Nardo & Karim, 2019). Such worries are quite common among potential confronters and can lead to inaction (Ashburn-Nardo et al., 2014; Gordon, 2005). In the previous few sections, we have provided suggestions for *what* teacher-

educators can say and do to include proactive confrontation as a technique in their teaching. We have (a) provided illustrative examples of racial bias expression in math settings that teacher-educators can use to raise the self-awareness of teacher-pupils, (b) explained how such expressions can be harmful to students of color (and in some cases to White students too) in order to help teacher-educators understand these consequences and can communicate them to their teacher-pupils, and (c) suggested practical strategies that teacher-educators can share with their teacher-pupils to make their math classrooms more inclusive and equitable. With these examples and strategies in mind, we now provide several suggestions for *how* teacher-educators can frame proactive confrontations.

Although no one teacher is wholly responsible for the bias expression in math settings, each teacher is responsible for doing their part to mitigate bias expression. As we stated above, feeling a little guilty or embarrassed for expressing bias can be a good thing—it may motivate desirable behavioral self-regulation, wherein people endeavor to suppress bias (Czopp et al., 2006; Monteith, 1993). Proactive confronters must be mindful, however, that too much guilt or embarrassment may spark a defensive reaction among confrontees (Hernandez et al., 2013; Wolsiefer & Stone, 2019). Moreover, if teacher-pupils are led to believe that expressing bias makes them a bad, irredeemable person, then the only way for them to resolve their negative self-directed feelings is to deny that there is a problem. For these reasons, confrontations saturated in hostility and judgment are likely suboptimal (Monteith et al., 2019).

To lessen the likelihood of defensiveness, we recommend the following guidelines for delivering a proactive confrontation (see Walton & Brady, 2019). First, teacher-educators should *avoid using negative labels* to describe their teacher-pupils. Negative labels are words that suggest bias expression is a fixed and unchanging character trait. For example, terms like ‘bigoted’ or ‘racist’ suggest a stable character flaw. Because people are strongly motivated to feel positively about themselves (Tajfel & Turner, 1979), threatening their positive sense of self with negative labels may prevent teacher-pupils from acknowledging their own bias expression.

Rather than use negative labels, teacher-educators could instead communicate that, while very problematic, bias expression is a changeable behavior (Cox & Devine, 2019; Rattan, 2019). Teacher-educators can emphasize that by being self-aware, concerned for students of color, and ready to adopt culturally relevant strategies, bias expression in their classrooms can (and should) be reduced.

Second, teacher-educators should communicate that teacher-pupils are *not alone* in trying to mitigate their bias expression. Because it is challenging to employ culturally relevant teaching methods with fidelity, teachers must feel sufficiently *motivated* and *supported* in taking on this challenging work. Teacher-educators should be clear with their teacher-pupils that many people are concerned about racial bias expressed toward students of color in math environments. By connecting with these likeminded teachers, teacher-pupils can build communities of support—sharing in successes and passing along tips to deal with challenges in this area. By emphasizing that many others share a similar mindset, teacher-educators can make the steps to addressing racial bias in math settings seem more normative and manageable for their teacher-pupils.

Finally, teacher-educators should *explicitly forecast improvement* for teacher-pupils. Teaching in a culturally relevant and responsive manner can be challenging. For many math teachers, culturally relevant practice requires cognitive shifts: a change from seeing students merely as recipients of knowledge to sources of knowledge that teachers can also learn from (Ayers, 2004) and a change from seeing math as an objective, acultural discipline to a culturally embedded one (D. B. Martin, 2009). Beyond these perspective shifts, culturally relevant teaching requires continual (re)learning, reflection, and (re)integration of cultural knowledge into one's teaching as well as critical self-awareness with the aim of identifying cultural blind spots (Gay, 2002, 2009). Teachers must seek out and strive to understand the cultural experiences and perspectives of their students and apply that learning to create non-prejudiced classroom norms, values, hierarchies, practices, and policies. It may seem overwhelming to teacher-pupils

at first, but it is a learning process that gets more comfortable and sustainable over time as teachers continue to apply the principles and seek feedback when they struggle. According to Bell and colleagues (1997, p. 301):

“As teachers, we can also try to be thoughtful about our own different levels of awareness on particular issues and realize that our own consciousness is likely to shift and change through our ongoing learning about the various forms and manifestations of oppression in our society.”

Raising self-awareness involves an ongoing process of learning. Teacher-educators should help teacher-pupils understand that making mistakes is a normal part of learning how to teach in a culturally relevant and responsive manner. When teachers occasionally slip up, they can learn from their mistakes, seek feedback from their peers and students, and work to do better going forward (L. A. Bell et al., 1997). Given time and practice, teachers will get better and better at regulating bias expression and intervening when bias expression occurs in the classroom by applying the principles of culturally relevant pedagogy. By forecasting improvement, teacher-educators can encourage their pupils to construe the challenges of culturally relevant teaching as normal and temporary, which has been shown to increase persistence in the face of difficulty (see Walton & Cohen, 2011).

Remaining Challenges and Future Directions

We have proposed proactive confrontation as a tool for teacher-educators to help train their teacher-pupils in culturally relevant pedagogy and provide them adequate support in the process. Proactive confrontation can motivate math teachers to use culturally relevant practices (via raising their self-awareness about racial bias in math settings and their concern for students of color) and empower them to implement these practices with fidelity (via offering strategies).

Still, there are several challenges that teacher-educators interested in proactive confrontation should consider. Although proactive confrontation has been tested in field and classroom settings (Carnes et al., 2015; Devine et al., 2012, 2017; Forscher et al., 2017), this approach has not yet been vetted specifically in teacher-education classrooms. We would

expect the patterns found in previous academic research to carry over into teacher-education contexts, but rigorous field experimentation in these settings is still recommended. Such experimentation could involve continuous improvement self-assessment models (Dew & Nearing, 2004) or randomized controlled trials (Spieth et al., 2016), wherein teacher-pupils are randomly assigned to either an experimental group (who learns about culturally relevant teaching strategies via proactive confrontation) or a control group (who learns about culturally relevant teaching strategies without the steps and framing provided in a proactive confrontation). Consistent with existing proactive confrontation research, several outcomes should be measured to assess intervention success, including teacher-pupils' beliefs and attitudes about the prevalence and impact of racial bias (before, during, and after the intervention) as well as an assessment of their own classrooms' norms, values, hierarchies, policies, and practices after the intervention (perhaps via teacher self-reports, student reports, and classroom observations). It will also be important to examine the long-term effects of such an intervention by revisiting participating math teachers in the months and years after being proactively confronted. Do teachers continue to develop self-awareness and adopt new culturally relevant teaching strategies over time? Or is continual education required to support teachers? It will be important to figure this out.

Another challenge concerns contextual heterogeneity. The goal of a proactive confrontation in a math teacher-education classroom would be to communicate three things to teachers: (1) that they are capable of expressing racial bias (or being complicit with racially biased structures), (2) that racial bias expression is concerning because it can harm students of color, and (3) that they, as teachers, have situational power to mitigate bias expression by employing culturally relevant practices in their classrooms. However, to communicate these messages effectively, the particulars of message delivery may need to change across contexts (Yeager & Walton, 2011). For example, math teachers working at a primarily Black-student serving institution may benefit from different illustrative examples of racial bias expression (and

different strategies to combat it) than teachers at primarily Native-, Latinx-, or White-student serving institution. It would be an ironic misstep for a proactive confrontation to fail simply because the teacher-pupils felt the content was not *relevant* to their particular school context. Customizing the content of proactive confrontation, depending on teacher-pupils' backgrounds and experiences, may resonate better than a 'one-size-fits-all' approach.

Conclusion

Expressions of racial bias in math settings threaten the inclusion of students of color. While no one teacher is wholly responsible for the bias expression in math classrooms, each teacher has a hand in making the classroom environment more equitable. By employing culturally relevant teaching practices, math teachers can mitigate racial bias expression; however, we opened this article by identifying two implementation challenges. First, many teachers exhibit fear and/or reluctance to engage in culturally relevant practices and, second, many instantiations of 'culturally relevant practices' are employed without fidelity to the pedagogies' guiding principles. Using insights from social psychology, we have proposed that teacher-educators use a proactive confrontation approach to encourage teacher-pupil to engage in culturally relevant teaching and support them in practicing this teaching method with fidelity. Successful proactive confrontations suppress the racial bias expression of others by equipping confrontees with three key resources: self-awareness of racial bias expression, concern for students of color, and practical behavioral strategies (Cox & Devine, 2019). This intentional ordering—first raising self-awareness, then raising concern, and then offering specific culturally relevant practices as a strategy to reduce racial bias expression—uses psychological science to shape math teachers' motivation and skill to engage in culturally relevant practices and reduce bias expression in the classroom. In particular, *self-awareness* and *concern* contribute to math teachers' *motivation* to regulate bias expression, while the behavioral strategies that follow contribute to teachers' *skills and ability* to regulate bias expression and change their behavior:

- First, proactive confrontation **raises self-awareness** among teachers that they have expressed (or were complicit with) racial bias in the past or that they are capable of expressing (or being complicit with) racial bias in the future. Developing awareness of racial positionality, cultural blind spots, and personal racial biases is a first step for math teachers to recognize that they must develop a culturally diverse knowledge base (Carr, 2017; Gay, 2009; Gordon, 2005; Talbert-Johnson & Tillman, 1999). Without self-awareness that racial bias has been expressed (or could be expressed), math teachers are unlikely to change their behavior going forward.
- Second, proactive confrontation can persuade teachers that racial prejudice expression in the classroom is **cause for concern**. That is, proactive confrontations show how certain (biased) policies, practices, and interactions can have the effect of widening inequalities in math engagement and opportunity and can further marginalize students of color from the discipline—outcomes that teachers presumably want to ameliorate. Without understanding and feeling distressed by the harmful consequences of racial prejudice expression, math teachers may be unlikely to be motivated to develop a culturally diverse knowledge base and translate it into practice (e.g., Gay, 2002).
- Third, proactive confrontations offer teachers **practical strategies to recognize and override** biased policies, practices, and interactions. Without specific behavioral strategies, math teachers may feel uncertain and helpless, which could lead to avoidance (rather than self-reflection) of their bias or avoidance of (rather than engagement with) minoritized students altogether (e.g., engaging in fewer conversations with these students, calling on them less; Cox & Devine, 2019; Perry, Dovidio, Murphy, & van Ryn, 2015; Plant & Devine, 2003; Stephan & Stephan, 1985). By offering culturally relevant teaching strategies after raising

self-awareness and concern, teacher-educators who proactively confront biased policies, practices, and interactions provide their teacher-pupil confrontees actionable ways to address (rather than avoid) racial prejudice.

For these reasons, we view proactive confrontation as a practical and useful tool for math teacher-educators to challenge racial bias expression on the part of their pre-service and in-service teacher-pupils in their classrooms and, further, to motivate and empower their pupils to create more equitable and inclusive math learning environments that inspire and motivate learning and performance among all students.

References

- Adams, G., Garcia, D. M., Purdie-Vaughns, V., & Steele, C. M. (2006). The detrimental effects of a suggestion of sexism in an instruction situation. *Journal of Experimental Social Psychology, 42*(5), 602–615. <https://doi.org/10.1016/j.jesp.2005.10.004>
- Aguirre, J. M., Turner, E. E., Bartell, T. G., Kalinec-Craig, C., Foote, M. Q., Roth McDuffie, A., & Drake, C. (2013). Making Connections in Practice: How Prospective Elementary Teachers Connect to Children's Mathematical Thinking and Community Funds of Knowledge in Mathematics Instruction. *Journal of Teacher Education, 64*(2), 178–192. <https://doi.org/10.1177/0022487112466900>
- Aikenhead, G. S. (2017). Enhancing School Mathematics Culturally: A Path of Reconciliation. *Canadian Journal of Science, Mathematics and Technology Education, 17*(2), 73–140. <https://doi.org/10.1080/14926156.2017.1308043>
- Amodio, D. M., Devine, P. G., & Harmon-Jones, E. (2007). A Dynamic Model of Guilt: Implications for Motivation and Self-Regulation in the Context of Prejudice. *Psychological Science, 18*(6), 524–530. <https://doi.org/10.1111/j.1467-9280.2007.01933.x>
- Appel, M., Kronberger, N., & Aronson, J. (2011). Stereotype threat impairs ability building: Effects on test preparation among women in science and technology: Stereotype threat and ability building. *European Journal of Social Psychology, 41*(7), 904–913. <https://doi.org/10.1002/ejsp.835>
- Ascher, M. (1984). Mathematical ideas in non-western cultures. *Historia Mathematica, 11*, 76–80.
- Ashburn-Nardo, L., Blanchar, J. C., Petersson, J., Morris, K. A., & Goodwin, S. A. (2014). Do You Say Something When It's Your Boss? The Role of Perpetrator Power in Prejudice Confrontation: Perpetrator Power and Prejudice Confrontation. *Journal of Social Issues, 70*(4), 615–636. <https://doi.org/10.1111/josi.12082>

- Ashburn-Nardo, L., & Karim, M. F. A. (2019). The CPR model: Decisions involved in confronting prejudiced responses. In R. K. Mallett & M. J. Monteith (Eds.), *Confronting prejudice and discrimination: The science of changing minds and behaviors* (pp. 29–47). Academic Press. <https://doi.org/10.1016/B978-0-12-814715-3.00002-3>
- Ashburn-Nardo, L., Morris, K. A., & Goodwin, S. A. (2008). The Confronting Prejudiced Responses (CPR) Model: Applying CPR in Organizations. *Academy of Management Learning & Education*, 7(3), 332–342.
- Augoustinos, M., & Every, D. (2007). The Language of “Race” and Prejudice: A Discourse of Denial, Reason, and Liberal-Practical Politics. *Journal of Language and Social Psychology*, 26(2), 123–141. <https://doi.org/10.1177/0261927X07300075>
- Ayers, W. (2004). *Teaching the Personal and the Political: Essays on Hope and Justice*. Teachers College Press.
- Baker, B. D., & Corcoran, S. P. (2012). *The Stealth Inequities of School Funding: How State and Local School Finance Systems Perpetuate Inequitable Student Spending*. Center for American Progress. <https://eric.ed.gov/?id=ED535555>
- Barajas-López, F. (2014). Mexican Immigrant Students’ Schooling Experiences and the Construction of Disengagement in Mathematics Learning Contexts. *Journal of Latinos and Education*, 13(1), 14–32. <https://doi.org/10.1080/15348431.2013.800818>
- Bartell, T. G., Wager, A., Edwards, A., Battey, D., Foote, M., & Spencer, J. (2017). Toward a Framework for Research Linking Equitable Teaching With the Standards for Mathematical Practice. *Journal for Research in Mathematics Education*, 48(1), 7–21. <https://doi.org/10.5951/jresmetheduc.48.1.0007>
- Battey, D. (2013). “Good” mathematics teaching for students of color and those in poverty: The importance of relational interactions within instruction. *Educational Studies in Mathematics*, 82(1), 125–144. <https://doi.org/10.1007/s10649-012-9412-z>

- Battey, D., & Leyva, L. A. (2016). A Framework for Understanding Whiteness in Mathematics Education. *Journal of Urban Mathematics Education*, 9(2).
<https://journals.tdl.org/jume/index.php/JUME/article/view/294>
- Battey, D., & Leyva, L. A. (2018). Making the Implicit Explicit: Building a Case for Implicit Racial Attitudes to Inform Mathematics Education Research. In T. G. Bartell (Ed.), *Toward Equity and Social Justice in Mathematics Education* (pp. 21–41). Springer International Publishing. https://doi.org/10.1007/978-3-319-92907-1_2
- Baumeister, R. F., Stillwell, A. M., & Heatherton, T. F. (1994). Guilt: An interpersonal approach. *Psychological Bulletin*, 115(2), 243–267. <https://doi.org/10.1037/0033-2909.115.2.243>
- Bell, A. C., Burkley, M., & Bock, J. (2018). Examining the asymmetry in judgments of racism in self and others. *The Journal of Social Psychology*, 1–16.
<https://doi.org/10.1080/00224545.2018.1538930>
- Bell, L. A., Washington, S., Weinstein, G., & Love, B. (1997). Knowing Ourselves as Instructors. In M. Adams, L. A. Bell, & P. Griffin (Eds.), *Teaching for diversity and social justice* (pp. 299–310). Routledge.
- Benner, A. D., Crosnoe, R., & Eccles, J. S. (2015). Schools, Peers, and Prejudice in Adolescence. *Journal of Research on Adolescence*, 25(1), 173–188.
<https://doi.org/10.1111/jora.12106>
- Bennett, J. E., & Sekaquaptewa, D. (2014). Setting an egalitarian social norm in the classroom: Improving attitudes towards diversity among male engineering students. *Social Psychology of Education*, 17(2), 343–355.
<http://dx.doi.org.proxyiub.uits.iu.edu/10.1007/s11218-014-9253-y>
- Benson, B. E. (2003). Framing Culture within Classroom Practice: Culturally Relevant Teaching. *Action in Teacher Education*, 25(2), 16–22.
<https://doi.org/10.1080/01626620.2003.10463301>

- Berry, R. Q. (2005). Voices of Success: Descriptive Portraits of Two Successful African American Male Middle School Mathematics Students. *Journal of African American Studies*, 8(4), 46–62. JSTOR.
- Berry, R. Q. (2008). Access to Upper-Level Mathematics: The Stories of Successful African American Middle School Boys. *Journal for Research in Mathematics Education*, 39(5), 464–488.
- Berry, R. Q., Thunder, K., & McClain, O. L. (2011). Counter Narratives: Examining the Mathematics and Racial Identities of Black Boys who are Successful with School Mathematics. *Journal of African American Males in Education*, 2(1), 14.
- Blanchard, F. A., Crandall, C. S., Brigham, J. C., & Vaughn, L. A. (1994). Condemning and condoning racism: A social context approach to interracial settings. *Journal of Applied Psychology*, 79(6), 993–997. <https://doi.org/10.1037/0021-9010.79.6.993>
- Blanchard, F. A., Lilly, T., & Vaughn, L. A. (1991). Reducing the Expression of Racial Prejudice. *Psychological Science*, 2(2), 101–105. <https://doi.org/10.1111/j.1467-9280.1991.tb00108.x>
- Boysen, G. A., & Vogel, D. L. (2009). Bias in the Classroom: Types, Frequencies, and Responses. *Teaching of Psychology*, 36(1), 12–17. <https://doi.org/10.1080/00986280802529038>
- Boysen, G. A., Vogel, D. L., Cope, M. A., & Hubbard, A. (2009). Incidents of bias in college classrooms: Instructor and student perceptions. *Journal of Diversity in Higher Education*, 2(4), 219–231. <https://doi.org/10.1037/a0017538>
- Brenner, M. E. (1998). Adding Cognition to the Formula for Culturally Relevant Instruction in Mathematics. *Anthropology & Education Quarterly*, 29(2), 214–244. <https://doi.org/10.1525/aeq.1998.29.2.214>
- Brewley-Kennedy, D. N. (2005). The struggles of incorporating equity into practice in a university mathematics methods course. *The Mathematics Educator*, 1, 16–28.

- Buehler, J., Ruggles Gere, A., Dallavis, C., & Shaw Haviland, V. (2009). Normalizing the Fraughtness: How Emotion, Race, and School Context Complicate Cultural Competence. *Journal of Teacher Education*, 60(4), 408–418.
<https://doi.org/10.1177/0022487109339905>
- Burns, M. D., & Monteith, M. J. (2018). Confronting stereotypic biases: Does internal versus external motivational framing matter? *Group Processes & Intergroup Relations*, 136843021879804. <https://doi.org/10.1177/1368430218798041>
- Byrd, C. M. (2016). Does Culturally Relevant Teaching Work? An Examination From Student Perspectives. *SAGE Open*, 6(3), 2158244016660744.
<https://doi.org/10.1177/2158244016660744>
- Cammarota, J., & Romero, A. F. (2009). A social justice epistemology and pedagogy for Latina/o students: Transforming public education with participatory action research. *New Directions for Youth Development*, 2009(123), 53–65. <https://doi.org/10.1002/ym.314>
- Campbell, S. L. (2012). For Colored Girls? Factors that Influence Teacher Recommendations into Advanced Courses for Black Girls. *The Review of Black Political Economy*, 39(4), 389–402. <https://doi.org/10.1007/s12114-012-9139-1>
- Carnes, M., Devine, P. G., Manwell, L. B., Byars-Winston, A., Fine, E., Ford, C. E., Forscher, P. S., Isaac, C., Kaatz, A., Magua, W., Palta, M., & Sheridan, J. (2015). Effect of an Intervention to Break the Gender Bias Habit for Faculty at One Institution: A Cluster Randomized, Controlled Trial. *Academic Medicine : Journal of the Association of American Medical Colleges*, 90(2), 221–230.
<https://doi.org/10.1097/ACM.0000000000000552>
- Carr, P. R. (2017). Whiteness and White Privilege: Problematizing Race and Racism in a “Color-blind” World and in Education. In K. Fereidooni & M. El (Eds.), *Rassismuskritik und Widerstandsformen* (pp. 871–889). Springer Fachmedien.
https://doi.org/10.1007/978-3-658-14721-1_52

- Carter, E. R., & Murphy, M. C. (2015). Group-based Differences in Perceptions of Racism: What Counts, to Whom, and Why?: Perceptions of Racism. *Social and Personality Psychology Compass*, 9(6), 269–280. <https://doi.org/10.1111/spc3.12181>
- Casad, B. J., Petzel, Z. W., & Ingalls, E. A. (2019). A Model of Threatening Academic Environments Predicts Women STEM Majors' Self-Esteem and Engagement in STEM. *Sex Roles*, 80(7), 469–488. <https://doi.org/10.1007/s11199-018-0942-4>
- Chaney, K. E., & Sanchez, D. T. (2018). The Endurance of Interpersonal Confrontations as a Prejudice Reduction Strategy. *Personality and Social Psychology Bulletin*, 44(3), 418–429. <https://doi.org/10.1177/0146167217741344>
- Chang, F., Luo, M., Walton, G., Aguilar, L., & Bailenson, J. (2019). Stereotype Threat in Virtual Learning Environments: Effects of Avatar Gender and Sexist Behavior on Women's Math Learning Outcomes. *Cyberpsychology, Behavior, and Social Networking*. <https://doi.org/10.1089/cyber.2019.0106>
- Cheryan, S., & Monin, B. (2005). Where are you really from?: Asian Americans and identity denial. *Journal of Personality and Social Psychology*, 89(5), 717–730. <https://doi.org/10.1037/0022-3514.89.5.717>
- Cho, G., & DeCastro-Ambrosetti, D. (2005). Is Ignorance Bliss? Pre-service Teachers' Attitudes Toward Multicultural Education. *The High School Journal*, 89(2), 24–28. <https://doi.org/10.1353/hsj.2005.0020>
- Civil, M. (2007). Building on Community Knowledge: An Avenue to Equity in Mathematics Education. In N. S. Nasir & P. Cobb (Eds.), *Improving access to mathematics: Diversity and equity in the classroom* (pp. 105–117). Teachers College Press.
- Cohen, G. L., & Steele, C. M. (2002). A Barrier of Mistrust: How Negative Stereotypes Affect Cross-Race Mentoring. In J. Aronson (Ed.), *Improving Academic Achievement* (pp. 303–327). Academic Press. <https://doi.org/10.1016/B978-012064455-1/50018-X>

- Cohen, G. L., Steele, C. M., & Ross, L. D. (1999). The Mentor's Dilemma: Providing Critical Feedback Across the Racial Divide. *Personality and Social Psychology Bulletin*, 25(10), 1302–1318. <https://doi.org/10.1177/0146167299258011>
- Covarrubias, R., Herrmann, S. D., & Fryberg, S. A. (2016). Affirming the Interdependent Self: Implications for Latino Student Performance. *Basic and Applied Social Psychology*, 38(1), 47–57. <https://doi.org/10.1080/01973533.2015.1129609>
- Cox, W. T. L., & Devine, P. G. (2019). The prejudice habit-breaking intervention. In R. K. Mallett & M. J. Monteith (Eds.), *Confronting prejudice and discrimination: The science of changing minds and behaviors* (pp. 249–274). Academic Press. <https://doi.org/10.1016/B978-0-12-814715-3.00015-1>
- Crandall, C. S., & Eshleman, A. (2003). A justification-suppression model of the expression and experience of prejudice. *Psychological Bulletin*, 129(3), 414–446. <https://doi.org/10.1037/0033-2909.129.3.414>
- Crandall, C. S., Eshleman, A., & O'Brien, L. (2002). Social norms and the expression and suppression of prejudice: The struggle for internalization. *Journal of Personality and Social Psychology*, 82(3), 359–378. <https://doi.org/10.1037/0022-3514.82.3.359>
- Cross, B. E. (2003). Learning or Unlearning Racism: Transferring Teacher Education Curriculum to Classroom Practices. *Theory Into Practice*, 42(3), 203–209. https://doi.org/10.1207/s15430421tip4203_6
- Czopp, A. M. (2008). When is a compliment not a compliment? Evaluating expressions of positive stereotypes. *Journal of Experimental Social Psychology*, 44(2), 413–420. <https://doi.org/10.1016/j.jesp.2006.12.007>
- Czopp, A. M., Kay, A. C., & Cheryan, S. (2015). Positive Stereotypes are Pervasive and Powerful. *Perspectives on Psychological Science*, 10(4), 451–463. <https://doi.org/10.1177/1745691615588091>

- Czopp, A. M., & Monteith, M. J. (2003). Confronting Prejudice (Literally): Reactions to Confrontations of Racial and Gender Bias. *Personality and Social Psychology Bulletin*, 29(4), 532–544. <https://doi.org/10.1177/0146167202250923>
- Czopp, A. M., Monteith, M. J., & Mark, A. Y. (2006). Standing up for a change: Reducing bias through interpersonal confrontation. *Journal of Personality and Social Psychology*, 90(5), 784–803. <https://doi.org/10.1037/0022-3514.90.5.784>
- Davies, P. G., Spencer, S. J., & Steele, C. M. (2005). Clearing the Air: Identity Safety Moderates the Effects of Stereotype Threat on Women's Leadership Aspirations. *Journal of Personality and Social Psychology*, 88(2), 276–287. <https://doi.org/10.1037/0022-3514.88.2.276>
- Dee, T., & Penner, E. (2016). *The Causal Effects of Cultural Relevance: Evidence from an Ethnic Studies Curriculum. CEPA Working Paper No. 16-01*. Stanford Center for Education Policy Analysis. <https://eric.ed.gov/?id=ED580355>
- Devine, P. G., Forscher, P. S., Austin, A. J., & Cox, W. T. L. (2012). Long-term reduction in implicit race bias: A prejudice habit-breaking intervention. *Journal of Experimental Social Psychology*, 48(6), 1267–1278. <https://doi.org/10.1016/j.jesp.2012.06.003>
- Devine, P. G., Forscher, P. S., Cox, W. T. L., Kaatz, A., Sheridan, J., & Carnes, M. (2017). A gender bias habit-breaking intervention led to increased hiring of female faculty in STEM departments. *Journal of Experimental Social Psychology*, 73, 211–215. <https://doi.org/10.1016/j.jesp.2017.07.002>
- Devine, P. G., Monteith, M. J., Zuwerink, J. R., & Elliot, A. J. (1991). Prejudice with and without compunction. *Journal of Personality and Social Psychology*, 60(6), 817–830. <https://doi.org/10.1037/0022-3514.60.6.817>
- Dew, J. R., & Nearing, M. M. (2004). *Continuous Quality Improvement in Higher Education*. Greenwood Publishing Group.

- DiAngelo, R. (2018). *White Fragility: Why It's So Hard for White People to Talk About Racism*. Beacon Press.
- Dovidio, J. F., & Gaertner, S. L. (2000). Aversive Racism and Selection Decisions: 1989 and 1999. *Psychological Science*, 11(4), 315–319. <https://doi.org/10.1111/1467-9280.00262>
- Dovidio, J. F., & Gaertner, S. L. (2004). Aversive Racism. *Advances in Experimental Social Psychology*, 36, 1–52.
- Ellsworth, P. C., & Smith, C. A. (1988). From appraisal to emotion: Differences among unpleasant feelings. *Motivation and Emotion*, 12(3), 271–302.
<https://doi.org/10.1007/BF00993115>
- Ernest, P., Skovsmose, O., Bendegem, J. P. van, Bicudo, M., Miarka, R., Kvasz, L., & Möller, R. (2016). The Philosophy of Mathematics Education. *ICME-13 Topical Surveys*, 1–26.
https://doi.org/10.1007/978-3-319-40569-8_1
- Evans, L., & Moore, W. L. (2015). Impossible Burdens: White Institutions, Emotional Labor, and Micro-Resistance. *Social Problems*, 62(3), 439–454.
<https://doi.org/10.1093/socpro/spv009>
- Fisher, C. B., Wallace, S. A., & Fenton, R. E. (2000). Discrimination Distress During Adolescence. *Journal of Youth and Adolescence*, 29(6), 679–695.
<https://doi.org/10.1023/A:1026455906512>
- Forbes, C. E., Duran, K. A., Leitner, J. B., & Magerman, A. (2015). Stereotype Threatening Contexts Enhance Encoding of Negative Feedback to Engender Underperformance and Anxiety. *Social Cognition; New York*, 33(6), 605–625.
<http://dx.doi.org/10.1521/soco.2015.33.6.605>
- Fordham, S., & Ogbu, J. U. (1986). Black students' school success: Coping with the "burden of 'acting white.'" *The Urban Review*, 18(3), 176–206. <https://doi.org/10.1007/BF01112192>

- Forscher, P. S., Mitamura, C., Dix, E. L., Cox, W. T. L., & Devine, P. G. (2017). Breaking the prejudice habit: Mechanisms, timecourse, and longevity. *Journal of Experimental Social Psychology*, 72, 133–146. <https://doi.org/10.1016/j.jesp.2017.04.009>
- Fried, A. C., Kroeper, K. M., & Murphy, M. C. (in prep). *Fostering Growth Mindset Classrooms: Identifying “Growth” and “Fixed” Mindset Faculty Behaviors using a Mouse Tracking Paradigm*.
- Frijda, N. H., Kuipers, P., & ter Schure, E. (1989). Relations Among Emotion, Appraisal, and Emotional Action Readiness. *Journal of Personality and Social Psychology*, 57(2), 212–228.
- Fyhn, A. B., Sara Eira, E. J., & Sriraman, B. (2011). Perspectives on Sámi Mathematics Education. *Interchange*, 42(2), 185. <https://doi.org/10.1007/s10780-011-9154-3>
- Garza, R. (2008). Latino and White High School Students’ Perceptions of Caring Behaviors: Are We Culturally Responsive to our Students? *Urban Education*.
<https://doi.org/10.1177/0042085908318714>
- Gay, G. (2002). Preparing for Culturally Responsive Teaching. *Journal of Teacher Education*, 53(2), 106–116. <https://doi.org/10.1177/0022487102053002003>
- Gay, G. (2009). Preparing Culturally Responsive Mathematics Teachers. In B. Greer, S. Mukhopadhyay, A. B. Powell, & S. Nelson-Barber (Eds.), *Culturally Responsive Mathematics Education* (pp. 189–205). Routledge.
- Gholson, M. L., & Wilkes, C. E. (2017). (Mis)Taken Identities: Reclaiming Identities of the “Collective Black” in Mathematics Education Research Through an Exercise in Black Specificity. *Review of Research in Education*, 41(1), 228–252.
<https://doi.org/10.3102/0091732X16686950>
- González, N., Andrade, R., Civil, M., & Moll, L. (2001). Bridging Funds of Distributed Knowledge: Creating Zones of Practices in Mathematics. *Journal of Education for*

- Students Placed at Risk*, 6(1–2), 115–132.
https://doi.org/10.1207/S15327671ESPR0601-2_7
- Gordon, J. (2005). Inadvertent Complicity: Colorblindness in Teacher Education. *Educational Studies*, 38(2), 135–153. https://doi.org/10.1207/s15326993es3802_5
- Gray, D. L., McElveen, T. L., Green, B. P., & Bryant, L. H. (2019). Engaging Black and Latinx Students through Communal Learning Opportunities: A Relevance Intervention for Middle Schoolers in STEM Elective Classrooms. *Contemporary Educational Psychology*, 101833. <https://doi.org/10.1016/j.cedpsych.2019.101833>
- Greer, B., Mukhopadhyay, S., Powell, A. B., & Nelson-Barber, S. (2009). *Culturally Responsive Mathematics Education*. Routledge.
- Grissom, J. A., & Redding, C. (2016). Discretion and Disproportionality: Explaining the Underrepresentation of High-Achieving Students of Color in Gifted Programs. *AERA Open*, 2(1), 2332858415622175. <https://doi.org/10.1177/2332858415622175>
- Gutiérrez, R. (2008). A “Gap-Gazing” Fetish in Mathematics Education? Problematizing Research on the Achievement Gap. *Journal for Research in Mathematics Education*, 39(4), 357–364.
- Gutiérrez, R. (2013). The Sociopolitical Turn in Mathematics Education. *Journal for Research in Mathematics Education*, 44(1), 37–68. <https://doi.org/10.5951/jresmetheduc.44.1.0037>
- Gutstein, E. (2003). Teaching and Learning Mathematics for Social Justice in an Urban, Latino School. *Journal for Research in Mathematics Education*, 34(1), 37–73.
<https://doi.org/10.2307/30034699>
- Gutstein, E., Lipman, P., Hernandez, P., & de los Reyes, R. (1997). Culturally Relevant Mathematics Teaching in a Mexican American Context. *Journal for Research in Mathematics Education*, 28(6), 709–737. JSTOR. <https://doi.org/10.2307/749639>

- Hammond, Z. (2014). *Culturally Responsive Teaching and The Brain: Promoting Authentic Engagement and Rigor Among Culturally and Linguistically Diverse Students*. Corwin Press.
- Harmon, D. A. (2012). Culturally Responsive Teaching though a Historical Lens: Will History Repeat Itself? *Interdisciplinary Journal of Teaching and Learning*, 2(1), 12–22.
- Hernandez, R. A., Haidet, P., Gill, A. C., & Teal, C. R. (2013). Fostering students' reflection about bias in healthcare: Cognitive dissonance and the role of personal and normative standards. *Medical Teacher*, 35(4), e1082–e1089.
<https://doi.org/10.3109/0142159X.2012.733453>
- Howard, T. C. (2001). Telling Their Side of the Story: African-American Students' Perceptions of Culturally Relevant Teaching. *The Urban Review*, 33(2), 131–149.
<https://doi.org/10.1023/A:1010393224120>
- Hyers, L. L. (2010). Alternatives to Silence in Face-to-Face Encounters with Everyday Heterosexism: Activism on the Interpersonal Front. *Journal of Homosexuality*, 57(4), 539–565. <https://doi.org/10.1080/00918361003608749>
- Ishimaru, A. M., Barajas-Lopez, F., & Bang, M. (2015). Centering Family Knowledge to Develop Children's Empowered Mathematics Identities. *Journal of Family Diversity in Education*, 1(4), 1–21.
- Jackson, K. J. (2009). The Social Construction of Youth and Mathematics: The Case of a Fifth-Grade Classroom. In D. B. Martin (Ed.), *Mathematics teaching, learning, and liberation in the lives of Black children* (pp. 175–199). Routledge.
- Karataş, K., & Oral, B. (2015). Teachers' Perceptions on Culturally Responsiveness in Education. *Journal of Ethnic and Cultural Studies*, 2(2), 47–57.
<https://doi.org/10.29333/ejecs/39>

- Koedinger, K. R., & Nathan, M. J. (2004). The Real Story Behind Story Problems: Effects of Representations on Quantitative Reasoning. *Journal of the Learning Sciences*, 13(2), 129–164. https://doi.org/10.1207/s15327809jls1302_1
- Kohli, R., Arteaga, N., & McGovern, E. R. (2018). “Compliments” and “Jokes”: Unpacking Racial Microaggressions in the K-12 Classroom. In G. C. Torino, D. P. Rivera, C. M. Capodilupo, K. L. Nadal, & D. W. Sue (Eds.), *Microaggression Theory* (pp. 276–290). John Wiley & Sons, Inc. <https://doi.org/10.1002/9781119466642.ch17>
- Kroeper, K. M., Williams, H. E., & Murphy, M. C. (in prep). *Counterfeit Diversity: How Strategically Misrepresenting Gender Diversity Dampens Organizations’ Perceived Sincerity and Elevates Women’s Identity Threat Concerns*.
- Ladson-Billings, G. (1995). But that’s just good teaching! The case for culturally relevant pedagogy. *Theory Into Practice*, 34(3), 159–165. <https://doi.org/10.1080/00405849509543675>
- Ladson-Billings, G. (2014). Culturally Relevant Pedagogy 2.0: A.k.a. the Remix. *Harvard Educational Review*, 84(1), 74–84. <https://doi.org/10.17763/haer.84.1.p2rj131485484751>
- Lambeth, D. T., & Smith, A. M. (2016). Pre-service Teachers’ Perceptions of Culturally Responsive Teacher Preparation. *The Journal of Negro Education*, 85(1), 46–58. JSTOR. <https://doi.org/10.7709/jnegroeducation.85.1.0046>
- Larnell, G. V., Bullock, E. C., & Jett, C. C. (2016). Rethinking Teaching and Learning Mathematics for Social Justice from a Critical Race Perspective. *Journal of Education*, 196(1), 19–29. <https://doi.org/10.1177/002205741619600104>
- Lawrence, C. R. (1987). The Id, the Ego, and Equal Protection: Reckoning with Unconscious Racism. *Stanford Law Review*, 39(2), 317–388. JSTOR. <https://doi.org/10.2307/1228797>
- Leland, C. H., & Harste, J. C. (2005). Doing what We Want to Become: Preparing New Urban Teachers. *Urban Education*, 40(1), 60–77. <https://doi.org/10.1177/0042085904270374>

Leonard, J. (2018). *Culturally Specific Pedagogy in the Mathematics Classroom: Strategies for Teachers and Students*. Routledge. <https://doi.org/10.4324/9781351255837>

Leonard, J., Brooks, W., Barnes-Johnson, J., & Berry, R. Q. (2010). The Nuances and Complexities of Teaching Mathematics for Cultural Relevance and Social Justice. *Journal of Teacher Education*, 61(3), 261–270. <https://doi.org/10.1177/0022487109359927>

Leonard, J., Napp, C., & Adeleke, S. (2009). The Complexities of Culturally Relevant Pedagogy: A Case Study of Two Secondary Mathematics Teachers and Their ESOL Students. *The High School Journal*, 93(1), 3–22. JSTOR.

Lewis, J. A., Mendenhall, R., Ojiemwen, A., Thomas, M., Riopelle, C., Harwood, S. A., & Browne Hunt, M. (2019). Racial Microaggressions and Sense of Belonging at a Historically White University. *American Behavioral Scientist*, 0002764219859613. <https://doi.org/10.1177/0002764219859613>

Linder, C. (2015). Navigating Guilt, Shame, and Fear of Appearing Racist: A Conceptual Model of Antiracist White Feminist Identity Development. *Journal of College Student Development*, 56(6), 535–550. <https://doi.org/10.1353/csd.2015.0057>

Lipka, J., Hogan, M. P., Webster, J. P., Yanez, E., Adams, B., Clark, S., & Lacy, D. (2005). Math in a Cultural Context: Two Case Studies of a Successful Culturally Based Math Project. *Anthropology & Education Quarterly*, 36(4), 367–385. JSTOR.

Lipman, P. (1995). “Bringing out the best in them”: The contribution of culturally relevant teachers to educational reform. *Theory Into Practice*, 34(3), 202–208. <https://doi.org/10.1080/00405849509543680>

Logel, C., Walton, G. M., Spencer, S. J., Iserman, E. C., von Hippel, W., & Bell, A. E. (2009). Interacting with sexist men triggers social identity threat among female engineers. *Journal of Personality and Social Psychology*, 96(6), 1089–1103. <https://doi.org/10.1037/a0015703>

- Lunenberg, M. (2010). Characteristics, Scholarship and Research of Teacher Educators. In P. Peterson, E. Baker, & B. McGaw (Eds.), *International Encyclopedia of Education (Third Edition)* (pp. 676–680). Elsevier. <https://doi.org/10.1016/B978-0-08-044894-7.00674-6>
- Major, B., & O'Brien, L. T. (2005). The Social Psychology of Stigma. *Annual Review of Psychology*, 56(1), 393–421. <https://doi.org/10.1146/annurev.psych.56.091103.070137>
- Major, B., Quinton, W. J., & Schmader, T. (2003). Attributions to discrimination and self-esteem: Impact of group identification and situational ambiguity. *Journal of Experimental Social Psychology*, 39(3), 220–231. [https://doi.org/10.1016/S0022-1031\(02\)00547-4](https://doi.org/10.1016/S0022-1031(02)00547-4)
- Major, B., & Schmader, T. (1998). Coping with Stigma through Psychological Disengagement. In J. K. Swim & C. Stangor (Eds.), *Prejudice* (pp. 219–241). Academic Press. <https://doi.org/10.1016/B978-012679130-3/50045-4>
- Mallett, R. K., & Monteith, M. J. (2019a). Confronting prejudice and discrimination: Historical influences and contemporary approaches. In R. K. Mallett & M. J. Monteith (Eds.), *Confronting prejudice and discrimination: The science of changing minds and behaviors* (pp. xiii–xxv). Academic Press. <https://doi.org/10.1016/B978-0-12-814715-3.00025-4>
- Mallett, R. K., & Monteith, M. J. (Eds.). (2019b). *Confronting prejudice and discrimination: The science of changing minds and behaviors* (1st edition). Elsevier.
- Mallett, R. K., & Wagner, D. E. (2011). The unexpectedly positive consequences of confronting sexism. *Journal of Experimental Social Psychology*, 47(1), 215–220. <https://doi.org/10.1016/j.jesp.2010.10.001>
- Markus, H. R., & Kitayama, S. (2003). Culture, Self, and the Reality of the Social. *Psychological Inquiry*, 14(3–4), 277–283. <https://doi.org/10.1080/1047840X.2003.9682893>
- Martin, B. (1988). Mathematics and social interests. *Search*, 19(4), 209–214.
- Martin, D. B. (2009). Researching Race in Mathematics Education. *Teachers College Record*, 111(2), 295–338.
- Martin, D. B. (2012). Learning Mathematics while Black. *Educational Foundations*, 26, 47–66.

- Martin, D. B., Gholson, M. L., & Leonard, J. (2010). Mathematics as Gatekeeper: Power and Privilege in the Production of Knowledge. *Journal of Urban Mathematics Education*, 3(2), 12–24.
- Martin, R. J., & Van Gunten, D. M. (2002). Reflected Identities: Applying Positionality and Multicultural Social Reconstructionism in Teacher Education. *Journal of Teacher Education*, 53(1), 44–54. <https://doi.org/10.1177/0022487102053001005>
- McGee, E. O., & Martin, D. B. (2011). “You Would Not Believe What I Have to Go Through to Prove My Intellectual Value!” Stereotype Management Among Academically Successful Black Mathematics and Engineering Students. *American Educational Research Journal*, 48(6), 1347–1389. <https://doi.org/10.3102/0002831211423972>
- McKown, C., & Weinstein, R. S. (2008). Teacher expectations, classroom context, and the achievement gap. *Journal of School Psychology*, 46(3), 235–261. <https://doi.org/10.1016/j.jsp.2007.05.001>
- Meckler, L. (2019, February 26). Report finds \$23 billion racial funding gap for schools. *Washington Post*. https://www.washingtonpost.com/local/education/report-finds-23-billion-racial-funding-gap-for-schools/2019/02/25/d562b704-3915-11e9-a06c-3ec8ed509d15_story.html
- Milner, R. H. (2009). What Does Teacher Education Have to Do With Teaching? Implications for Diversity Studies. *Journal of Teacher Education*. <https://doi.org/10.1177/0022487109347670>
- Monroe, C. R. (2005). Why Are “Bad Boys” always Black?: Causes of Disproportionality in School Discipline and Recommendations for Change. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 79(1), 45–50. <https://doi.org/10.3200/TCHS.79.1.45-50>

- Monteith, M. J. (1993). Self-Regulation of Prejudiced Responses: Implications for Progress in Prejudice-Reduction Efforts. *Journal of Personality and Social Psychology*, 65(3), 469–485. <https://doi.org/10.1037/0022-3514.65.3.469>
- Monteith, M. J., Ashburn-Nardo, L., Voils, C. I., & Czopp, A. M. (2002). Putting the brakes on prejudice: On the development and operation of cues for control. *Journal of Personality and Social Psychology*, 83(5), 1029–1050. <https://doi.org/10.1037//0022-3514.83.5.1029>
- Monteith, M. J., Burns, M. D., & Hildebrand, L. K. (2019). Navigating successful confrontations. In R. K. Mallett & M. J. Monteith (Eds.), *Confronting prejudice and discrimination: The science of changing minds and behaviors* (pp. 225–248). Academic Press. <https://doi.org/10.1016/B978-0-12-814715-3.00006-0>
- Monteith, M. J., Deneen, N. E., & Tooman, G. D. (1996). The Effect of Social Norm Activation on the Expression of Opinions Concerning Gay Men and Blacks. *Basic and Applied Social Psychology*, 18(3), 267–288. https://doi.org/10.1207/s15324834basp1803_2
- Monteith, M. J., Devine, P. G., & Zuwerink, J. R. (1993). Self-Directed Versus Other-Directed Affect as a Consequence of Prejudice-Related Discrepancies. *Journal of Personality and Social Psychology*, 64(2), 198–210. <https://doi.org/10.1037/0022-3514.64.2.198>
- Monteith, M. J., & Voils, C. I. (1998). Proneness to prejudiced responses: Toward understanding the authenticity of self-reported discrepancies. *Journal of Personality and Social Psychology*, 75(4), 901–916. <https://doi.org/10.1037/0022-3514.75.4.901>
- Morgan, I., & Amerikaner, A. (2018). *Funding gaps: An analysis of school funding equity across the U.S. and within each state*. (pp. 1–13). The Education Trust. https://edtrust.org/wp-content/uploads/2014/09/FundingGapReport_2018_FINAL.pdf
- Morris, A. K., & Hiebert, J. (2011). Creating Shared Instructional Products: An Alternative Approach to Improving Teaching. *Educational Researcher*, 40(1), 5–14. <https://doi.org/10.3102/0013189X10393501>

- Morrison, K. A., Robbins, H. H., & Rose, D. G. (2008). Operationalizing Culturally Relevant Pedagogy: A Synthesis of Classroom-Based Research. *Equity & Excellence in Education*, 41(4), 433–452. <https://doi.org/10.1080/10665680802400006>
- Moschkovich, J. (2013). Principles and Guidelines for Equitable Mathematics Teaching Practices and Materials for English Language Learners. *Journal of Urban Mathematics Education*, 6(1), 45–57–45–57.
- Mosenkis, D. (2014, November 15). Racial Bias in Pennsylvania's Funding of Public Schools. *POWER*. <https://powerinterfaith.org/racial-bias-in-pennsylvanias-funding-of-public-schools/>
- Moskowitz, G. B., & Li, P. (2011). Egalitarian goals trigger stereotype inhibition: A proactive form of stereotype control. *Journal of Experimental Social Psychology*, 47(1), 103–116. <https://doi.org/10.1016/j.jesp.2010.08.014>
- Muenks, K., Kroeper, K. M., Canning, E. A., & Murphy, M. C. (in prep). *What do fixed and growth mindset college professors actually do and say in the classroom?*
- Muñiz, J. (2019). *Culturally Responsive Teaching: A 50-State Survey of Teaching Standards* (pp. 1–53). New America. newamerica.org/education-policy/reports/culturally-responsive-teaching/
- Murphy, M. C., Kroeper, K. M., & Ozier, E. M. (2018). Prejudiced Places: How Contexts Shape Inequality and How Policy Can Change Them. *Policy Insights from the Behavioral and Brain Sciences*, 5(1), 66–74. <https://doi.org/10.1177/2372732217748671>
- Murphy, M. C., Steele, C. M., & Gross, J. J. (2007). Signaling Threat: How Situational Cues Affect Women in Math, Science, and Engineering Settings. *Psychological Science*, 18(10), 879–885. <https://doi.org/10.1111/j.1467-9280.2007.01995.x>
- Murphy, M. C., & Taylor, V. J. (2012). The role of situational cues in signaling and maintaining stereotype threat. In M. Inzlicht & T. Schmader (Eds.), *Stereotype Threat: Theory, Process, and Application* (pp. 17–33). Oxford University Press.

- Murphy, M. C., & Walton, G.M. (2013). From prejudiced people to prejudiced places: A social-contextual approach to prejudice. In *Frontiers in Social Psychology Series: Stereotyping and Prejudice* (pp. 181–204). Psychology Press.
<http://indiana.edu/~mcmlab/Murphy%20&%20Walton%20%282013%29.pdf>
- Nasir, N. S., Hand, V., & Taylor, E. V. (2008). Culture and Mathematics in School: Boundaries Between “Cultural” and “Domain” Knowledge in the Mathematics Classroom and Beyond. *Review of Research in Education*, 32(1), 187–240.
<https://doi.org/10.3102/0091732X07308962>
- Nasir, N. S., & Shah, N. (2011). On defense: African American Males Making Sense of Racialized Narratives in Mathematics Education. *Journal of African American Males in Education*, 2(1), 24–45.
- National Science Foundation. (2019). *Women, Minorities, and Persons with Disabilities in Science and Engineering* (NSF 19-304) [Data set]. <https://doi.org/10.1037/e558442013-001>
- Okonofua, J. A., & Eberhardt, J. L. (2015). Two Strikes: Race and the Disciplining of Young Students. *Psychological Science*, 26(5), 617–624.
<https://doi.org/10.1177/0956797615570365>
- Okonofua, J. A., Walton, G. M., & Eberhardt, J. L. (2016). A Vicious Cycle: A Social–Psychological Account of Extreme Racial Disparities in School Discipline. *Perspectives on Psychological Science*, 11(3), 381–398. <https://doi.org/10.1177/1745691616635592>
- Oppland-Cordell, S. (2013). Mathematics and Racial Identity Co-Construction in Multiple Sociopolitical Contexts: A Case Study of a Latina Undergraduate Student from an Urban Community. *Journal of Urban Learning, Teaching, and Research*, 9, 89–99.
- Paris, D. (2012). Culturally Sustaining Pedagogy: A Needed Change in Stance, Terminology, and Practice. *Educational Researcher*, 41(3), 93–97.
<https://doi.org/10.3102/0013189X12441244>

- Parker, L. R., Monteith, M. J., Moss-Racusin, C. A., & Van Camp, A. R. (2018). Promoting concern about gender bias with evidence-based confrontation. *Journal of Experimental Social Psychology, 74*, 8–23. <https://doi.org/10.1016/j.jesp.2017.07.009>
- Peguero, A. A., & Williams, L. M. (2011). Racial and Ethnic Stereotypes and Bullying Victimization. *Youth & Society, 45*(4), 545–564. <https://doi.org/10.1177/0044118X11424757>
- Perry, S. P., Dovidio, J. F., Murphy, M. C., & van Ryn, M. (2015). The joint effect of bias awareness and self-reported prejudice on intergroup anxiety and intentions for intergroup contact. *Cultural Diversity and Ethnic Minority Psychology, 21*(1), 89–96. <https://doi.org/10.1037/a0037147>
- Picower, B. (2009). The unexamined Whiteness of teaching: How White teachers maintain and enact dominant racial ideologies. *Race Ethnicity and Education, 12*(2), 197–215. <https://doi.org/10.1080/13613320902995475>
- Plant, E. A., & Devine, P. G. (1998). Internal and External Motivation to Respond Without Prejudice. *Journal of Personality and Social Psychology, 75*(3), 811–832. <https://doi.org/10.1037/0022-3514.75.3.811>
- Plant, E. A., & Devine, P. G. (2003). The Antecedents and Implications of Interracial Anxiety. *Personality and Social Psychology Bulletin, 29*(6), 790–801. <https://doi.org/10.1177/0146167203029006011>
- Powell, A. B. (2002). *Ethnomathematics and the challenges of racism in mathematics education* (P. Valero & O. Skovsmose, Eds.; pp. 1–15). Centre for Research in Learning Mathematics.
- Pronin, E., Lin, D. Y., & Ross, L. (2002). The Bias Blind Spot: Perceptions of Bias in Self Versus Others. *Personality and Social Psychology Bulletin, 28*(3), 369–381. <https://doi.org/10.1177/0146167202286008>

- Pronin, E., Steele, C. M., & Ross, L. (2004). Identity bifurcation in response to stereotype threat: Women and mathematics. *Journal of Experimental Social Psychology, 40*(2), 152–168.
[https://doi.org/10.1016/S0022-1031\(03\)00088-X](https://doi.org/10.1016/S0022-1031(03)00088-X)
- Rattan, A. (2019). How lay theories (or mindsets) shape the confrontation of prejudice. In R. K. Mallett & M. J. Monteith (Eds.), *Confronting prejudice and discrimination: The science of changing minds and behaviors* (pp. 121–140). Academic Press.
<https://doi.org/10.1016/B978-0-12-814715-3.00008-4>
- Rowland, T. (2008). The purpose, design and use of examples in the teaching of elementary mathematics. *Educational Studies in Mathematics, 69*(2), 149–163.
<https://doi.org/10.1007/s10649-008-9148-y>
- Rydell, R. J., Rydell, M. T., & Boucher, K. L. (2010). The effect of negative performance stereotypes on learning. *Journal of Personality and Social Psychology, 99*(6), 883–896.
<https://doi.org/10.1037/a0021139>
- Rydell, R. J., Shiffrin, R. M., Boucher, K. L., Loo, K. V., & Rydell, M. T. (2010). Stereotype threat prevents perceptual learning. *Proceedings of the National Academy of Sciences, 107*(32), 14042–14047. <https://doi.org/10.1073/pnas.1002815107>
- Rydell, R. J., Van Loo, K. J., & Boucher, K. L. (2014). Stereotype Threat and Executive Functions: Which Functions Mediate Different Threat-Related Outcomes? *Personality and Social Psychology Bulletin, 40*(3), 377–390.
<https://doi.org/10.1177/0146167213513475>
- Salmivalli, C., Voeten, M., & Poskiparta, E. (2011). Bystanders Matter: Associations Between Reinforcing, Defending, and the Frequency of Bullying Behavior in Classrooms. *Journal of Clinical Child & Adolescent Psychology, 40*(5), 668–676.
<https://doi.org/10.1080/15374416.2011.597090>
- Sampson, D., & Garrison-Wade, D. F. (2011). Cultural Vibrancy: Exploring the Preferences of African American Children Toward Culturally Relevant and Non-Culturally Relevant

Lessons. *The Urban Review*, 43(2), 279–309. [https://doi.org/10.1007/s11256-010-0170-](https://doi.org/10.1007/s11256-010-0170-x)

x

Schmader, T., Forbes, C. E., Zhang, S., & Berry Mendes, W. (2009). A Metacognitive Perspective on the Cognitive Deficits Experienced in Intellectually Threatening Environments. *Personality and Social Psychology Bulletin*, 35(5), 584–596. <https://doi.org/10.1177/0146167208330450>

Schmader, T., Johns, M., & Forbes, C. (2008). An integrated process model of stereotype threat effects on performance. *Psychological Review*, 115(2), 336–356. <https://doi.org/10.1037/0033-295X.115.2.336>

Selin, H. (2001). *Mathematics Across Cultures: The History of Non-Western Mathematics*. Springer Science & Business Media.

Shaw, J. T. (2016). “The Music I Was Meant to Sing”: Adolescent Choral Students’ Perceptions of Culturally Responsive Pedagogy. *Journal of Research in Music Education*, 64(1), 45–70. <https://doi.org/10.1177/0022429415627989>

Shelton, J. N., Richeson, J. A., Salvatore, J., & Hill, D. M. (2006). Silence is Not Golden: The Intrapersonal Consequences of Not Confronting Prejudice. In S. Levin & C. Van Laar (Eds.), *Stigma and Group Inequality: Social Psychological Perspectives* (pp. 65–82). Lawrence Erlbaum Associates, Inc.

Simons, R. L., Murry, V., Mcloyd, V., Lin, K.-H., Cutrona, C., & Conger, R. D. (2002). Discrimination, crime, ethnic identity, and parenting as correlates of depressive symptoms among African American children: A multilevel analysis. *Development and Psychopathology*, 14(2), 371–393. <https://doi.org/10.1017/S0954579402002109>

Skiba, R. J., Michael, R. S., Nardo, A. C., & Peterson, R. L. (2002). The Color of Discipline: Sources of Racial and Gender Disproportionality in School Punishment. *The Urban Review*, 34(4), 317–342.

- Sleeter, C. E. (2001). Preparing Teachers for Culturally Diverse Schools: Research and the Overwhelming Presence of Whiteness. *Journal of Teacher Education*, 52(2), 94–106.
<https://doi.org/10.1177/0022487101052002002>
- Sleeter, C. E. (2011). An Agenda to Strengthen Culturally Responsive Pedagogy. *English Teaching: Practice and Critique*, 10(2), 7–23.
- Sleeter, C. E. (2012). Confronting the Marginalization of Culturally Responsive Pedagogy. *Urban Education*, 47(3), 562–584. <https://doi.org/10.1177/0042085911431472>
- Son Hing, L. S., Li, W., & Zanna, M. P. (2002). Inducing Hypocrisy to Reduce Prejudicial Responses among Aversive Racists. *Journal of Experimental Social Psychology*, 38(1), 71–78. <https://doi.org/10.1006/jesp.2001.1484>
- Spencer, S. J., Steele, C. M., & Quinn, D. M. (1999). Stereotype Threat and Women's Math Performance. *Journal of Experimental Social Psychology*, 35(1), 4–28.
<https://doi.org/10.1006/jesp.1998.1373>
- Spieth, P. M., Kubasch, A. S., Penzlin, A. I., Illigens, B. M.-W., Barlinn, K., & Siepmann, T. (2016). Randomized controlled trials – a matter of design. *Neuropsychiatric Disease and Treatment*, 12, 1341–1349. <https://doi.org/10.2147/NDT.S101938>
- Steele, C. M. (2011). *Whistling Vivaldi: How Stereotypes Affect Us and What We Can Do*. W. Norton & Company.
- Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, 69(5), 797–811.
<https://doi.org/10.1037/0022-3514.69.5.797>
- Steele, C. M., Spencer, S. J., & Aronson, J. (2002). Contending with group image: The psychology of stereotype and social identity threat. *Advances in Experimental Social Psychology*, 34, 379–440. [https://doi.org/10.1016/S0065-2601\(02\)80009-0](https://doi.org/10.1016/S0065-2601(02)80009-0)
- Steele, D. M., & Cohn-Vargas, B. (2013). *Identity Safe Classrooms: Places to Belong and Learn*. Corwin Press.

- Stephan, W. G., & Stephan, C. W. (1985). Intergroup Anxiety. *Journal of Social Issues*, 41(3), 157–175. <https://doi.org/10.1111/j.1540-4560.1985.tb01134.x>
- Tajfel, H., & Turner, J. (1979). An integrative theory of intergroup conflict. In M. J. Hatch & M. Schultz (Eds.), *Organizational identity: A reader*.
- Talbert-Johnson, C., & Tillman, B. (1999). Perspectives on Color in Teacher Education Programs: Prominent Issues. *Journal of Teacher Education*, 50(3), 200–208. <https://doi.org/10.1177/002248719905000306>
- Tate, W. F. (1995a). Returning to the root: A culturally relevant approach to mathematics pedagogy. *Theory Into Practice*, 34(3), 166–173. <https://doi.org/10.1080/00405849509543676>
- Tate, W. F. (1995b). School Mathematics and African American Students: Thinking Seriously about Opportunity-to-Learn Standards. *Educational Administration Quarterly*, 31(3), 424–448. <https://doi.org/10.1177/0013161X95031003006>
- Tate, W. F. (1997). Critical Race Theory and Education: History, Theory, and Implications. *Review of Research in Education*, 22(1), 195–247. <https://doi.org/10.3102/0091732X022001195>
- Tatum, B. D. (1999). When You're Called a Racist. *Education Digest*, 65(1), 29–32.
- Taylor, S. D., Veri, M. J., Eliason, M., Hermoso, J. C. R., Bolter, N. D., & Olphen, J. E. V. (2019). The Social Justice Syllabus Design Tool: A First Step in Doing Social Justice Pedagogy. *JCSCORE*, 5(2), 132–166. <https://doi.org/10.15763/issn.2642-2387.2019.5.2.132-166>
- Teal, C. R., Shada, R. E., Gill, A. C., Thompson, B. M., Frugé, E., Villarreal, G. B., & Haidet, P. (2010). When Best Intentions Aren't Enough: Helping Medical Students Develop Strategies for Managing Bias about Patients. *Journal of General Internal Medicine*, 25(2), 115–118. <https://doi.org/10.1007/s11606-009-1243-y>

- Terrill, M. M., & Mark, D. L. H. (2000). Preservice Teachers' Expectations for Schools With Children of Color and Second-Language Learners. *Journal of Teacher Education*, 51(2), 149–155. <https://doi.org/10.1177/002248710005100209>
- Terry, S. C. L. (2011). Mathematical Counterstory and African American Male Students: Urban Mathematics Education From a Critical Race Theory Perspective. *Journal of Urban Mathematics Education*, 4(1), 23–49.
- Trainor, J. S. (2005). "My Ancestors Didn't Own Slaves": Understanding White Talk about Race. *Research in the Teaching of English*, 40(2), 140–167. JSTOR.
- Troop-Gordon, W. (2015). The Role of the Classroom Teacher in the Lives of Children Victimized by Peers. *Child Development Perspectives*, 9(1), 55–60. <https://doi.org/10.1111/cdep.12106>
- Turner, E. E., Drake, C., McDuffie, A. R., Aguirre, J., Bartell, T. G., & Foote, M. Q. (2012). Promoting equity in mathematics teacher preparation: A framework for advancing teacher learning of children's multiple mathematics knowledge bases. *Journal of Mathematics Teacher Education*, 15(1), 67–82. <https://doi.org/10.1007/s10857-011-9196-6>
- Ullucci, K., & Battey, D. (2011). Exposing Color Blindness/Grounding Color Consciousness: Challenges for Teacher Education. *Urban Education*, 46(6), 1195–1225. <https://doi.org/10.1177/0042085911413150>
- Valli, L. (1995). The Dilemma of Race: Learning to be Color Blind and Color Conscious. *Journal of Teacher Education*, 46(2), 120–129. <https://doi.org/10.1177/0022487195046002006>
- Villegas, A. M., & Lucas, T. (2002). Preparing Culturally Responsive Teachers: Rethinking the Curriculum. *Journal of Teacher Education*, 53(1), 20–32. <https://doi.org/10.1177/0022487102053001003>

- Walton, G. M., & Brady, S. T. (2019). "Bad" Things Reconsidered. In J. P. Forgas, W. D. Crano, & K. Fiedler (Eds.), *Applications of Social Psychology* (pp. 58–81). Routledge.
<https://doi.org/10.4324/9780367816407-4>
- Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, 92(1), 82–96.
<https://doi.org/10.1037/0022-3514.92.1.82>
- Walton, G. M., & Cohen, G. L. (2011). A Brief Social-Belonging Intervention Improves Academic and Health Outcomes of Minority Students. *Science*, 331(6023), 1447–1451.
<https://doi.org/10.1126/science.1198364>
- White, G. B. (2015, September 30). The Data Are Damning: How Race Influences School Funding. *The Atlantic*. <https://www.theatlantic.com/business/archive/2015/09/public-school-funding-and-the-role-of-race/408085/>
- Whiting, G. W., & Ford, D. Y. (2009). Black students and advanced placement classes: Summary, concerns, and recommendations. *Gifted Child Today*, 32(1), 23–26.
- Wilton, L. S., Bell, A. N., Vahradyan, M., & Kaiser, C. R. (2020). Show Don't Tell: Diversity Dishonesty Harms Racial/Ethnic Minorities at Work. *Personality and Social Psychology Bulletin*, 0146167219897149. <https://doi.org/10.1177/0146167219897149>
- Wolsiefer, K., & Stone, J. (2019). Addressing bias in healthcare. In R. K. Mallett & M. J. Monteith (Eds.), *Confronting prejudice and discrimination: The science of changing minds and behaviors* (pp. 275–297). Academic Press. <https://doi.org/10.1016/B978-0-12-814715-3.00013-8>
- Wong, C. A., Eccles, J. S., & Sameroff, A. (2003). The Influence of Ethnic Discrimination and Ethnic Identification on African American adolescents' School and Socioemotional Adjustment. *Journal of Personality*, 71(6), 1197–1232. <https://doi.org/10.1111/1467-6494.7106012>

Yeager, D. S., & Walton, G. M. (2011). Social-Psychological Interventions in Education: They're Not Magic. *Review of Educational Research*, 81(2), 267–301.

<https://doi.org/10.3102/0034654311405999>

Zuwerink, J. Z., Devine, P. G., Monteith, M. J., & Cook, D. A. (1996). Prejudice Toward Blacks: With and Without Compunction? *Basic and Applied Social Psychology*, 18(2), 131–150.

https://doi.org/10.1207/s15324834basp1802_2