THE SCIENCE OF EQUALITY IN EDUCATION

THE IMPACT OF IMPLICIT BIAS, RACIAL ANXIETY, AND STEREOTYPE THREAT ON STUDENT OUTCOMES

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The impact of implicit bias, racial anxiety, and stereotype threat on student outcomes

by Rachel D. Godsil, Linda R. Tropp, Phillip A. Goff, john a. powell, & Jessica MacFarlane

Those of us who work in education experience a confounding paradox. We are committed to ideals of justice and fairness for all students, yet we see evidence of disproportionate outcomes in academic achievement and discipline that suggest we are failing to achieve those ideals. Research from the "mind sciences" – from neuroscience to social psychology – provides insights that can help explain this paradox; this body of work specifies how our minds interpret group differences and navigate stereotypes and attitudes linked to race, gender, and other identities.

Research indicates that teachers, like everyone, are subject to an array of biases and anxieties associated with race and ethnicity, which can affect their judgments of student behavior and their relational dynamics with students (Harber et al., 2012; Okonofua & Eberhardt, 2015; Godsil et al., 2014; Fergus, 2016). Understanding the mechanisms that underlie biases, anxieties, and relational dynamics is the first step to disrupting them, and moving us toward effective strategies that can achieve equity across diverse populations of students.

THE MIND SCIENCES

As we examine inequities in academic outcomes, disciplinary practices, and other issues in education, we are confronted with critical questions. What explains the lack of academic encouragement for some students of color? Why don't we see more girls and young women in fields such as science, technology, engineering, and math? Why are black students—and especially black girls—disciplined more harshly than other students?

Schools across the country are grappling with these questions. The reality is that even though most teachers and administrators hold egalitarian values and want the best for all children, far too many schools show dramatic inequalities in academic and disciplinary outcomes among students from different racial and ethnic backgrounds. Just as students of color and girls are burdened by differential outcomes, teachers and administrators – who seek to enact their egalitarian values – are often perplexed and at a loss for how to chart a way forward.

Advances in the mind sciences provide explanations for the common disjuncture between our stated aspirations and our educational practices. Specifically, research suggests that three intersecting phenomena are primarily at play: *implicit bias*, the automatic association of stereotypes and attitudes toward particular groups; *racial anxiety*, the stressful concerns people often experience prior to and during cross-group interactions; and *stereotype threat*, the fear of confirming a negative stereotype about one's group (Godsil et al., 2014). Due in part to these

phenomena, even people who have the best intentions far too often fail to align their behavior with their values, which can cause harmful outcomes for students.

For instance, teachers with higher levels of implicit bias against blacks and Latinos may judge the misbehavior of boys from these groups more harshly than that of white and Asian boys, along with judging their work less favorably, and exhibiting colder or more hostile attitudes toward them. Racially anxious teachers may do the opposite: they may turn a blind eye to misbehavior or be overly favorable in assessments of the work of students of color work in an effort to avoid appearing biased (Harber et al., 2012). Negatively stereotyped groups of students, such as students of color and girls, often experience stereotype threat, putting them at risk of underperforming on important standardized tests, and resulting in a significant underestimation of their academic capacities (Steele, Spencer, & Aronson, 2002). Each of these phenomena has the potential to contribute to disparities in students' experiences and hindrances to the ultimate expression of their academic capacities and potential, whether through receiving disproportionate discipline, feeling as if little is expected of them, or receiving less mentoring or fewer opportunities to build meaningful teacher–student relationships.

Of course, addressing issues surrounding identity differences at the individual level is not sufficient, but it is necessary. In order to change classroom and institutional climates, and challenge racial and gender inequities in educational settings, we must be equipped to modify patterns of behavior and persuaded to support changes in practices that will do this work.

In the pages that follow, this report describes the underlying mechanisms of bias, anxiety, and stereotype threat, and many interventions that have been developed to date to override and prevent these phenomena. The report also looks specifically at disciplinary data and discusses how implicit bias, racial anxiety, and stereotype threat may contribute to documented disparities in disciplinary outcomes. Crucial next steps involve taking advantage of these insights, translating these interventions into best practices, and taking proactive steps to provide all students with the opportunity to thrive in school.

IMPLICIT BIAS

Implicit bias is the brain's automatic, instantaneous association of stereotypes and attitudes with particular groups (Dovidio, Kawakami, & Gaertner, 2002). Implicit biases are not a consequence of an individual's psychology—they are social phenomena that manifest in the minds of individuals. The social environments around us shape our implicit attitudes, whether or not we are aware of their effects, leading us to hold unconscious assumptions about the abilities, competencies, and characteristics of other people. As a result, our implicit biases can be contrary to our conscious values and ideals.

Many of our biases are based on the representations we see of other groups. Distorted stereotypes associating black and Latino men with violence, criminality, and poverty have been and continue to be common in the media (Barreto, Manzano, & Segura, 2012; Dixon, 2008). For mainstream images of Native Americans, old stereotypes linked to savagery as well as more current stereotypes of poverty, remain powerful and are rarely balanced by more authentic and accurate portrayals. Similarly, the dominant culture in the U.S. has relied on specific tropes in its depiction of women

of color; for instance, rooted in offensive stereotypes, these representations cast black women as welfare queens (Browne & Misra, 2003), Asian women as excessively submissive (Kim & Chung, 2005), and Latina women as hyper-sexualized (Guzmán & Valdivia, 2004).

Implicit bias affects our judgments of others. For example, in studies of facial expressions (see image below), white participants with stronger implicit racial bias perceive the black faces as angrier than white participants with lower levels of bias (Hugenberg & Bodenhausen, 2003). Further, those with stronger implicit bias perceive the black faces as angrier than the white faces, even when the facial expressions are actually identical.

Research shows that our implicit biases are also reflected in our body language: when we have stronger biases against certain groups, we stand further away from and engage in less eye contact with people from those groups (Richeson & Shelton, 2007). Though these behaviors may seem subtle, they are perceptible to the people with whom we are interacting (Dovidio, Kawakami, & Gaertner, 2002). Simply put, our bias seeps through our nonverbal behavior, and we may come across as less friendly to others.

Even those who pride themselves on their objectivity—lawyers, judges, doctors—have been shown to be affected by implicit biases (Godsil et al., 2014). For example, in one study, 60 law firm partners were given an identical memorandum written by "Thomas Meyer," identified as a third year associate who went to NYU Law School (a top 10 school). The memo contained seven spelling or grammar errors. Half of the partners were led to believe that Meyer was white and the other half that Meyer was black. Though the memos were identical, partners found an average of 2.9 of the 7 errors when Thomas Meyer was depicted as white, and an average of 5.8 of the 7 errors when Thomas Meyer was depicted as black (Nextions, 2014). These findings appear to be a case of "confirmation bias," in which the reviewers saw what they expected to see in relation to race-based stereotypes linked to competence, and then drew conclusions that confirmed those stereotypes (Nextions, 2014).

Teachers are not immune to the impact of bias. Some teachers may hold implicit biases about their students, such that they believe many students of color will be less capable or less well-behaved than other students. In a meta-analysis of studies assessing whether teacher expectations differ according to race or ethnicity, Tenenbaum and Ruck (2007) found that teachers hold a small but statistically significant higher level of expectations for Asian American students than for white students, and a small but statistically higher level of expectations for white students as compared to black and Latino students. A recent study also shows that black students are half as likely as

white students to be assigned to "gifted" programs (Grissom & Redding, 2016). Teachers also tend to ask more questions of, and give more encouragement to, white students, compared to students of color (Tenenbaum & Ruck, 2007). Similarly, researchers have found that teachers interact more frequently with male students than female students, including asking them more questions and giving them more precise feedback (Sadker & Zittleman, 2009).

Few teachers are likely to admit to others (or even to know themselves) that they hold students to different standards or have varying expectations based on race, ethnicity, or gender. Nonetheless, the disproportionate outcomes that emerge in relation to academics and disciplinary decisions suggest that bias may contribute to decision-making in subtle ways. To date, researchers have not yet published outcomes of studies demonstrating direct links between teachers' implicit biases and their assessments of student capacity or merit, but this research is underway.

While implicit bias is a critically important phenomenon to understand, it is not the only potential source of differential expectations and treatment of some students in schools. Two related phenomena, racial anxiety and stereotype threat, also have implications for disparate academic and disciplinary outcomes.

RACIAL ANXIETY

As a general phenomenon, *racial anxiety* involves the stress response people experience before or during interracial interactions (Tropp & Page-Gould, 2015), and may also be linked to potential consequences of such interactions (Stephan & Stephan, 1985). Racial anxiety can arise for both people of color and white people, but stems from different underlying concerns: people of color may be anxious that they will be subject to stereotyping, discrimination, rejection, or invalidation, whereas white people may be anxious that they will be assumed to be racist or that they will be met with hostility (Devine & Vasquez, 1998). Not surprisingly, when people are anxiously concerned that an interaction will be negative, it usually ends up being negative. Racial anxiety causes us to avoid eye contact, use less friendly tones of voice, and have shorter interactions (Dovidio et al., 2002). This sets up a negative feedback loop in which both individuals' fears are confirmed by the behavior of the other. Thus, even if only one person in the interaction experiences racial anxiety, the other person also suffers, regardless of whether they were racially anxious. For some of us, racial anxiety may even lead us to avoid interracial interactions altogether.

Racial anxiety can have a significant impact on cross-race interactions, with important implications for relations between teachers and students. For example, depending on their own psychological needs and concerns, a white teacher may be less likely to engage with students of color or to convey warmth or confidence in interactions with them. Bergsieker, Shelton, and Richeson (2010) have found that when a white person fears that they will be perceived as racist during a cross-race interaction, they typically try to get the person of color to like them. When a person of color fears that they will be perceived as less competent during a cross-race interaction, they try to gain the white person's respect. When these two come together in an interaction, the divergent goals of the people involved can mean that neither party will end up being satisfied, and both may come away frustrated by the interaction (Bergsieker et al., 2010). By contrast, when a white person's need to be accepted, and a person of color's need to be respected and empowered are affirmed during an interaction, people on both sides show more willingness to engage (Shnabel et al., 2009).

Research also shows that circumstances leading students of color to feel alienated from educational institutions can lead to avoidance of teachers or professors, academic support programs, and other facets of the school experience. Students of color who are sensitive to social rejection often find themselves feeling a lower level of belonging in the academic environment, which can prevent them from reaching their full academic potential (Page-Gould & Mendoza-Denton, 2011). The fear of social rejection and feelings of alienation are often a reaction to prior experiences with white authority figures (Page-Gould & Mendoza-Denton, 2011).

When it comes to discipline, a robust literature has established that the quality of student-teacher relationships is among the strongest predictors of classroom behavior, particularly during adolescence (Okonofua, Paunesku, & Walton, 2016; Toldson, McGee, & Lemmons, 2015; Crosnoe, Johnson, & Elder, 2004). Students still developing their cognitive-control regions on the brain rely upon trusted teachers to guide growth (Kesner, 2002). When teacher treat students without warmth and confidence, there is a risk that teachers will not inspire necessary trust, and students may not respond well to modest disciplinary measures; alternatively, a teacher's racial anxiety may inhibit their ability to establish appropriate structure and boundaries. In either case, a student's misbehavior might confirm a teacher's stereotype that the student is a "troublemaker" and making harsher disciplinary responses more likely (Okonofua & Eberhardt 2015).

Racial anxiety may also be triggered among students of color if they feel they are being disciplined unfairly by teachers. This dynamic may be similar to dynamics that have been identified in interactions between police officers and black citizens (Tyler & Wakslak, 2004): the all-too-reasonable perception among many black citizens is that they are unfairly racially profiled, which can lead them to expect that police officers will be racially biased and to lack legitimacy. Similar concerns may be at play for boys and young men of color in terms of how they respond to discipline by their teachers. A trusting relationship and feelings of respect are critical to the teacher-student relationship and closely related to how students respond to discipline (Toldson et al., 2015). For black and Latino male students, academic disengagement has been found to be the strongest predictor of disciplinary referrals, while aggressive behavior and school crime were stronger predictors for white male students (Toldson et al., 2015).

STEREOTYPE THREAT

Stereotype threat involves inhibition in cognitive functioning when a negative stereotype about our identity group is activated (Steele, 2012). Under these circumstances, even without conscious awareness, our mental energy is split between focusing on the task at hand and concerns about confirming the negative stereotype. The physiological effects of this anxiety are detectable in both the body (for example, increased heart rate and rising blood pressure), as well as in brain regions that regulate emotion. Mental resources are diverted toward vigilant self-monitoring and suppressing self-doubt, which could otherwise be used to maximize one's performance (Schmader & Johns, 2003). The result, therefore, is usually underperformance on the task.

Stereotype threat is particularly likely to be triggered in high pressure situations or when the task outcome is of high value (Roberson & Kulik, 2007), thereby making the phenomenon of stereotype threat especially relevant to academic settings (Steele & Aronson, 1995). Indeed, most stereotype threat studies in the United States have focused on the effects of stereotype threat in academic

settings for at-risk groups, including black and Latino students, and women in STEM fields. Stereotype threat has been shown to lead to the underperformance, across several subjects, of students of color, as they unconsciously grapple with the stereotypes about their abilities (Walton & Spencer 2009). In fact, researchers conclude that, due to stereotype threat, conventional measures of academic performance significantly underestimate the ability of stereotyped groups. In concrete terms, this translates to a difference of 62 points on the SAT (Walton & Spencer 2009).

Stereotype threat has been shown to be a critical factor in disparities in students' academic achievement. In a rare study assessing stereotype threat among Native American students, researchers found that Native American college students exposed to images of Native American sports mascots had lower achievement expectancies (Fryberg et al., 2008).

One study demonstrated that in situations where math skills are exposed to judgment—whether in a formal test, through classroom participation, or simply when calculating a waiter's tip—young women bear the extra burden of being negatively stereotyped in this domain (Spencer, Steele, & Quinn, 1999). Building on earlier studies, researchers found that even women who were otherwise strong math students were susceptible to stereotype threat. On a difficult math test, female participants did worse than equally qualified men. When the women were told that the math test typically produced gender differences, they performed even worse. These findings suggest that attempting to grapple with a negative stereotype about math ability can significantly undermine women's performance. However, when the women in the study were explicitly told that the math test did not typically produce a gender difference, women's underperformance disappeared (Spencer et al., 1999), a basic finding that has been replicated in numerous studies (see, for example, Brown & Day, 2006; Ben-Zeev, Fein, & Inzlicht, 2005; Davies et al., 2002; Schmader, Johns, & Forbes, 2008; Schmader & Johns, 2003). The research demonstrates the powerful potential for gender-based stereotypes to influence performance, without our even realizing it.

The experience of stereotype threat may be different depending upon aspects of identity, such as race and gender, and the stereotypes relevant to the particular context. For example, Asian Americans are often assumed to have strong math and science skills as compared to people from other racial and ethnic groups, while women are assumed to have weaker math and science skills than men. Depending upon which aspect of identity is made salient, researchers have found that Asian American young women perform better on math tests when they are asked to identify their ethnicity prior to taking a math test, whereas they tend to underperform if they are asked to identity their gender prior to taking the same test (Shih, Pittinsky, & Ambady, 1999). Other research shows that Latina undergraduates experienced more intense symptoms of stereotype threat, such as cognitive interference and self-doubt, than did their white female counterparts or their Latino counterparts (Gonzales, Blanton, & Williams, 2002); at the intersection of race and gender, the effects of stereotype threat on these Latina young women were intensified.

Stereotype threat as experienced by students of color, and girls and young women of all races and ethnicities in STEM fields, is of particular concern in an age of high-stakes testing. Stereotype threat has been shown to influence the academic performance of students of color as early as middle school (Cohen et al., 2006). One meta-analysis combining the results of randomized field experiments involving more than 15,000 students found that conventional measures of academic performance significantly underestimated the ability of members of stereotyped groups (Walton

& Spencer, 2009). The size of this gap – 0.17 standard deviations (62 points) on the SAT – is significant and is highly likely to be an underestimation. These effects can be substantially greater in settings with higher stakes associated with standardized testing, more difficult material, or lower representation of one's group, all of which may enhance the level of stereotype threat.

A startling example of the effects of stereotype threat was identified by Reardon et al. (2009), who found that the graduation rates of students of color and female students were significantly lower in California after the state introduced high-stakes "exit" exams in 2006. Graduation rates for white male students in the lowest quartile of high school classes were not affected by the exit exam; by contrast, graduation rates declined by 19% for black students, 17% for Asian American students, and 15% for Latino students (Reardon et al., 2009). The differences in effect were present even among students in the same school. The researchers, who found no difference in the scores of these same students on general achievement tests that are not high stakes, suggest that (a) students who take the high-stakes tests are not learning "more" than students who do not, and (b) the racial gaps in achievement among the low quartile students on the high-stakes tests are likely attributable to stereotype threat and not content knowledge (Reardon et al., 2009).

Of note, stereotype threat among school staff can affect student outcomes as well. White staff may experience stereotype threat triggered by the fear of confirming the negative stereotype that they are racist (Crosby & Monin, 2007). In turn, white teachers may give less critical feedback to black students because they fear their negative comments will be perceived as racially biased (Harber et al., 2012). In one study, researchers asked teacher trainees first to describe the degree to which they consider themselves egalitarian and then to provide feedback on an essay attributed to either a black student or a white student (Harber, Stafford, & Kennedy, 2010). Even though the trainees completed both tasks anonymously, those who were worried about being sufficiently egalitarian and who thought they were giving feedback to a black student displayed "positive bias" (giving overly positive responses to the student), relative to those who believed they were giving feedback to a white student.

Relatedly, in a separate study, poorly written essays were sent to 126 middle school teachers in the Northeast who were instructed to provide feedback to the student author, who was believed to be either white, black, or Latino (Harber et al., 2012). Focusing on responses from the 113 white teachers, the researchers found that teachers who thought they were responding to black and Latino students provided less critical feedback and more praise than teachers who thought they were responding to white students (Harber et al., 2012). The only exceptions were teachers who received "school based social support," which included both material support and feelings supported by fellow teachers and administrators; these teachers provided equal feedback to white and black students (though still less critical feedback to Latino students). The difference in outcomes for Latino students may reflect the perception among teachers that Latino students face particular obstacles – such as living in homes where English is a second language – but there is too little experimental research on Latino–white relations to reach firm conclusions regarding the extent or causes of Latino-targeted discrimination (Harber et al., 2012).

While we may perceive praise as good and helpful, false praise undermines rather than encourages a student's growth (Harber, 1998). If given skewed feedback, black students will be uninformed about the quality of their work and will be deprived of the necessary tools to learn and improve.

Less criticism may not seem as harmful as other more active forms of bias, but students can often tell when praise is unwarranted and when they are not being held to a high standard (Harber, 1998), and that perception can foster distrust of the teacher, lead to a feeling of alienation, and result in disengagement from school. The experience of receiving unwarranted praise may also lead students of color to discount genuine praise as a sign of "intergroup politeness" (Harber, 1998), and this may generate distrust or cynicism that could have additional intergroup effects throughout students' academic careers. In contrast, students view critical feedback as a sign of care when it is conveyed supportively and shows the teacher's belief that the student can do better (Yeager et al., 2013; Cohen, Steele, & Ross, 1999; Cohen & Steele, 2002).

A related phenomenon is that a fear of appearing prejudiced can lead to a "failure to warn" – where teachers or counselors fail to instruct a student about the potential negative consequences of a difficult proposed course or plan (Crosby & Monin, 2007). In one study, white peer advisors were given information about a prospective student who was seeking advice about whether to take on a particularly challenging course schedule. Peer advisors who thought the student was white or Asian American recommended against the schedule as too much work for a given semester, but advisors who thought the student was black did not. Authors of the study conclude that the white peer advisors may have been concerned about being perceived as racist by the black student if they advised against the challenging schedule (Crosby & Monin, 2007).

Research is currently underway to determine how teachers and school staff are affected by stereotype threat in the context of their work as educators. This research may help explain the disproportionate disciplinary outcomes found even in predominantly minority school districts in which the administrators and teachers mirror the demographics of the students. Although direct research on stereotype threat among educators is limited, findings provide reason to be concerned that some teachers with the best of intentions may be inadvertently undermining students of color by not providing them with the critical feedback they need to achieve academic success.

INTERVENTIONS

The research presented on implicit bias, racial anxiety, and stereotype threat helps to explain otherwise confounding discrepancies between egalitarian ideals and disparate outcomes in education. In addition to increasing our understanding, social psychologists have also made significant strides in identifying interventions that have been shown to reduce bias, alleviate racial anxieties, ameliorate the effects of threat, and transform behavior across groups.

In this section, we describe concrete steps and interventions informed by research that can be implemented to move institutions and individuals toward eliminating race as an obstacle to educational success. These interventions are devised to address contexts in which racial disparities are identified, but the vast majority of individuals within the institutions consciously reject negative attitudes and stereotypes. This focus does not foreclose the continued presence of explicit bias in our society or the role structural conditions play in perpetuating inequality (powell, 2012).

Indeed, implicit bias, racial anxiety, and stereotype threat are all reactions to societal and institutional conditions. Individuals hold implicit associations and attitudes and experience racial anxiety and stereotype threat because unconscious processes absorb both biased cultural messages

and deeply held norms of racial fairness. Yet broad cultural messages and noxious stereotypes can be defused by contexts that reduce bias, anxiety, and stereotype threat. Related research shows that contact between racial and ethnic groups can result in decreased prejudice, reduced racial anxiety, and positive shifts in intergroup attitudes (Pettigrew & Tropp, 2011; Page-Gould, Mendoza-Denton, & Tropp, 2008). Yet intergroup contact does not always lead to these salutary outcomes; the particular contexts and conditions in which the interaction occurs will influence whether the contact will fulfill its positive potential (Tropp & Page-Gould, 2015).

Thus, the good intentions of individuals are rarely sufficient by themselves to achieve desired intergroup outcomes. Institutions can change the environmental conditions in ways that dramatically reduce the effects of implicit bias and make racial anxiety and stereotype threat less likely. In turn, individuals situated in those institutions can benefit greatly from strategies that lead to reduced bias and behaviors that stem from such bias, allowing them to experience more positive cross-group interactions, easing of racial anxieties, and resilience in the face of stereotype threat.

The catalysts for institutions and individuals to undertake these interventions will vary. Some will embrace the opportunity to create conditions that are consistent with racial equality ideals. Others may be concerned that litigation efforts under the Equal Protection Clause or Title VI of the Civil Rights Act or administrative investigations by invigorated Offices of Civil Rights will have greater likelihood of success in light of the robust evidence that race is the proximate cause of harmful behavior. Our goal in this report is to describe the kinds of interventions that institutions ought to adopt and that individuals ought to engage in – whether voluntarily or subject to a consent decree or administrative order – to respond effectively to the racial dynamics that lead to the wide array of harms to stigmatized groups, as described above. We focus on research suggesting interventions to address implicit bias, racial anxiety, stereotype threat, and the specific work that has been done on intergroup contact.

IMPLICIT BIAS INTERVENTIONS

The research discussed in this report makes a powerful case that all of us, including teachers, are at risk of viewing student behavior through a biased lens, based on student identity characteristics. The challenge of addressing implicit bias is due in part to the fact that implicit bias is unconscious, so that those who hold these biases are wholly unaware that their behavior is inconsistent with the egalitarian values they may consciously hold. Unfortunately, the result of this disconnect is often that the consequences of their biased behavior are presumed to be the fault of the people affected—for instance, a professor may preferentially call on the male students in his class, then deem his female students as less participatory.

Fortunately, implicit biases are far from intractable, and researchers have identified interventions to address them. The interventions fall into two categories: bias reduction and bias override. Bias reduction is the fundamental goal because the biased lens itself is altered; however, a whole amelioration of our biases is unlikely to happen in the near term. Thus, pursuing bias override simultaneously is crucial.

It's important to remember that implicit biases are not a consequence of an individual's psychology—they are socially shared phenomena that manifest in the minds of individuals. As a

result, interventions to either reduce implicit bias or to prevent it from manifesting in behavior are best set at the societal or institutional level.

At the same time, though, we as individuals can accept responsibility and adopt practices to counter implicit biases, in order to shift norms of expectations tied to gender or race. Implicit attitudes and beliefs toward social groups are mirror-like reflections of the local environments and communities in which we as individuals are immersed (Dasgupta, 2013). Our attitudes depend upon the environments in which we spend our time. It follows, then, that changes in these environments can result in changes in our implicit attitudes. It is a mistake to think of implicit bias as only internal. It is the result of internal processes interacting with external stimuli; therefore, there is not a sharp distinction between structural processes and implicit bias.

Bias Reduction

Research on implicit bias reduction (or "de-biasing") is somewhat nascent compared to research on the presence of bias; researchers have identified some promising de-biasing strategies (Dasgupta & Asgari, 2004; Dasgupta & Rivera, 2006; Devine et al., 2012), but remain cautious about the breadth of their effectiveness (Joy-Gaba & Nosek, 2010).

Change the Local Environment

Relevant changes in the local environment include increasing the prominence of non-stereotypical out-group individuals. Depictions that counter negative stereotypes create new implicit associations between those positive attributes and the out-group as a whole (Dasgupta, 2013; Gawronski & Bodenhausen, 2006). One study, for instance, exposed participants to images and brief biographies of famous, admired individuals who also belonged to historically disadvantaged social groups, such as women and people of color. The result was a significant lowering of participants' implicit biases toward these groups, as measured by the IAT (Dasgupta, 2013). What's more, the effect was still there 24 hours later, suggesting that the impact of even brief media exposure isn't fleeting. Over time, immersion in counter-stereotypic environments may reduce how readily we access stereotypes and may increase the ease with which we access counter-stereotypes (Dasgupta, 2013). In other studies, researchers have found that exposure to counter-stereotypic examples can diminish implicit stereotypes of women and negative implicit attitudes toward gay people (Dasgupta & Asgari, 2004; Dasgupta & Rivera, 2006), and inducing empathy toward an Asian American movie character (the daughter in The Joy Luck Club) can decrease implicit bias toward Asian Americans (Shih, Stotzer, & Gutiérrez, 2013).

Altering people's local environments, even through media (Godsil, Gonzales, & Balcetis, 2015), can not only make a positive difference in people's implicit biases toward out-groups, but can also reduce the bias a person may hold against their own group. Thus, shifting the local environment to counter gender stereotypes and promote egalitarian gender norms can impact both men's and women's implicit gender biases. Furthermore, changes in the local environment are an important avenue to achieve structural change, as they can increase people's support for public policies and institutional practices that fix structural bias and extend equal rights to all groups.

Break the Prejudice Habit

The most effective individual bias reduction strategies are a series of steps devised by Devine and colleagues (2012), who encourage people to "break the prejudice habit." In a longitudinal study, participants who engaged in these strategies showed significant reductions in implicit racial bias, which were maintained over a period of eight weeks (Devine et al., 2012). These steps include:

Stereotype Replacement
This strategy involves replacing stereotypical responses with non-stereotypical ones. The process includes recognizing that a response is based on stereotypes, labeling the response as stereotypical, and reflecting on why the biased response occurred. Next, one considers how the biased response could be avoided in the future and replaced with an unbiased response (Monteith, 1993).

Counter-Stereotypic Imaging
This strategy involves imagining in detail counter-stereotypic others (Blair, Ma, & Lenton, 2001). These can be abstract (e.g., smart black people), famous (e.g., Barack Obama), or non-famous (e.g., a personal friend). The strategy makes positive exemplars salient and accessible when challenging a stereotype's validity.

Individuation
This strategy relies on preventing stereotypic inferences by obtaining specific information about group members (Brewer, 1988; Fiske & Neuberg, 1990). Using this strategy helps people evaluate members of the target group based on personal, rather than group-based, attributes.

Perspective-Taking
This strategy involves viewing environments and experiences from the perspective of a member of a stereotyped group. Perspective-taking increases psychological closeness to the stereotyped group, which ameliorates automatic group-based evaluations (Galinsky & Moskowitz, 2000).

Increasing Opportunities for Contact
This strategy involves seeking opportunities to encounter and engage in positive interactions with out-group members. Increased contact is believed to ameliorate implicit bias through a variety of mechanisms, including altering the cognitive representations of the group and directly improving evaluations of the group (Pettigrew, 1998; Pettigrew & Tropp, 2006; Devine et al., 2012).

Devine and colleagues (2012) found that after four weeks of engaging in the interventions described above, intervention group participants showed lower IAT scores than control group participants, and these effects held when participants retook the IAT another four weeks later, leading researchers to conclude that the reduction in implicit race bias persisted throughout the eight-week interval. While these results provide reason to be optimistic, it is important to recognize that it is impossible at this point to control for the continued prevalence of negative, racialized imagery in the media (Dixon, 2008, 2009). Accordingly, most researchers agree that it is critical to focus on displays of racial bias in the broader social environment, as well as how implicit bias may manifest itself in individuals' behavior.

Bias Override

Because it will likely take time to eliminate or significantly diminish the role of implicit bias, it is crucial for institutions to set into place practices that will minimize the effects of such bias. Most of the interventions devised to address implicitly biased behavior have been directed primarily toward the effects of implicit bias on decision-making. Notably, Jerry Kang led a group of social scientists, law professors, and a federal judge to identify an array of actions that have been found to decrease the likelihood that implicit bias will affect decision-making (Kang et al., 2012). These actions serve as the basis of the strategies detailed below.

Establish Culture of Fairness
Because implicit biases are cultural rather than individual, the cues within a particular environment will affect whether implicit biases are triggered.

Question our Objectivity
Somewhat ironically, evidence suggests that when people assume they are objective, they are at a greater risk of inadvertently allowing bias to influence their decision-making (Pronin, 2007). Indeed, inviting people to affirm their objectivity actually has the effect of increasing their discrimination (Uhlmann & Cohen, 2007). By contrast, teaching people about how the unconscious mind operates and the challenges of behaving objectively may lead them to be more skeptical of their own objectivity and better able to guard against biased evaluations (Pronin, 2007). Furthermore, drawing people's attention to the many opportunities for bias to influence their decisions may help them recognize situations in which bias may be at play and think more critically about these circumstances. Keep in mind that this intervention may not necessarily decrease implicit bias itself (Lai et al., 2014), but rather it can be effective in reducing discriminatory behavior that results from such bias.

Increase Motivation to be Fair
Simply telling someone to be "non-biased" is not likely to lead to behavior change if a person does not develop an internal motivation to be fair. A large body of research shows that those who are internally motivated by the desire to be unprejudiced rather than "externally" motivated by a concern about social disapproval are better able to control prejudiced behavior (see for example Devine et al., 2002; Klonis, Plant, & Devine, 2005; Peruche & Plant, 2006). In other words, holding equal treatment as an important personal value is linked with less discriminatory behavior. In fact, research has demonstrated that people with motivation to be egalitarian were able to prevent their implicit anti-gay attitudes from affecting their behavior (Dasgupta & Asgari, 2004).

Think Slow: Improve Conditions of Decision-Making
As we have discussed, implicit biases are a function of automatic processes (Kahneman, 2011). In contrast, "thinking slow," by engaging in mindful, deliberate processing, reduces the likelihood that our implicit schema will kick in and determine our behaviors. Ideally, decisions should be made in a context in which one is accountable for the outcome, rather than in the throes of any emotion (either positive or negative) that may exacerbate bias. In addition, when an important decision is to be made—such as selecting between applicants for a scholarship—clear criteria will have been established in advance to guide the choice. The criteria themselves should be evaluated for potential bias, and the decision-maker should be accountable for the outcome.

Enhance Accountability

Not surprisingly, when decision-makers and those in positions of power are accountable for outcomes and behaviors that stem from biased behavior, they are more likely to put in place specific systems and practices that prevent the behavior from occurring.

Count: Identify Disparities

Implicitly biased behavior is best detected by using data to determine whether patterns of behavior are leading to disparate outcomes across genders. Research has shown that people are more likely to detect discrimination when it is presented in the aggregate rather than on a case- by-case basis (Crosby et al., 1986). Therefore, tracking outcomes—such as academic achievement and disciplinary actions—is critical to unveiling the role of bias across circumstances. Once people are aware that decisions or behavior are having disparate outcomes, they are more likely to consider whether and how the outcomes are linked to bias. Demonstrating disparities is a fundamental step toward engaging people in all facets of society in preventing biased behaviors.

REDUCING RACIAL ANXIETY

As discussed, racial anxiety can significantly impact cross-race relationships between teachers and students, and thus contribute to different academic experiences and disproportionate disciplinary outcomes. The mechanisms for reducing racial anxiety are related to – but are not identical to – the reduction of implicit bias, and a combination of intervention strategies is vastly more likely to be successful than either approach in isolation. In this section, we will focus on three approaches to reducing racial anxiety.

Overcoming the Relational Challenge of Racial Anxiety

Social science research supports the use of the following strategies to prevent and mitigate racial anxiety in cross-group interactions:

Acknowledge Anxiety

Recognizing the role of racial anxiety in relationships is critical as a first step to allowing the anxiety to dissipate. In a recent study, researchers identified a set of actions that reduce racial anxiety: 1) acknowledging the anxiety triggered by interracial interaction, and 2) alerting participants to the fact that choosing to engage in an interracial interaction helps reduce future feelings of anxiety (Schultz et al. 2015). When participants chose to interact with someone of a different race, these interactions were rated as more positive, with the white participant exhibiting warmer nonverbal behavior.

Provide Scripts for Interaction

Scripts, or predetermined language, are useful for easing an initial interracial interaction, as they shift our attention from what we should say to forming a genuine connection. White people may particularly benefit from this intervention. Studies of interracial interactions demonstrate that providing white people who may otherwise experience racial anxiety with social scripts can reduce racial anxieties (Avery et al., 2009). Social scripts are specific and structured guidelines about what behaviors are appropriate, acceptable, and expected during interracial interactions. By

providing this explicit guidance about what constitutes non-prejudiced behavior, the scripts can largely allay the anxiety elicited by the concern that they will be perceived as racist.

Establish Opportunities for Intergroup Contact

The role of intergroup contact in reducing anxiety and bias underscores the role of emotion in racial interactions. It is not enough for people to be taught that negative stereotypes are false or to believe in the morality of non-prejudice. People need to feel a connection to others outside of their group; once people feel connected, their racial anxiety subsides and so does their bias (Pettigrew & Tropp, 2008; Voci & Hewstone, 2003).

Intergroup friendships are considered especially effective in promoting positive intergroup attitudes (Binder et al., 2009; Brown & Hewstone, 2005; Davies et al., 2011). Having intergroup friendships or other forms of meaningful, sustained intergroup contact is valuable not only in creating more positive attitudes, but also in creating greater resilience for future cross-group interactions which have the potential to be stressful (Page-Gould, Mendes, & Major, 2010). Prior positive contact can also enhance the likelihood that future cross-group interactions will be positive. Page-Gould et al. (2010) have found that priming people to think about prior positive cross-group contact before a new cross-group interaction can help to facilitate a positive intergroup experience in that new interaction. Similarly, Mallett, Wilson, and Gilbert (2008) have observed positive shifts in expectations for cross-group interactions, by having subjects observe a positive cross-group interaction and write about their own similar experience. In other words, instead of anticipating the worst, we can establish more positive expectations for interactions that often flow into more positive intergroup experiences (Mallett et al., 2008).

A great deal of social science focuses on how intergroup contact can lead to a range of positive outcomes among both whites and people of color (Tropp & Page Gould, 2015), though conditions of the contact situation can inhibit or facilitate such positive effects. It has long been recognized that certain situational factors are of particular importance, including the establishment of equal status between groups, cooperation, common goals, and institutional support for the contact (Allport, 1954; Pettigrew & Tropp, 2006). Cooperative learning strategies and integrated sports teams exemplify these ideal conditions (Slavin, 1979; Brown et al., 2003). Still, such optimal conditions cannot always be guaranteed, and researchers have sought to identify ways to achieve cooperative interdependence between groups. In particular, researchers have noted that it is important to create a shared sense of identity, while also acknowledging group differences (Gaertner et al., 2000). Tension can ensue if group difference is emphasized before a certain degree of trust and rapport has developed between members of the different groups (Brewer & Miller, 1984; Miller, 2002). At the same time, ignoring group differences completely tends to undermine the potential for broader positive impacts resulting from intergroup contact (Hewstone & Brown 1986; Brown & Hewstone, 2005). When people of different races interact with one another, those interactions will yield more changes in intergroup attitudes only if they are recognizing group membership (Brown et al., 2007; Brown et al., 1999; Van Oudenhoven et al., 1996; Voci & Hewstone, 2003). Further, emphasizing group differences once relationships have been developed can help to build cross-group intimacy and understanding (Nagda, 2006; Tropp, 2008), and to ensure that meaningful differences in perspective and experience are not disregarded or overlooked (Eggins, Haslam, & Reynolds, 2002; Tropp & Bianchi, 2007).

Consider Indirect Forms of Intergroup Contact

In light of current patterns of racial segregation in so many life domains, sustained interracial interaction may not always be easy to achieve (powell, 2012). Racial anxiety is often a byproduct of living in a racially homogenous environment, which renders future intergroup interaction less likely and increases the chances that it will be less positive if it does occur (Plant & Devine, 2003). As a result, researchers have sought to develop strategies that can facilitate positive intergroup dynamics even among racially homogenous groups, both to enhance attitudes toward other racial and ethnic groups and to diminish anxiety about potential interactions with members of those groups (Christ et al., 2010; Page-Gould et al., 2010; Page-Gould et al., 2008). One important approach is known as the "extended contact" effect, which refers to the idea that knowing that members of your group have friends in the other group can positively shift your attitudes toward and expectations for contact with members of those other groups (Wright et al., 1997; Turner et al., 2008; Gómez et al., 2011).

Extended contact research shows that even if a person does not have opportunities to interact directly with members of other groups, knowing that others in their own group have positive relations can help to shift their own attitudes more positively toward members of other groups. Indeed, a number of studies indicate that while direct contact tends to be more effective in improving intergroup attitudes when there are ample contact opportunities, indirect strategies such as "extended contact" tend to be more effective when opportunities for direct contact are limited (Eller, Abrams, & Gomez, 2012; Christ et al., 2010). For example, in a study focusing on whites' attitudes toward Mexican Americans in California, Eller and colleagues (2012) found that extended contact (knowing whites with Mexican American friends) reduced prejudice when direct contact was minimal but did not influence prejudice levels when direct contact was high.

Like direct contact, these approaches have been shown to be effective in enhancing positive intergroup attitudes, in large part through reducing intergroup anxiety (Wright et al., 1997; Eller et al., 2011; Turner et al., 2008). In addition, this work highlights the roles that norms play in shaping attitudes toward other groups and expectations for cross-group interaction – including both in-group norms demonstrating how members of our group should relate to others and out-group norms indicating how we can expect to be received by others (Gómez et al., 2011; Turner et al., 2008). This body of work is important because it provides options for addressing prejudice and racial anxiety in racially homogenous environments – which, in light of the continued prevalence of segregation in K-12 education, is critical (Orfield & Frankenberg, 2014).

STEREOTYPE THREAT INTERVENTIONS

A significant body of research has demonstrated how stereotype threat operates, as well as the conditions that both trigger and mitigate it. Social scientists have drawn upon this research to develop an array of interventions that have been found to prevent or significantly lessen the effect of stereotype threat (Dasgupta & Stout, 2014; Erman & Walton, 2014). These interventions, which have been constructed primarily to address the effect of stereotype threat on student performance, include the interventions described below.

Many of these interventions can be translated from domains of ability to the context of character-

based stereotype threat. The interventions are largely premised on the idea that, as long as a person is not worrying that he or she will be judged or presumed to confirm a stereotype about her or his group, the threat will not be triggered and the behavioral effects of the threat will not occur. The mechanisms to address ability threat and character threat are quite similar – and sometimes overlap. In other words, an intervention to keep students of color from being adversely affected by stereotypes regarding their presumed academic ability may also work to keep white teachers from being adversely affected by stereotypes regarding their presumed racial attitudes.

Social Belonging
When we feel out of place or as though we aren't valued because of race, ethnicity, or gender, we are at risk of interpreting any negative experiences in our environment as evidence that we don't belong and are unlikely to succeed. The simple act of assuring students that they are valued can mitigate the detrimental impact of experiences of racial or gender bias and stereotype threat.

In a study of a "social belonging" intervention, both black and white students were told that students of all races felt out of place when they began in school, but that the feeling abated over time (Walton & Cohen, 2007). The students then completed a series of reflection exercises, and the researchers tracked their grades over time. The intervention resulted in significant improvement in the grades of black students and had no effect on the grades of white students (Walton & Cohen, 2007). This simple intervention was intended to provide context for the black students; in effect, it protected them "from inferring that they did not belong in general on campus when they encountered social adversity" (Erman & Walton, 2014). Rather, the students were able to contextualize the adversity as a passing experience; they developed resilience in the face of these difficulties, and as a result, they had an improved school experience.

Wise Feedback: Communicate High Standards
A significant challenge for students of color is determining whether negative feedback is a result of bias or, just as detrimentally, whether positive feedback is a form of racial condescension. This uncertainty—termed attributional ambiguity (Crocker et al., 1991)—can have the effect of making it less likely that a student will work to address negative feedback (which may be biased) and also less likely that the student will feel a positive lift from praise (which may be false). To address this quandary, Cohen, Steele, and Ross (1999) developed an intervention used with college students in which teachers and supervisors communicated both high expectations and confidence that the individual is capable of meeting those expectations. The results were very positive: black students who received this message were significantly more likely to work to respond to critical feedback and to think of the person providing the feedback as unbiased (Cohen et al., 1999).

The high-standards intervention (also known as wise feedback) has been tested in other contexts, including criticism of middle school essays (Yeager et al., 2014). In such research, when students received a note on a paper which read, "I'm giving you these comments so you have feedback on your essay," 17% of black students chose to revise and resubmit their essay a week later. When the note read, "I'm giving you these comments because I have high standards and I know that you can meet them"— thereby disambiguating the reason for the critical feedback—71% of black students revised and resubmitted their essay (Yeager et al., 2014).

Thus, communicating high expectations to diverse groups of students, as well as expressing

confidence in their abilities, may be an effective strategy to promote students' continued academic engagement at a high level—one which is reflective of their true abilities.

Growth Mindset

The "growth mindset" is based on work by Carol Dweck (2006) showing that abilities can be conceptualized as either an entity ("you have it or you don't") or an increment ("you can learn it"). If one holds the former view, then poor performance simply confirms inadequacy; however, if one holds the latter view, then poor performance simply means one has more work to do.

The growth mindset is applicable to stereotype threat because it can keep students from feeling like any single poor performance on a test serves as "stereotype confirming evidence" (Carr & Steele, 2010). Thus, teachers who purposefully emphasize that skills can be learned by everyone may effectively reduce stereotype threat among their female students and their students of color.

Value Affirmation

Students experiencing stereotype threat often lose track of "their broader identities and values— those qualities that can make them feel positively about themselves, and which can increase their resilience and help them cope with adversity" (Erman & Walton, 2014). Affirming positive values and skills for students of color works to defy detrimental stereotypes, bolsters their self-confidence in their abilities, and increases their resilience in the face of adversity. In fact, a study of students of color interested in STEM fields demonstrated that students' perception of their math and science abilities was a significant predictor of whether they pursued STEM studies (Lewis, 2003). Teachers, parents, and other important adults can be instrumental in affirming these strengths, particularly among girls and students of color.

Remove Triggers on Standardized Tests

Because standardized tests are typically understood as intended to evaluate students' intellectual ability, they are likely to trigger stereotype threat as a default (Walton & Spencer, 2009), placing students under stress to defy relevant stereotypes. Minimizing the impact of these threats can be achieved by reducing the salience of identity factors during test taking. In fact, in a field experiment of the Advanced Placement (AP) Calculus test, researchers found that moving demographic questions from immediately before the test to after the test raised girls' scores. The researchers estimate that, if implemented nationwide, this change would cause 4,700 additional girls each year to receive AP Calculus credit (Danaher & Crandall, 2008).

Interventions Focused on Girls

While students of color may experience stereotype threat linked to race or ethnicity, girls and young women may experience particular manifestations of stereotype threat related to their gender. Research suggests a number of ways that parents and teachers can encourage young girls' interest in STEM fields and build their confidence in general in order to combat harmful stereotypes that limit educational opportunities for girls.

Parental Encouragement

Parents can have a significant impact on increasing girls' engagement in STEM fields. A first step is simple encouragement. A longitudinal study of primarily white middle-class families in

Michigan found that when parents encourage their daughters' engagement in math, provide activity-related materials, and participate with them, girls are more likely to become interested in math and to take math courses (Simpkins, Davis-Kean, & Eccles, 2006). This encouragement can go a long way: in fact, a synthesis of nine meta-analyses of parental influence on child's academic achievement found that parental involvement was significantly related to achievement across all grade levels and that parental expectations were the strongest predictor of academic success (Wilder, 2014). That study noted the relationship between parental involvement and academic achievement was significant across ethnic groups (Wilder, 2014), though researchers suggest the role and impact of parental encouragement may vary depending on cultural norms (Simpkins et al., 2006; Wang, 2012).

Collaborative Learning
Within the classroom, there are additional methods that can be used to engage girls' interest in STEM subjects. Because peer acceptance is a central concern in adolescence (Brown, 2004), and peers can influence a classroom climate, collaborating with other girls in STEM subjects can make a big difference for female students, especially in math. A large longitudinal study among predominantly white students in Michigan found that when girls collaborate in math, they show more interest in math, better math grades, and stronger math aspirations (Wang, 2012).

Applied Learning
Research suggests that, as compared to boys, girls are more engaged when STEM subjects are taught from an applied perspective, via hands-on projects, academic tasks that are relevant to their lives, and visits to science and technology museums that are aligned with lesson plans (Gentry & Owen, 2004; Hidi & Harackiewicz, 2000; Geist & King, 2008; Halpern, 2004).

Since communal goals typically interest women more than men (Su, Rounds, & Armstrong, 2009), young women often move away from STEM fields, which are often seen as antithetical to these goals (Diekman, Brown, Johnston, & Clark, 2010) and more aligned with traditionally masculine values of risk-taking and power (Eccles, 1994; Konrad et al., 2000; Post-Kammer, 1987). However, using an applied, personally relevant way of teaching also encourages girls and young women to consider stem as something that might coincide with their broader goals. Museum exhibitions can demonstrate how science and technology improve people's lives, solve real-world problems, and require collaboration (Dasgupta & Stout, 2014).

Relationships between K-12 schools and colleges and universities can also be fruitful, bringing girls face-to-face with real-life scientists for demonstrations and workshops. Female role models have a significant impact on girls pursuing STEM fields; thus, a significant portion of classroom visitors should be female scientists, engineers, and graduate students from STEM programs (Dasgupta & Stout, 2014; Dasgupta, Scircle, & Hunsinger, 2015; Stout et al., 2011). These women can be particularly influential in defying stereotypes about STEM fields and demonstrating that the physical and life sciences, engineering, and technology involve collaboration within teams and are critical to solving real problems that help people and society (Dasgupta & Stout, 2014).

Extracurricular Engagement
Extracurricular projects have proven to be another effective way of attracting girls to STEM fields. Activities such as coding clubs, robotics clubs, and science-art camps allow girls to explore science

and technology as enjoyable pastimes and open up opportunities to explore these fields through "doing" (Dasgupta & Stout, 2014). Girls are also likely to be attracted to informal STEM activities that are communally oriented—that is, organized around real-world problems and helping people (Diekman et al., 2010). It's important to keep in mind that, when these activities involve teamwork, girls are most eager and participate most fully in teams that are at least 50% girls and are far less engaged in teams where girls are in the minority, making up 25% or less of the team (Dasgupta & Stout, 2014; Dasgupta et al., 2015).

NOTES ON DISCIPLINE

Along with focusing on disparities in academic achievement, disparities in discipline along racial lines, and intersecting with gender, have received considerable attention in the national dialogue around education. While the causes are undoubtedly complex, the phenomena addressed in this report – implicit racial bias, racial anxiety, and stereotype threat – help explain how well-meaning and consciously egalitarian teachers may inadvertently contribute to some of the disciplinary disparities we observe.

RACIAL DIFFERENCES IN DISCIPLINE

As will be discussed, the data showing disproportionate disciplinary treatment of students of color is deeply disconcerting and should trigger urgency—but first, it is important to note that most students, of all races, do not receive out-of-school suspensions in any given year (U.S. Department of Education Office for Civil Rights, 2014). In fact, schools differ markedly in their disciplinary rates, with relatively few schools suspending at high rates (Losen et al., 2015). Illuminating this reality is important—to affirm that suspension is not the norm for students of color.

That being said, the rates at which students of color do receive out-of-school suspension is exceedingly troubling. White and Asian students receive out-of-school suspensions significantly less often than students of other racial groups. A recent report by the U.C.L.A. Civil Rights Project shows an extraordinary increase in student suspensions from the 1970's to 2010, but also illustrates that the most dramatic increases were among black and Latino students (Losen & Martinez, 2013). As demonstrated in Figure 1, suspension rates for white students increased by only 1.1% (from 6 to 7.1%), while the rates for black and Latino students more than doubled. In the 1970's, hardly the halcyon days of race relations, black student suspension rates where 11.8%, and Latino students' rates were 6.1%. In 2009-2010, black students' rates were 24.3%, and Latino students' rates were 12%.

Figure 1. Risk of Suspension in Secondary School
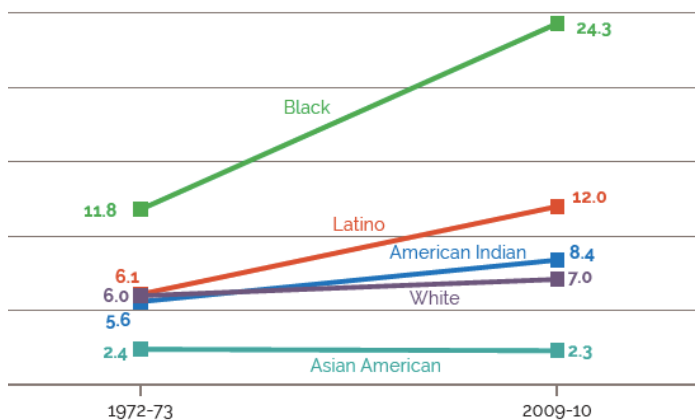
Source: Losen, D. J., & Martinez, T. E. (2013). *Out of School and Off Track: The Overuse of Suspensions in American Middle and High Schools.* The Center for Civil Rights Remedies.

The intersection between race and gender also demonstrates dramatic differences across groups; in particular, black boys, and black and Native American girls, are disproportionately likely to receive out-of-school suspensions (U.S. Department of Education Office for Civil Rights, 2014).

What explains the dramatic distinctions in the disciplinary treatment of some groups compared to others? Research indicates that discipline and suspension disparities are not based upon more severely problematic behavior by black or Latino youth, such as bringing weapons to school or acting aggressively toward other students. Rather, they found that the greatest racial disparities are in responses to subjectively evaluated behaviors such as willful defiance, disrespect or loitering (Losen et al., 2015). Indeed, black students have almost four times the odds, and Latino students twice the odds, of being suspended or even expelled in elementary school for minor infractions (Skiba et al., 2011). Thus, to truly address the treatment of students of color in schools, we must also understand and address the dynamics between teachers and students. For instance, researchers posit that teacher attitudes play a crucial role in disproportionate discipline (Fergus, 2016; Gregory, Cornell, & Fan 2011)—such as when the teacher believes the student is undermining the teacher's authority (Vavrus & Cole, 2002). In a sense, teachers may view actions of students, particularly black, Latino, and Native American boys, through a lens clouded by racial stereotypes. These perceptions are challenging to disrupt, but they are far from fixed.

INTERVENTIONS FOR DISCIPLINE

Education researchers have identified a set of practices to address the overuse of discipline. The most effective practices in the immediate are to end harsh disciplinary policies that suspend students for minor infractions: breaking the dress code, using a cell phone in class, or truancy (Losen, 2015). What is the logic behind suspending a student from school for failing to attend school? As Losen (2015) has argued, eliminating these policies is cost-free and the administrative time and energy spent on administering such policies can be redirected toward facilitating strong teacher–student and teacher–parent relationships (see also Steinberg, Allensworth, & Johnson 2015). To foster a supportive environment, resources should be directed toward increasing social and emotional learning initiatives, numbers of school counselors, and support services for students with special needs (Finn & Servoss, 2015; Osher et al., 2015).

Other practices that have shown success in reducing disciplinary exclusion include School-wide Positive Behavior Intervention Systems (SW PBIS) (Sprague & Horner, 2006; Horner, Sugai, & Anderson, 2010) and restorative justice practices (Gonzáles, 2015; Skiba et al., 2011).

Figure 2. Average Per-District Decline by Subgroup, 2009-10 to 2011-12, across the 28 Districts with the Greatest Declines
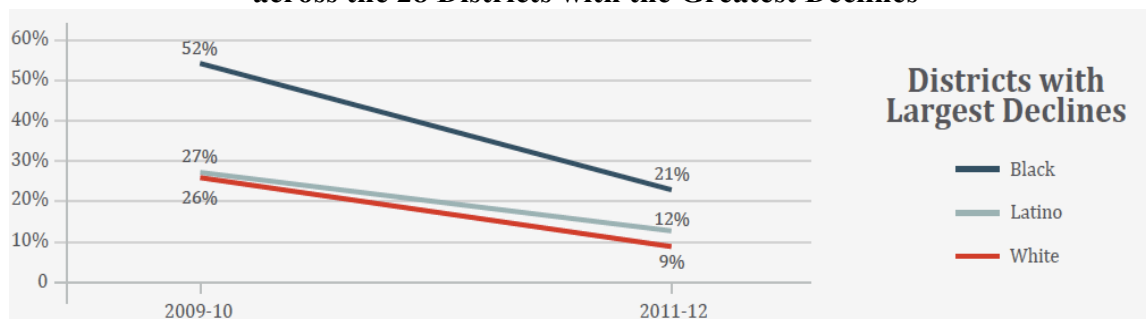
As the data in Figure 2 show, an array of policy and practice changes have had a positive impact in reducing overall suspensions, but there is still significant work to be done to address the disproportionate discipline of students of color. Restorative justice programs, often referred to as restorative practice in school settings, are based on respect, responsibility, relationship-building, and relationship-repairing, focusing on mediation and agreement rather than punishment by exclusion. These programs have shown promise in both reducing overall suspensions as well as the racial gap in discipline (Gonzáles, 2015).

However, disproportionate discipline continues to be a challenge. We can use insights from social psychology to explain the disjuncture between intentions and behaviors, and to supplement existing strategies. Evidence-based interventions that have arisen from the research on implicit bias, racial anxiety, and stereotype threat can be used to provide schools and teachers with additional tools to grapple with the role that race and ethnic differences play in creating obstacles to fair discipline and academic achievement.

In addition, researchers have identified empathy as a key mechanism for reducing reliance on school discipline. Okonofua and colleagues recently conducted an experimental study of a brief online intervention that encouraged teachers to adopt an empathic mindset about discipline (Okonofua et al., 2016) – that is, "to view discipline as an opportunity to facilitate mutual understanding and better relationships" (p. 5224). The intervention was evaluated at five middle schools in three school districts, and the results are remarkable: year-long student suspension rates were halved, from 9.6% to 4.8%. The intervention also bolstered teachers' respect for the most at-risk students—those who were previously suspended (Okonofua et al., 2016).

CONCLUSION

Insights from social psychology provide a powerful tool to explaining why even well-intentioned teachers and administrators may be acting directly contrary to the goals we share to create environments for all of our students to flourish. Research demonstrates how implicit bias, racial anxiety, and stereotype threat get in the way of these goals, but we have the evidence to suggest the efficacy of tailored interventions in combating these phenomena. Hopefully, administrators and teachers alike can implement these interventions, along with other policy and practice changes, to create school environments that fulfill our ideals and allow all students—particularly students of color and girls—to achieve their full potential.

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Science is nothing but perception.

~Plato

T his report, *The Science of Equality in Education: The Impact of Implicit Bias, Racial Anxiety, and Stereotype Threat on Student Outcomes*, documents how perceptions of ourselves and others impact education -- specifically, academic and disciplinary outcomes for students of color and girls. Drawing on over two hundred studies, we describe the operation of implicit bias, racial anxiety, and stereotype threat, and how they affect teachers and students in ways that may ultimately shape outcomes. We document how students of color are given too little feedback on their work in the classroom, how standardized tests underestimate the aptitudes and abilities of black and Latino students and girls, and how teachers' interpretations of subjective behavior contribute to the over-discipline of students of color.

We live in a time when discrimination in education looks less like segregated lunch tables and more like a teacher not calling on a certain student. *The Science of Equality in Education* illustrates the role perception plays in our daily lives, from the mundane to the tragic. It's our sincere hope that translating these insights can make the complex science of the mind accessible, and show how these scientific phenomena operate in our classrooms and beyond.

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