

# Converging Evidence That Stereotype Threat Reduces Working Memory Capacity

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Although research has shown that priming negative stereotypes leads to lower performance among stigmatized individuals, little is understood about the cognitive mechanism that accounts for these effects. Three experiments tested the hypothesis that stereotype threat interferes with test performance because it reduces individuals' working memory capacity. Results show that priming self-relevant negative stereotypes reduces women's (Experiment 1) and Latinos' (Experiment 2) working memory capacity. The final study revealed that a reduction in working memory capacity mediates the effect of stereotype threat on women's math performance (Experiment 3). Implications for future research on stereotype threat and working memory are discussed.

One of our brightest and most motivated undergraduate research assistants was recently lamenting her upcoming date with the Graduate Record Examination (GRE). In describing her past struggles with these sorts of standardized tests, she stated that as soon as she sees the math problems, she becomes intensely fascinated by the physical details of her pencil or any other proximal stimulus, so long as it is not the actual math problem she is meant to solve. Although her experience could represent nothing more than active avoidance of an aversive stimulus, we wondered if it might also illustrate one of the ways that stereotype threat interferes with performance on complex tests of cognitive abilities. Cognitive psychology has identified working memory capacity as the ability to focus one's attention on a given task while keeping task-irrelevant thoughts at bay (Engle, 2001). Thus, one explanation for our research assistant's frustration with standardized math tests is that she experiences lower levels of working memory capacity in these testing situations, perhaps because gender stereotypes place an extra burden on her cognitive resources. In the research presented here, we set out to test the hypothesis that stereotype threat interferes with performance on complex cognitive tasks by reducing individuals' working memory capacity. In this article, we

integrate existing research on stereotype threat with what is known about working memory capacity. We then present the results of three experiments that examine whether manipulations of stereotype threat reduce working memory capacity.

## Stereotype Threat and Performance

Stereotype threat refers to the phenomenon whereby individuals perform more poorly on a task when a relevant stereotype or stigmatized social identity is made salient in the performance situation. Steele and his colleagues (Steele, 1997; Steele & Aronson, 1995; Steele, Spencer, & Aronson, 2002) maintained that this reduced performance results from an added pressure or concern that a poor performance could be seen as confirming a negative social stereotype about their ingroup. Thus, in sharp contrast to socialization theories, inherent ability theories, or even educational resource theories for why men outperform women on math tests or why European Americans outperform African Americans on standardized tests, stereotype threat offers a uniquely situational explanation for these group-performance differences (see Steele, 1997, for review).

In support of the stereotype threat explanation, research shows that group-performance differences can be eliminated when the same test is given in a stereotype-free context (see Steele et al., 2002, for a review). For example, African Americans show increased stereotype activation and perform worse than their White peers when the task they are performing is described as diagnostic of intellectual ability (Steele & Aronson, 1995). However, when the same task is framed as unrelated to intelligence, levels of stereotype activation are much lower and African American students perform equally to White students. Similarly, women perform worse than men on a math test when they are told that the test has revealed gender differences in the past, but they perform equally to men when they are told that the test is "gender fair" (Spencer, Steele, & Quinn, 1999). The ease with which stereotype threat can be created in testing situations is demonstrated further by evidence that White men, a group that is not traditionally thought of as being negatively stereotyped as being poor at math, perform more poorly on a math test when they believe they will be compared with Asian men (Aronson et al., 1999).

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Portions of this research were presented at the 14th Annual Meeting of the American Psychological Society, New Orleans, Louisiana, June 2002, and at the Fourth Annual Meeting of the Society for Personality and Social Psychology, Los Angeles, February 2003. This research was supported in part by National Science Foundation Grant BCS-0112427 and by a faculty small grant awarded to Toni Schmader from the University of Arizona Foundation. We are indebted to the countless hours put in by the research assistants who ran these studies—Kristen Hooks, Amy Hooks, Jodie Deutsch, Ryan Hendrix, Mike Stanfill, David Trotter, Yassiin Nasser, and Martin Kaasa—and also to Amy Baesler for her help preparing materials. We also thank Marchelle Barquissau and Brian Lickel for their valuable help and advice in planning this research.

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