

# Stereotype Threat

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## Abstract

Research has documented that subtle reminders of negative stereotypes can reduce performance for those who are targeted by them. This phenomenon has been labeled stereotype threat and was originally proposed as a novel explanation for racial and gender gaps in certain types of intellectual performance. Two decades of research on stereotype threat has expanded to explain performance differences for a number of different groups across a variety of domains. The most recent research on stereotype threat has both mapped out the sequence of cognitive and affective mechanisms that underlie the phenomena and tested the effectiveness of various interventions that allow people to perform up to their potential. Future work is needed to examine possible cultural variation in stereotype threat, study the dynamic processes of how the phenomenon unfolds over time, and move to inform public policies in workplaces and schools.

*Stereotype threat* is the fear that one might confirm, in one's own eyes or the eyes of someone else, a negative stereotype about a valued social identity. Two decades of research has revealed that stereotype threat can lead to performance impairments that can, somewhat ironically, perpetuate the appearance of group differences in ability. In this article, we summarize the foundational research on this phenomenon, describe some of the emerging trends in the most cutting-edge research, and point to new directions for theoretical and practical advances.

## FOUNDATIONAL RESEARCH

The earliest studies of stereotype threat were conducted in an effort to understand longstanding and persistent racial and gender gaps in academic achievement. Conducted under controlled laboratory settings, this research replicated racial differences on intellectual tasks and gender differences on quantitative tasks when students believed that they were taking a diagnostic test of their ability. However, when the same task was described as a mere

laboratory exercise or as being a “gender fair” test, African American and female students performed much better and not significantly different from their White or male peers, at least after controlling for prior performance (Spencer, Steele, & Quinn, 1999; Steele & Aronson, 1995). Meta-analyses of the literature since these early influential studies suggest that stereotype threat can lead some women and minorities to perform up to one half a standard deviation lower than their nonstereotyped peers (Nguyen & Ryan, 2008; Walton & Spencer, 2009). Given the millions of students who could be affected by this phenomenon each year, the practical appeal of stereotype threat theory lies in its potential to level the playing field by creating more threat-free educational environments for all students.

Theoretically, however, stereotype threat is not an experience that is limited to traditionally stigmatized groups. The situational nature of the phenomena means that anyone, given the right circumstances, can underperform when they fear they might be negatively stereotyped. For instance, even White men sometimes underperform on a math test when they are reminded about a negative stereotype about their math ability compared to Asian men (Aronson, Lustina, Good, Keough, & Steele, 1999). Outside of academic environments, stereotypes about the natural athletic ability of Black athletes or sports intelligence of White athletes can help create a corresponding racial difference in athletic performance (Stone, Chalabaev, & Harrison, 2012). In organizational settings, stereotypes can influence how women negotiate with men (Kray & Shirako, 2012). And in neurological testing, there is concern that stereotypes about how memory declines with age can magnify age-based gaps in memory performance (Levy & Leifheit-Limson, 2009).

Although stereotype threat can be experienced by a broad array of groups performing in a variety of domains, there are also a number of theoretically meaningful preconditions that need to be met to elicit stereotype threat (Steele, 1997). First, people cannot be concerned about confirming a stereotype if they do not know that the stereotype exists. This assumption means that recent immigrants, young children, or those who have only experienced stereotype free environments in the past can be protected from experiencing stereotype threat, at least until those stereotypes are learned. Furthermore, although believing in the stereotype can exacerbate effects, people do not need to endorse the stereotype in order to experience stereotype threat, particularly if there is reason to believe that others believe it to be true (see Shapiro & Neuberg, 2007 for a review). In addition, perhaps the most pernicious aspect of the theory is that those students who most want to excel in a given domain are the very ones who are most at risk of experiencing stereotype threat. To be threatened by the possibility of confirming a stereotype requires some investment in breaking through those social barriers.

## CUTTING-EDGE RESEARCH

Two decades of research has established stereotype threat as a meaningful phenomenon that creates group differences in performance. Two main issues have defined more cutting-edge research on stereotype threat. At the micro-level, social cognitive research has revealed the underlying processes by which stereotype threat can impair performance. At the macro-level, researchers have begun developing and testing interventions that alleviate stereotype threat, not just in the laboratory but also in the field.

### REVEALING THE MECHANISMS

The integrated process model of stereotype threat provides a comprehensive account of the key psychological processes that explain how subtle reminders of negative stereotypes can lead to poor performance across a variety of domains (Schmader, Johns, & Forbes, 2008). This model begins by positing that people experience stereotype threat in situations where they are, (i) reminded of their membership in a given group, (ii) reminded that their group is thought to lack ability in a given domain, and (iii) personally invested in demonstrating their ability in that domain. There is a logical inconsistency to these three propositions, which creates a sense of uncertainty about oneself and one's performance, cuing one question, "Will I do well, as I have done in the past? Or will I do poorly, consistent with these beliefs about my group?" Performance is impaired as a result of a host of processes activated in effort to resolve this uncertainty.

First, much like any evaluative performance situation where the possibility of failure seems plausible, stereotype threat activates an elevated physiological stress response. For example, situations of stereotype threat have been linked to elevated blood pressure, cardiovascular threat reactivity, and increases in sympathetic arousal (see Mendes & Jamieson, 2012, for a review). However, because research has not revealed a direct link between these physiological effects and lower performance, these physiological changes alone do not seem to account for performance impairments observed under stereotype threat.

The second process activated by stereotype threat is greater meta-cognitive monitoring of oneself and one's performance. As people try to resolve their uncertainty and avoid confirming the stereotype, they become vigilant to any evidence of poor performance. As a result, they become more prevention focused in their mindset and show attentional salience for errors as well as their own anxiety (Forbes, Schmader, & Allen, 2008; Johns, Inzlicht, & Schmader, 2008; Seibt & Forster, 2004). In tasks that rely on automated skills (such as many athletic or sensorimotor tasks), this more conscious focus on

oneself and one's actions directly impairs one's ability to access proceduralized memory (Beilock, Jellison, Rydell, McConnell, & Carr, 2006). But even in academic settings, social neuroscience evidence reveals that the activation of systems involved in monitoring for errors and emotion occurs alongside weaker activation in neural systems needed for successful performance on the task at hand and promotes subsequent avoidance of learning opportunities (e.g., Krendl, Richeson, Kelley, & Heatherton, 2008; Mangels, Good, Whiteman, Maniscalco, & Dweck, 2012).

Elevated stress and increased meta-monitoring of performance are part of the story of how stereotype threat can impair performance. But it is also important to recognize that the outcome of these two processes is often a conscious experience of anxiety and self-doubt that people then try to suppress (e.g., Johns *et al.*, 2008). The problem is that the act of trying to push negative thoughts and feelings out of mind is cognitively effortful and can hijack the same executive resources needed for successful performance on tasks that rely on abstract reasoning or complex problem solving.

What this cocktail of physiological, affective, and cognitive processes does is make people expend cognitive effort on something other than the task at hand. In fact, people experiencing stereotype threat show evidence of reduced working memory capacity—the ability to keep task-relevant information in mind, while inhibiting irrelevant information (Schmader & Johns, 2003). These impairments to basic processes involved in regulating attention are thought to be the proximal mechanism by which performance is impaired on any task that involves sustained attention and the active manipulation of complex or abstract information. But the cognitive fatigue that results from these processes can also leave one less able to regulate their behavior on subsequent tasks (Inzlicht, Tullett, & Gutsell, 2012).

#### IDENTIFYING EFFECTIVE INTERVENTIONS

In addition to research aimed at unpacking the sequence of processes that fully define the phenomena, cutting-edge research has also sought to use this understanding of underlying mechanisms to develop a guidebook for remedying stereotype threat. Using both laboratory and field-based studies, research has now documented several effective interventions ranging from methods that work to change underlying stereotypes, interventions that help buffer people from the threat to their identities, and strategies that might enable people to more successfully cope with the threat of negative stereotypes.

*Changing the Stereotypes.* Because knowledge of the stereotype is a precondition to experiencing stereotype threat, one of the most effective ways to reduce stereotype threat is to change the underlying stereotypes people have. One way to do this is through exposure to successful role models that contradict traditional stereotypes. For example, women who are exposed to other women who have been successful in math and science are not only buffered from experiencing stereotype threat but also develop more positive implicit associations of women with math (e.g., Marx & Roman, 2002; Stout, Dasgupta, Hunsinger, & McManus, 2011). Other research in the laboratory shows more directly that using repeated exposure to retrain a more positive implicit association between women and math can elevate women's performance on a math test (Forbes & Schmader, 2010). Research in this vein offers some promise that as barriers to success are increasingly dismantled, changing stereotypes will be accompanied by diminished stereotype threat.

*Buffering the Threat to Identity.* Despite the promise of interventions that seek to weaken stereotyped associations, it is unrealistic to imagine that stereotypes would be completely eradicated. Because stereotype threat is at its most basic level a threat to identity, a second group of interventions are aimed at providing a means of buffering one's identity from the threat of a negative stereotype. One successful means of doing this is to remind people of other more positively stereotyped identities that they also possess (e.g., Rydell, McConnell, & Beilock, 2009). Because most people belong to multiple groups, shifting attention to a subgroup identity that is expected to do well can easily combat stereotype threat.

In addition, rather than refocusing on a different group identity, people can also be prompted to affirm deeply held values, such as religion or relationships, which make up another important part of identity. Such self-affirmation manipulations have been effectively used to buffer people against a large array of identity threats including stereotype threat (Cohen, Purdie-Vaughns, & Garcia, 2012). For example, when seventh grade students were asked to spend 15 min reflecting on their most important values, the racial gap in academic performance was decreased over 2 years (Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009). Similar benefits have been found for female physics undergraduates (Miyake *et al.*, 2010). Recent work shows that these manipulations work by changing students' day-to-day construal of threatening situations such that they no longer impact feelings of belonging and motivation (Sherman *et al.*, 2013).

*Reappraisal Strategies.* A third class of interventions have been found to effectively reduce stereotype threat by helping people reframe performance

situations or their own experience of them in a less threatening way. For example, because stereotypes often focus people on ideas about inherent and fixed ability differences, stereotype threat can be reduced by shifting people's mindset to having a more incremental, mastery orientation within a domain (Good, Aronson, & Inzlicht, 2003). For example, Black students who are told that a test is an opportunity for learning performed better than those instructed to see the test as an evaluation (Alter, Aronson, Darley, Rodriguez, & Ruble, 2010). Similarly, learning that gender differences in math are the result of biological sex differences leads women to underperform on a math test, whereas learning that such differences result from socialization processes does not (Dar-Nimrod & Heine, 2006).

Even if a given performance situation is necessarily evaluative, stereotype threat can also be reduced by changing the way people construe the stress and anxiety that results from stereotype threat. For example, students instructed to refrain from seeing anxiety as a sign of poor performance show less of a tendency to suppress their anxious feelings, exhibit better working memory capacity, and perform better on stereotype relevant tests even two months after the manipulation (e.g., Jamieson, Mendes, Blackstock, & Schmader, 2010). In more naturalistic contexts, peers might play an important role in helping people reappraise their experiences in threatening environments. For example, when first-year college students heard older students talk about how normal it was to experience stress during the first year, African-American students in particular benefited from this information and showed an elevation in their GPA over the next 4 years compared to other Black students who did not receive this intervention (Walton & Cohen, 2011).

### KEY ISSUES FOR FUTURE RESEARCH

Since the original demonstration of stereotype threat as a phenomenon, research has made great strides specifying aspects of the theory and parameters of the effect. These theoretical advances have happened in tandem with important practical applications to educational contexts. We next outline several important questions that remain to be examined in future research.

#### IS STEREOTYPE THREAT A UNIVERSAL PHENOMENON?

As defined at the outset, stereotype threat has been described as a phenomenon that anyone might experience in the right set of circumstances. However, it is notable that almost all of the research on stereotype threat has been carried out in what have been termed WEIRD samples, that is, among samples that are Westernized, educated, industrialized, rich, and

democratic (Henrich, Heine, & Norenzayan, 2010). Future research is needed to assess whether stereotype threat is experienced similarly by stigmatized groups from other cultural contexts. By understanding how groups might experience stereotype threat differently we can better design interventions that target different groups (Shapiro, Williams, & Hambarchyan, 2013).

For a variety of reasons, one might not expect to find strong evidence of stereotype threat among individuals from more collectivist cultures such as those found in East Asia. First, because dialectical thinking and acceptance of contradictions is more common in collectivist cultures (Hamamura, Heine, & Paulhus, 2008), the cognitive imbalance inherent in stereotype threat might not be so threatening. In addition, because those from collectivist cultures can be more skilled at navigating social expectations and regulating their emotions in the interest of maintaining social harmony (Markus & Kitayama, 1991), the same process of meta-cognitive monitoring and emotional suppression that is cognitively depleting for Western samples might not be as debilitating for Eastern samples. Finally, because those from more collectivist cultures have a more contextualized and malleable view of oneself and one's skills (Heine *et al.*, 2001), performance situations are less likely to be construed in terms of diagnosing a fixed ability. As a result, subtle reminders of negative stereotypes might instead elicit a challenge rather than a threat response for individuals from collectivist backgrounds.

It is worth noting that some prior research has suggested that Asian American women, for example, can experience stereotype threat when primed with their gender identity (Shih, Pittinsky, & Trahan, 2006), which might seem to speak against the points raised earlier. But this work on bicultural individuals should be considered quite distinct from attempts to study stereotype threat in collectivist cultures. Regardless of one's cultural background, working to excel within a democratic society that explicitly values both meritocratic principles and social equality could set the stage for stereotype threat. It is within this cultural context that disadvantaged groups develop the aspirations to perform on par with their more advantaged peers but also see no explicit or institutionalized forms of discrimination that might explain their struggle. Such circumstances should particularly fuel uncertainty when stereotypes are brought to mind.

#### WHAT IS THE DYNAMIC ROLE OF MOTIVATION IN STEREOTYPE THREAT?

By definition, stereotype threat is thought to increase one's motivation to disconfirm a negative stereotype about his/her group. Indeed, people under stereotype threat expend greater effort at a task and perform better if the task is easy (e.g., Jamieson & Harkins, 2009). On the other hand, repeated

experiences of stereotype threat result in eventual disidentification or withdrawing from the domain (Steele, 1997). It is unknown when the experience of stereotype threat results in persistence and at what point people instead disidentify. More research is needed to examine the dynamic nature of people's experience over time both during a given performance situation and across successive experiences of stereotype threat.

Examining how exactly stereotype threat undermines working memory might provide some insight into the dynamics of motivation during performance. Recent work has found that stereotype threat can specifically undermine one's ability to maintain a goal in working memory (Hutchison, Smith, & Ferris, 2013; Rydell, Van Loo, & Bouch, 2014). In other research, manipulations designed to increase women's approach motivation or liking for math also increase the number of math problems they solve (especially under stereotype threat) but have no effect on actual performance (e.g., Forbes & Schmader, 2010). Such findings point to the need for a more complex view of motivation and its relationship to performance.

At a more macro-level, research is needed to understand the necessary and sufficient conditions for someone to disidentify with the domain. On the one hand, the mere existence of negative stereotypes can affect patterns of socialization that preclude some individuals from ever identifying with a domain in the first place. For example, the stereotype of the nerdy programmer repels many women from ever considering computer science as a career (Cheryan, Plaut, Davies, & Steele, 2009). But others who attempt to excel in programming might later disidentify after repeated exposure to stereotype threat. At what point does one redefine oneself out of a domain that was once highly valued? Perhaps, more importantly, what are the characteristics of those who remain identified and successful despite the experience of stereotype threat?

Parallel research on belongingness threat might offer some clues to disidentification (Good, Rattan, & Dweck, 2012). According to this research, those who are negatively stereotyped and in a numerical minority are especially vulnerable to feeling as if they do not belong (Walton & Carr, 2012). Although it might be practically difficult to tease the two apart, threats to one's sense of competence and to one's sense of belonging should be conceptually distinct. Is one a more powerful motivator of disidentification? For example, one can imagine working for a company where everyone is perfectly accepting of and friendly toward the few racial minorities who work there, but still expect them to perform less well than their White peers. One can also imagine a situation where there is no stereotyped expectation of lower performance, but members of a minority are still socially ostracized. It is an open question as to whether each situation is equally likely to cue disidentification both from that organization and the larger domain.



## HOW SHOULD STEREOTYPE THREAT RESEARCH INFORM PUBLIC POLICY?

From its original inception, the theory of stereotype threat developed as an alternative account of a very real social problem: How do we narrow group differences in performance in an effort to maximize human potential? Two decades later, findings gleaned from both the laboratory and the field are now beginning to inform public policy. One important consideration for policy makers is to identify and regulate the cultural cues that both perpetuate stereotypes and trigger stereotype threat. Research demonstrating the positive effects of role models bolsters the argument for affirmative action programs that increase the recruitment and retention of highly qualified women and minorities in domains where they are underrepresented. But, in addition, regulation of overly stereotypic portrayals of groups in the media might also be an important means of curtailing the development of stereotypic associations in the next generation.

Administrators of schools and organizations also need to be educated about these effects and how to identify elements in the environment that might cue stereotype threat for their students and/or employees. Without intent, the mere presence of these items can theoretically cue stereotype threat even in an otherwise accepting environment. For example, conscious efforts might be made to frame tests and performance evaluations not as diagnosing ability but as measuring steps toward mastery.

Developing identity safe environments for learning and work can also mean setting a broader cultural value system that embraces inclusivity and diversity over hierarchy and homogeneity. Recent research suggests that conversations between individuals of different groups can themselves elicit stereotype threat for both majority and minority individuals (Richeson & Shelton, 2012). Thus, programs that work to create positive intergroup contact might also be effective in alleviating stereotype threat. Although the evidence for the benefits of diversity training is mixed at best (Dobbin & Kalev, 2013), more research is needed on naturalistic interventions designed to alleviate interpersonal experiences of stereotype threat. Such work could have broad applications not just to educational environments, but also in workplaces and health care.

## CONCLUSIONS

We have reviewed evidence that simple reminders of negative stereotypes can undermine performance across a variety of domains. The theory of stereotype threat was originally proposed as an explanation for differences in academic performance between White and African American college students. It has since been expanded to explain performance differences for a number of different groups across a variety of domains. We now

understand a great deal about the processes that underlie the phenomena and the interventions that can alleviate stereotype threat. Future work is needed to understand cultural differences in stereotype threat, dynamic processes in how stereotype threat is experienced over time, and to translate basic knowledge into broader public policy. As we move forward in the twenty-first century, it is increasingly clear that we cannot ignore factors that undermine human capital. By changing aspects of the situation, we can allow all groups to perform at their true potential and enter into domains where they have typically been underrepresented. This movement in itself will help breakdown stereotypes that are the foundation of many prejudices.

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