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Are All Interventions Created Equal? A Multi-Threat Approach to Tailoring Stereotype Threat Interventions

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Abstract

To date, stereotype threat interventions have been considered interchangeable. Across 4 experiments, the present research demonstrates that stereotype threat interventions need to be tailored to the specific form of experienced stereotype threat to be effective. The Multi-Threat Framework (Shapiro & Neuberg, 2007) distinguishes between *group-as-target stereotype threats*—concerns that a stereotype-relevant performance will reflect poorly on the abilities of one’s group—and *self-as-target stereotype threats*—concerns that a stereotype-relevant performance will reflect poorly on one’s own abilities. The present experiments explored Black college students’ performance on diagnostic intelligence tests (Experiments 1 and 3) and women’s interest (Experiment 2) and performance (Experiment 4) in science, technology, engineering, and math (STEM). Across the 4 experiments, participants were randomly assigned to experience either a group-as-target or self-as-target stereotype threat. Experiments 1 and 2 revealed that role model interventions were successful at protecting only against group-as-target stereotype threats, and Experiments 3 and 4 revealed that self-affirmation interventions were successful at protecting only against self-as-target stereotype threats. The present research provides an experimental test of the Multi-Threat Framework across different negatively stereotyped groups (Black students, female students), different negatively stereotyped domains (general intelligence, STEM), and different outcomes (test performance, career interest). This research suggests that interventions should address the range of possible stereotype threats to effectively protect individuals against these threats. Through an appreciation of the distinct forms of stereotype threats and the ways in which interventions work to reduce them, this research aims to facilitate a more complete understanding of stereotype threat.

Keywords

stereotype threat; Multi-Threat Framework; role models; self-affirmation; intervention

I was the only Black person on the set. It was unusual for me to be in a circumstance in which every move I made was tantamount to representation of 18 million people.

—Sidney Poitier

My potential is more than can be expressed within the bounds of my race or ethnic identity.

—Arthur Ashe

Sidney Poitier, an actor, director, author, and diplomat, was the first Black person to win an Academy Award for Best Actor and was named by the American Film Institute as one of the Greatest Male Stars of All Time. Arthur Ashe, a world-renowned tennis player, remains the only Black man to ever win the singles title at Wimbledon, the U.S. Open, or the Australian Open. Clearly, both men have achieved significant successes. Yet, in the quotes above, both men report stereotype-relevant concerns. These worries represent what social psychologists have referred to as *stereotype threat*, broadly defined as a concern that one's actions can be seen through the lens of a negative stereotype (Steele & Aronson, 1995). However, a closer look at these quotes reveals that Poitier and Ashe have very different worries about their performances and the stereotypes: Poitier's concerns are rooted in the burden of representing his race/ethnicity, whereas Ashe's concerns are rooted in the burden of personally being reduced to a stereotype. This distinction is consistent with a recent theoretical conceptualization of stereotype threat, the *Multi-Threat Framework* (Shapiro & Neuberg, 2007), which articulates multiple, qualitatively distinct stereotype threats.

Although recent research has turned to developing and testing interventions aimed at reducing the pernicious effects of stereotype threat, such interventions are traditionally treated as interchangeable, in part because prior research has considered stereotype threat to be a singular construct. However, the Multi-Threat Framework highlights an implication of multiple stereotype threats: If these stereotype threats are qualitatively different and can be accounted for by unique processes, then interventions will need to address these distinctions to be effective. That is, an intervention may successfully reduce the harmful implications of some stereotype threats but fail to protect against other stereotype threats. In the present research, we tested this hypothesis.

Theoretically, this is the first experimental test of the Multi-Threat Framework. The varying success of different interventions across a range of stereotype threats provides evidence for the different forms of stereotype threats and further advances stereotype threat theory. Pragmatically, these findings highlight the importance of considering the range of possible stereotype threats for the development and translation of interventions that reduce stereotype threat. That is, to the extent that interventions may only be effective if they are targeting particular forms of stereotype threats, interventionists need to consider the variety of possible stereotype threats in a given context. For example, recent research reveals that different negatively stereotyped groups (e.g., groups based on race/ethnicity, physical disability, mental health status, weight, or religion) tend to be at risk for different stereotype threats (Shapiro, 2011). As a result, interventions tested and deemed effective in the context of one group may be applied, unsuccessfully, to different groups if these groups are more likely to experience different stereotype threats.

From a Single Stereotype Threat to Multiple Stereotype Threats

The past two decades have seen an explosion of research exploring the phenomenon of stereotype threat, yielding critical insights into how negative stereotypes can hinder outcomes such as performance and interest in stereotype-relevant domains (Beilock, 2008; Davies, Spencer, Quinn, & Gerhardstein, 2002; Schmader & Johns, 2003; Steele & Aronson, 1995). Researchers have typically conceptualized stereotype threat as a single threat experienced similarly across individuals, groups, and situations. More recently, however, the Multi-Threat Framework (Shapiro & Neuberg, 2007) identified six qualitatively distinct stereotype threats that emerge from the intersection of two dimensions—the target of the stereotype threat (who one's actions will reflect upon: the group or the self) and the source of the stereotype threat (who can judge these actions: the self, outgroup others, or ingroup others). Each stereotype threat results from distinct eliciting conditions, and different concerns form the core of each of these stereotype threats (Shapiro, 2011;

Shapiro & Neuberg, 2007; see also van Laar, Levin, & Sinclair, 2008; Wout, Danso, Jackson, & Spencer, 2008). In the following, we focus on one dimension of the Multi-Threat Framework—the target of the stereotype threat. As demonstrated in the quotes from Poitier and Ashe, in stereotype-relevant situations, one can fear that a performance will speak to the abilities of one's group (group-as-target stereotype threats) or one's personal abilities (self-as-target stereotype threats).

When in a stereotype-relevant situation, one's performance could reflect on the abilities of one's group, revealing whether the stereotypes are true of the group (in one's own eyes or in the eyes of others). For example, Derek, a Black student, might fear that a poor performance on an exam would reinforce in his own mind that the negative stereotypes about Blacks' intelligence are true. Alternatively, Derek might fear that this performance could confirm in the minds of others—for example, a White employer, coworker, teacher, or friend—that the stereotypes about Blacks' intelligence are true. That is, Derek may fear being a bad ambassador for his group. In both cases, Derek's concerns center on what his performance could reveal about the stereotypic nature of *Blacks'* abilities, not his personal abilities.

In contrast, the self can be the target of a stereotype threat. That is, when in a stereotype-relevant situation, one's performance could reflect on one's own personal abilities, revealing whether one is a stereotypic member of the group (in one's own eyes or in the eyes of others). Derek's concern in this case may be that a poor performance on an exam will confirm his hypothesis that he is indeed, by virtue of his race, less intelligent than his White classmates. Alternatively, he may fear that his performance might enable a White employer, coworker, teacher, or friend to judge him on the basis of negative stereotypes about Blacks' intelligence and, as a result, see him or treat him in an unfavorable manner. Thus, Derek's concern centers on what his performance could reveal about the stereotypic nature of *his own* abilities, not about Blacks' abilities in general.

In the present research, we chose to focus on the dimension of the target of the stereotype threat for two key reasons. First, this distinction emerges naturally across existing research. Although researchers have not explicitly recognized the distinctions between the group and the self as potential targets of stereotype threat, most stereotype threat manipulations and conceptualizations focus on one or the other. For example, stereotype threat is often conceptualized as a concern about representing the group (i.e., a group-as-target stereotype threat), defined as situations in which “members of stereotyped groups often feel extra pressure in situations where their behavior can confirm the negative reputation that their group lacks a valued ability” (Aronson, Lustina, et al., 1999, p. 30). Many operationalizations of stereotype threat are consistent with this definition, informing participants that their performance will be used as a measure of the group's abilities (e.g., Aronson, Lustina, et al., 1999). In contrast, others conceptualize stereotype threat as a concern about how a performance might represent one's personal, potentially stereotypic, abilities (i.e., a self-as-target stereotype threat), suggesting that stereotype threat is “the real-time threat of being judged and treated poorly in settings where a negative stereotype about one's group applies” (Steele, Spencer, & Aronson, 2002, p. 385). Many operationalizations of stereotype threat are consistent with this definition, informing participants that the test they are about to take is a diagnostic measure of personal abilities (e.g., Steele & Aronson, 1995).

Second, the Multi-Threat Framework makes predictions regarding the specific types of interventions that should be effective or ineffective in remedying group-as-target and self-as-target stereotype threats. The interventions anticipated to be differentially effective for each of these forms of stereotype threats are two popular and widely cited interventions in the stereotype threat literature—ingroup role models and self-affirmation. Whereas previous

research suggests that role model and self-affirmation interventions should be successful at remediating stereotype threat broadly defined, the Multi-Threat Framework suggests that role model interventions should protect *only* against group-as-target stereotype threats, whereas self-affirmations should protect *only* against self-as-target stereotype threats.

Stereotype Threat Interventions: Ingroup Role Models and Self-Affirmations

Role Models as an Intervention for Group-as-Target Stereotype Threats

Providing access to ingroup role models has received a great deal of empirical support as a stereotype threat intervention (e.g., Dasgupta & Asgari, 2004; Stout, Dasgupta, Hunsinger, & McManus, 2011). Ingroup role models share a common characteristic (e.g., race, gender) with the target and are accomplished in the stereotyped domain (Marx & Roman, 2002). For example, women performed better on a diagnostic math test and Black students performed better on a diagnostic verbal test when their highly competent experimenters were women or Black students, respectively (Marx & Goff, 2005; Marx & Roman, 2002). In addition, women exposed to examples of successful women—such as reading about women with impressive achievements in architecture or invention, or women students who have excelled in science, technology, engineering, and math (STEM) fields—performed better on a diagnostic test of math ability (Marx, Stapel, & Muller, 2005; McIntyre, Paulson, & Lord, 2003).

Role model interventions are believed to be successful in remediating stereotype threat because information about successful ingroup members helps alleviate concerns about positively representing the group in the stereotyped domain. Specifically, the role model accomplishes this task by demonstrating that the stereotypes are not true and by reflecting positively on the group (Marx et al., 2005; McIntyre et al., 2003). If, as is posited by the Multi-Threat Framework, group-as-target stereotype threats are rooted in concerns about representing the group poorly, ingroup role models will be useful in reducing group-as-target stereotype threats. However, a strategy that buffers against concerns about how a stereotype-relevant performance will reflect on one's group's abilities may do little to reduce one's concerns about how a stereotype-relevant performance will reflect on one's own abilities and thus may not successfully reduce self-as-target stereotype threats.

Self-Affirmations as an Intervention for Self-as-Target Stereotype Threats

Self-affirmation has also received empirical support as a stereotype threat intervention (e.g., Martens, Johns, Greenberg, & Schimel, 2006). Self-affirmation involves reflecting on important aspects of one's life that are different from the threatening domain or engaging in an activity that makes salient important values that are different from the threatening domain (e.g., Cohen, Garcia, Apfel, & Master, 2006). For example, stereotype-threatened women who affirmed a valued attribute (different from math ability) before taking a diagnostic math test performed comparably to those in the control (no-stereotype threat) condition and better than the stereotype-threatened women who did not receive the intervention (Martens et al., 2006). Research in the field has found similarly positive effects for self-affirmation. For example, African American seventh-graders from middle- to lower middle-class families who completed a self-affirmation exercise had stronger grades at the end of the term than those who completed a neutral exercise (Cohen et al., 2006; see Miyake et al., 2010, for a similar finding with women in a college-level introductory physics class). Furthermore, those who completed the self-affirmation exercises between three and five times in a year had higher grade point averages 2 years later (Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009).

Self-affirmations are believed to successfully protect against stereotype threat because self-evaluative information within the stereotyped domain is less threatening when domains

unrelated to the provoking threat are affirmed, and as a result, individuals react with fewer defensive biases (Aronson, Blanton, & Cooper, 1995; Aronson, Cohen, & Nail, 1999; Derks, van Laar, & Ellemers, 2009; Sherman & Cohen, 2002; 2006; Steele, 1988). Thus, self-affirmation is a successful stereotype threat intervention because it buffers against the evaluative implications of threats to self-integrity (Sherman & Cohen, 2006). If, as theorized in the Multi-Threat Framework, self-as-target stereotype threats are rooted in concerns that one could personally be seen as stereotypic (i.e., a threat to self-integrity), self-affirmation should reduce the self-evaluative implications of a poor performance, thereby reducing self-as-target stereotype threats. However, a strategy that sustains one's self-integrity should not be useful when one fears a blow to the reputation of one's group, as is the case for group-as-target stereotype threats. Consequently, self-affirmation interventions may not be successful for reducing group-as-target stereotype threats.

Current Research

The foregoing analysis suggests that ingroup role models and self-affirmations may be differentially effective in reducing stereotype threats as a function of the specific form of stereotype threat one is experiencing. Specifically, the Multi-Threat Framework differentiates between group-as-target stereotype threats—concerns that one's performance on a stereotype-relevant task could be used as an indication of the stereotypic nature of one's group's ability—and self-as-target stereotype threats—concerns that one's performance on a stereotype-relevant task could be used as an indication of the stereotypic nature of one's own ability. Following from the Multi-Threat Framework, given that ingroup role models likely reduce the *pressure to positively represent the group*, we anticipated that this intervention would reduce group-as-target stereotype threats but not self-as-target stereotype threats. In contrast, given that self-affirmations buffer against the evaluative implications of *threats to self-integrity*, we anticipated this intervention would reduce self-as-target stereotype threats but not group-as-target stereotype threats.

We tested these hypotheses across four experiments. These experiments explored Black college students' performance on diagnostic intelligence tests (Experiments 1 and 3) and women's interest (Experiment 2) and performance (Experiment 4) in STEM. In all four experiments, participants were randomly assigned to either a group-as-target or self-as-target stereotype threat manipulation. In addition, participants were randomly assigned to a role model intervention or control exercise (Experiments 1 and 2) or a self-affirmation intervention or control exercise (Experiments 3 and 4). Together, the present experiments explored the distinct forms that stereotype threat can take and the importance of differentiating between these stereotype threats to most effectively intervene.

Experiment 1

Experiment 1 exposed Black student participants to a self-as-target or group-as-target stereotype threat manipulation and to an ingroup role model intervention or control exercise. Because role models likely buffer individuals against the burden of poorly representing their group, we anticipated this intervention would be successful at protecting against group-as-target stereotype threats but not self-as-target stereotype threats.

Method

Participants and design—Sixty-five students (51 female) participated. All students who identify as Black or African American at University of California, Los Angeles (UCLA) were sent an e-mail from the university registrar advertising for students to participate in a 1-hr research study in exchange for \$20 or research credit. Interested participants were told to respond to the e-mail to schedule a time to participate.

Participants were randomly assigned to one of two types of stereotype threat manipulations that focused either on the group or the self as the target of the stereotype threat (discussed later). Participants were also randomly assigned to read about a successful UCLA student who was depicted as either Black (ingroup role model) or White (control). Thus, the experiment was a 2 (stereotype threat: group-as-target, self-as-target) \times 2 (intervention: role model, control) between-participants design with random assignment to condition.

Stereotype threat manipulations—As reviewed earlier, previous research has failed to acknowledge the distinction between group-as-target and self-as-target stereotype threats, yet most stereotype threat manipulations are framed in terms of a threat to the self or the group. Thus, the stereotype threat manipulations used in the present research were taken directly from extant research (Kahn & Davies, 2012). The group-as-target stereotype threat manipulation was drawn from previous stereotype threat research in which participants were focused on the test as a measure of the group's abilities (e.g., Aronson et al., 1999):

In today's session, we want to get a measure of intellectual ability for Black and White students by having you take a standardized intelligence test Your performance on this test will be used to help us establish intellectual performance norms for Black and White students. After the test, we will provide you with feedback about Blacks' performance relative to Whites' performance and ask you some questions about test taking.

The self-as-target manipulation was drawn from previous stereotype threat research in which participants were focused on the test as a measure of personal abilities (e.g., Steele & Aronson, 1995):

In today's session, we want to get a measure of your intellectual ability by having you take a standardized intelligence test Your performance on this test will be used to help us establish your personal intellectual ability. After the test, we will provide you with feedback about your performance relative to other students and ask you some questions about test taking.

Procedure—Participants were recruited into the lab and tested individually. The materials and procedure were modeled after those used by Marx et al. (2005). Participants first received an overview of the study, allowing for the introduction of the stereotype threat manipulation before the receipt of the intervention. Participants were informed they would be working on two purportedly unrelated tasks. The first task was described as a study conducted by the alumni association seeking feedback on a new feature they planned to include in their alumni publication, *UCLA Magazine*. (In reality, this task would be the role model intervention.) Participants were then told the second task was a test measuring intellectual ability. (In reality, this would be the focal dependent variable, a quantitative and verbal test similar to the Graduate Record Examination [GRE].) As part of the description of this second task, the stereotype threat manipulation was delivered; participants either received the self-as-target or the group-as-target stereotype threat manipulation described earlier.

Following this overview of the study procedures, participants began the first task, reading and providing feedback on the magazine article. The magazine article was based on role model manipulations used in previous research in which participants read about an ingroup member who is very competent in the stereotyped domain (Marx & Roman, 2002; Marx et al., 2005). In the present research, participants received a copy of a magazine article titled "UCLA Student Spotlight." The content of the article was identical for all participants and described a successful student. What varied between participants was the picture of the student. In the ingroup role model condition, the picture featured a same-gender Black

student. In the no-intervention control condition, the picture featured a same-gender White student. We bolstered the cover story by having participants answer five questions about the article (e.g., “How interesting is this article?”).

Immediately following the first task, the White research assistant administered the second task. The research assistant provided the participant with a 24-item GRE-like test consisting of 12 quantitative and 12 verbal problems. Participants were given 20 min to complete the test. To make salient the target of the stereotype threat and bolster the stereotype threat manipulation that the test would be connected to the group or the self, we included a field on the test cover page in which participants in the group-as-target condition indicated their race/ethnicity (Black or White) and participants in the self-as-target condition wrote their last name. Following the test, participants were fully debriefed using a process debriefing (Ross, Leper, & Hubbard, 1975) and then paid or credited.

Results

A 2 (stereotype threat: group-as-target, self-as-target) \times 2 (intervention: role model, control) analysis of variance (ANOVA) was conducted, with the participants' scores on the test (number correct) serving as the dependent variable. There was a main effect of stereotype threat type, $F(1, 61) = 8.16, p = .006, \eta_p^2 = .19$, and a main effect of intervention, $F(1, 61) = 18.65, p < .001, \eta_p^2 = .23$. However, this was qualified by the anticipated interaction between stereotype threat type and intervention condition, $F(1, 61) = 11.90, p = .001, \eta_p^2 = .16$ (see Figure 1).

As anticipated, in the no-intervention control condition, participants' performance on the test did not differ as a function of stereotype threat type (group-as-target: $M = 6.71, SD = 3.24$; self-as-target: $M = 7.18, SD = 3.59$), $F < 1$. However, when participants received the role model intervention, performance in the group-as-target stereotype threat condition ($M = 12.88, SD = 2.92$) was significantly better than performance in the self-as-target stereotype threat condition ($M = 7.87, SD = 2.95$), $F(1, 61) = 19.90, p < .001, \eta_p^2 = .25$. That is, the role model intervention did not influence performance in the self-as-target stereotype threat condition, $F < 1$. However, within the group-as-target stereotype threat condition, participants' performance significantly improved when exposed to the role model intervention compared with the no-intervention control condition, $F(1, 61) = 30.04, p < .001, \eta_p^2 = .33$.

Discussion

Consistent with previous research (e.g., Marx et al., 2005; McIntyre et al., 2003), exposure to a successful ingroup role model buffered against the negative effects of stereotype threat and led to increased performance on a GRE-like test believed to be diagnostic of intelligence. However, consistent with recent theoretical distinctions between stereotype threats (Shapiro & Neuberg, 2007), the effectiveness of this intervention was moderated by the specific type of stereotype threat. The role model intervention was successful only in reducing group-as-target stereotype threats, or stereotype threats rooted in concerns that one's performance would reflect on the abilities of one's group. In contrast, when participants experienced self-as-target stereotype threats, stereotype threats rooted in concerns that one's performance would reflect on one's own abilities, the role model intervention was no longer successful in protecting performance.

Experiment 2

Experiment 1 provided initial evidence that group-as-target, and not self-as-target, stereotype threats are reduced with role model interventions. The present experiment extended these findings in a number of ways. First, Experiment 2 explored whether the role model intervention similarly protects against other stereotype threat-driven outcomes, such as reduced interest in stereotype-relevant majors and careers. Second, this experiment examined whether role model interventions are similarly effective for another group stereotyped in a different domain: women in the domain of STEM. Third, Experiment 1 did not include a control condition with no stereotype threat and no intervention. Without a control condition, it is difficult to assess the efficacy of the role model intervention.

We anticipated that, consistent with Experiment 1, the role model intervention would protect participants against only group-as-target stereotype threats, resulting in women reporting more interest in STEM majors and careers when they received the role model intervention in conjunction with a group-as-target stereotype threat compared with when they received it in conjunction with a self-as-target stereotype threat. We also anticipated that women who received the role model intervention in conjunction with the group-as-target stereotype threat would report similar levels of (high) interest in STEM compared with those in the control (no-stereotype threat, no-intervention) condition.

Method

Participants and design—Sixty-eight women undergraduate students participated online in exchange for \$3. Participants were recruited from a participant database maintained at UCLA.

Participants were randomly assigned to one of two stereotype-threat conditions (group-as-target, self-as-target; discussed later). Participants were also randomly assigned to read about a female (ingroup role model) or a male (control) UCLA student who was successful in math. In addition, a set of participants was randomly assigned to a control condition with no stereotype threat and no intervention. Thus, the experiment was a 2 (stereotype threat: group-as-target, self-as-target) \times 2 (intervention: role model, control) + 1 (no-stereotype threat, no-intervention control) between-participants design with random assignment to condition.

Procedure—Participants were informed that they would be working on three purportedly unrelated tasks. The first task was the stereotype threat manipulation, framed as an exercise in which participants would write about personal experiences. Consistent with procedures described by Shapiro (2011) and Inzlicht and Kang (2010), participants were asked to think back to a time they had to take a test or engage in an action in a field where women are negatively stereotyped. Participants were asked to think about how they felt physically and emotionally in that situation and then write about what happened in that situation. Reliving a stereotype threat experience should elicit the same psychological effects one would experience in this actual situation (see also Ackerman, Goldstein, Shapiro, & Bargh, 2009). In the group-as-target stereotype threat condition, participants were asked to think about a time when they were concerned that their actions, performance, or behaviors could be used to gauge *women's abilities* and that others might *judge women* based on the participants' performance and these negative stereotypes. In the self-as-target stereotype threat condition, participants were asked to think about a time when they were concerned that their actions, performance, or behaviors could be used to gauge *their personal abilities* and that others might *judge them* based on their performance and these negative stereotypes. In the control (no-stereotype threat, no-intervention) condition, participants were asked to write about

what they did last Tuesday. In all conditions participants were asked to write two or three sentences regarding what happened in this situation.

The second part of the study was the role model intervention. As in Experiment 1, participants were told this task (ostensibly) was a study conducted by the alumni association seeking feedback on a new feature they planned to include in their alumni publication, *UCLA Magazine*. The content of the article was identical for all participants and described a senior undergraduate student who had taken difficult math classes and who had done well in, and enjoyed, these classes. What varied between participants was the picture of the student. In the ingroup role model condition, the picture featured a White female student. In the no-intervention control condition, the picture featured a White male student. We bolstered the cover story by asking participants to answer five questions about the article (e.g., “How interesting is this article?”).

The third part of the study contained the focal dependent variables. This part was described as a study of students’ career interests. Participants were asked to indicate their interest in a list of majors/careers (Davies et al., 2002). Participants responded to each major/career using a 7-point Likert-type scale anchored at 1 (*no interest*) and 7 (*strong interest*). Embedded in this list were nine STEM majors/careers that formed the interest in STEM composite (e.g., mathematics, computer science, engineering, statistics, physics, and biochemistry; $\alpha = .88$).

Results

First, to examine whether the present findings replicate Experiment 1, we conducted a 2 (stereotype threat: group-as-target, self-as-target) \times 2 (intervention: role model, control) ANOVA with the participants’ interest in STEM majors/careers as the dependent variable.

There was a main effect of intervention, $F(1, 45) = 5.58, p = .05, \eta_p^2 = .09$, and no effect of stereotype threat type, $F < 1$. However, this was qualified by a marginal (anticipated) interaction between stereotype threat type and intervention condition, $F(1, 45) = 3.07, p = .087, \eta_p^2 = .06$ (see Figure 2).

As anticipated, in the no-intervention condition, participants’ interest did not differ as a function of stereotype threat type (group-as-target: $M = 1.51, SD = 0.77$; self-as-target: $M = 1.83, SD = 0.99$), $F < 1$. However, when participants received the role model intervention, interest in STEM was higher in the group-as-target stereotype threat condition ($M = 2.79, SD = 1.29$) compared with the self-as-target stereotype threat condition ($M = 1.93, SD = 1.28$), $F(1, 45) = 4.16, p = .05, \eta_p^2 = .08$. That is, the role model intervention did not influence interest in the self-as-target stereotype threat condition, $F < 1$. However, within the group-as-target stereotype threat condition, participants’ interest in STEM majors and careers was significantly higher when exposed to the role model intervention compared with the no-intervention condition, $F(1, 45) = 8.02, p = .007, \eta_p^2 = .15$.

New to this study was a control (no-stereotype threat, no-intervention) condition. To compare interest in STEM in the control condition relative to the other conditions, we recoded the data to reflect one between-participants variable with five conditions. First, to examine whether the present pattern of stereotype threat data replicated previous research (e.g., Davies et al., 2002), we performed a specified contrast analysis to compare the stereotype threat conditions (group-as-target, self-as-target) to the control (no-stereotype threat, no-intervention) condition (1 1 – 2 0 0). As anticipated, and consistent with previous research findings, participants in the control (no-stereotype threat, no-intervention) condition ($M = 2.47, SD = 1.11$) reported greater interest in STEM compared with participants in the stereotype threat conditions ($M = 1.68, SD = 0.88$), $F(1, 63) = 4.65, p = .04, \eta_p^2 = .07$. Second,

to examine the influence of the role model intervention and its ability to protect participants against group-as-target stereotype threats, we performed a specified contrast analysis to compare interest in STEM in the control (no-stereotype threat, no-intervention) condition to the condition in which group-as-target stereotype threatened participants received the role model intervention (0 0 1 – 1 0). That is, if the role model intervention fully protects against group-as-target stereotype threats, there should be no difference in STEM interest compared with the control condition. Indeed, as anticipated, there was no difference, $F < 1$.

Discussion

Experiment 2 provided additional evidence for the distinction between self-as-target and group-as-target stereotype threats. Women's interest in STEM suffered as a function of self-as-target and group-as-target stereotype threats. However, a role model intervention protected against group-as-target stereotype threats such that women's interest in STEM was comparable to those women in the no-stereotype threat control condition. As in Experiment 1, the role model intervention did not protect women's interest in STEM when experiencing a self-as-target stereotype threat.

Together, Experiments 1 and 2 demonstrate that group-as-target and self-as-target stereotype threats are distinct in that role model interventions protect participants from group-as-target stereotype threats only. The differential success of this intervention is consistent with a multithreat approach to understanding stereotype threat. Although self-as-target stereotype threat was not remediated by the role model intervention in Experiments 1 and 2, the Multi-Threat Framework offers insight into the types of interventions that would be successful in combating these forms of stereotype threats. Experiments 3 and 4 address this question.

Experiment 3

As reviewed earlier, self-as-target stereotype threats are rooted in concerns about one's self-integrity. Given that self-affirmations are believed to reduce stereotype threat because they buffer against the evaluative implications of threats to self-integrity (Sherman & Cohen, 2006), we anticipated that self-affirmations would protect against the negative effects of self-as-target stereotype threats but not group-as-target stereotype threats. Thus, as in Experiment 1, Black college students were exposed to self-as-target or group-as-target stereotype threats while taking a GRE-like test consisting of both quantitative and verbal problems. However, in the present experiment, participants also received either a self-affirmation intervention or control task.

Method

Participants and design—Thirty-seven Black students (27 female) from UCLA were recruited in the same fashion as Experiment 1 and participated in exchange for class credit or \$20. The experiment was a 2 (stereotype threat: group-as-target, self-as-target) \times 2 (intervention: self-affirmation, control) between-participants design with random assignment to condition.

Procedure—Participants were recruited into the lab and tested individually. The materials and procedure were modeled after Martens et al. (2006). In a study overview, participants were informed they would be working on two ostensibly unrelated tasks. The first task was described as a ranking of characteristics and values. (In reality, this would be the self-affirmation intervention.) The second task was described as a test measuring intellectual ability. (In reality, this would be the focal dependent variable.) As part of the overview of the second task, participants received either the self-as-target or the group-as-target stereotype threat manipulation described in Experiment 1.

Following the overview of the study procedures, participants began the first task, the self-affirmation intervention, which was taken from previous research (Sherman & Cohen, 2006; Sherman et al., 2009; see McQueen & Klein, 2006, for a review). Participants received a list of 10 characteristics and values (e.g., sense of humor, artistic skills/aesthetic appreciation, and business/money). Participants were asked to rank the values in order of their importance to them, with 1 being the most important and 10 being the least important. When participants turned the page, they found an additional assignment, one of two (randomly assigned) activities. In the self-affirmation condition, participants were asked to write their most important value (the value ranked 1) at the top of the page. Next, they were asked to give a written explanation of why this value was important to them and to provide one example of something they had done that demonstrated how important it was to them. The participants in the control condition were asked to write their ninth value (the value ranked 9) on the top of the page. Next, they were asked to write about why this value might be important to the typical UCLA student and provide one example of something the typical UCLA student might do to demonstrate how important it was to him or her. All participants were given 8 min to complete this task and told that they could write as much or as little as they wanted during this time.

Immediately following the affirmation task, the White research assistant administered the same quantitative and verbal GRE-like test used in Experiment 1, which served as the focal dependent variable. After the test, participants were fully debriefed using a process debriefing and then paid or credited.

Results

A 2 (stereotype threat: group-as-target, self-as-target) \times 2 (intervention: self-affirmation, control) ANOVA was conducted, with the participants' scores on the test (number correct) as the dependent variable. The main effects of stereotype threat type, $F(1, 33) = 2.63, p = .11, \eta_p^2 = .07$, and intervention, $F(1, 33) = 3.63, p = .07, \eta_p^2 = .10$, did not reach conventional levels of significance. However, the anticipated interaction between the stereotype threat type and intervention emerged, $F(1, 33) = 8.34, p = .01, \eta_p^2 = .19$ (see Figure 3).

As anticipated, and consistent with Experiment 1, in the no-intervention condition, participants performed similarly on the test regardless of stereotype threat type (group-as-target: $M = 7.86, SD = 2.27$; self-as-target: $M = 6.73, SD = 2.33$), $p > .28$. However, when participants received the self-affirmation intervention, their performance in the self-as-target stereotype threat condition ($M = 11.27, SD = 3.69$) was significantly better than participants in the group-as-target stereotype threat condition ($M = 7.00, SD = 2.78$), $F(1, 33) = 11.65, p = .002, \eta_p^2 = .26$. That is, unlike the role model intervention in Experiment 1, the self-affirmation intervention *did not* increase participants' performance relative to the no-intervention condition for those in the group-as-target stereotype threat condition ($F < 1$) but did lead to significantly better performance for those in the self-as-target stereotype threat condition, $F(1, 33) = 13.63, p = .001, \eta_p^2 = .29$.

Discussion

Consistent with previous research (e.g., Martens et al., 2006), self-affirmation protected Black participants against the negative effects of stereotype threat and led to increased performance on a GRE-like test believed to be diagnostic of intelligence. However, consistent with the Multi-Threat Framework (Shapiro & Neuberg, 2007), the self-affirmation intervention was only successful in reducing self-as-target stereotype threats, or stereotype threats rooted in concerns about one's personal abilities. When participants experienced group-as-target stereotype threats, or a concern that their performance would be

used to reflect their group's abilities, the self-affirmation intervention was no longer successful in protecting performance.

Experiment 4

Experiment 3 provided initial evidence that self-as-target, and not group-as-target, stereotype threats are reduced with self-affirmation interventions. In Experiment 4, we built on these findings by moving to a different group and a different domain: women's performance on a quantitative GRE-like exam. Women student participants were exposed to a self-as-target or group-as-target stereotype threat. Consistent with Experiment 3, participants were also exposed to either a self-affirmation intervention or a control exercise. In addition, the present experiment included a no-stereotype threat control condition, allowing for an assessment of the strength of the self-affirmation intervention. We anticipated that self-affirmation would protect against the negative effects of self-as-target stereotype threats but not group-as-target stereotype threats.

Method

Participants—Seventy-five highly math-identified women undergraduates majoring in STEM fields at UCLA participated in exchange for between \$15 and \$20. To identify these women, the registrar's office sent an e-mail regarding participation in research to undergraduate women with declared STEM majors; the e-mail directed interested participants to a website where they completed demographic information that would be used to determine eligibility. This demographic information included reporting their major and their math identification. Math identification was measured with two items anchored at 1 (*strongly agree*) and 7 (*strongly disagree*; e.g., "My math abilities are important to my self-concept," $\alpha = .96$; Luhtanen & Crocker, 1992). To mask our interest in STEM, these questions were embedded in a set of filler questions that asked about school and verbal identification.

Information about participants' majors was collected to verify the accuracy of the registrar's records. Consistent with previous stereotype threat research exploring women's performance on diagnostic quantitative tests, math identification ($M = 5.12$, $SD = 1.04$) was collected. In previous research, participants have tended to be highly math-identified women, or women who report math identification in the upper half or third of the sample because they are most likely to experience stereotype threat (e.g., Aronson et al., 1999; Inzlicht & Ben-Zeev, 2003; Marx & Roman, 2002; Pronin, Steele, & Ross, 2004). Thus, consistent with previous research, women reporting math identification above the mean were included in the present research.

Design and procedure—The experimental design was a 2 (stereotype threat: group-as-target, self-as-target) \times 2 (intervention: self-affirmation, control) + 1 (no-stereotype threat, no-intervention control) between-participants design with random assignment to condition. The self-affirmation intervention materials were identical to Experiment 3. The stereotype threat conditions mirrored Experiments 1 and 3; however, because the present experiment focused on gender, the instructions referred to math ability for men and women (as opposed to general intellectual ability for Black and White students). For example, the group-as-target stereotype threat manipulation described performance on the test as giving the researchers "a clear idea of women's natural mathematical ability" and in the self-as-target stereotype threat condition participants were informed that the test would give the researchers "a clear idea of your natural mathematical ability." In the control condition, the test was described as merely an exercise, and there was no intervention.

Participants were recruited into the lab and tested individually. The materials and procedure were similar to Experiment 3. The focal dependent variable in this study was a quantitative GRE-like test (taken from Davies et al., 2002). Participants were given 20 min to complete 24 questions. All verbal instructions were provided via a headset by a male voice, the ostensible principal investigator. After the test, participants were fully debriefed with a process debriefing and then paid.

Results

To assess whether the present findings replicated the findings from Experiment 3, we conducted a 2 (stereotype threat: group-as-target, self-as-target) \times 2 (intervention: self-affirmation, control) ANOVA with the participants' scores on the test (number correct) as the dependent variable. There was no main effect of stereotype threat type or intervention, $F_s < 1$. However, the anticipated interaction between the stereotype threat type and intervention emerged, $F(1, 54) = 5.75, p = .02, \eta_p^2 = .10$ (see Figure 4).

As expected, and consistent with Experiment 3, in the no-intervention condition participants performed similarly on the test regardless of stereotype threat type (group-as-target: $M = 7.93, SD = 3.12$; self-as-target: $M = 6.71, SD = 2.76$), $F(1, 54) = 1.22, p = .27$. However, when participants received the self-affirmation intervention, their performance in the self-as-target stereotype threat condition ($M = 9.31, SD = 3.24$) was significantly stronger than participants in the group-as-target stereotype threat condition ($M = 6.86, SD = 2.38$), $F(1, 57) = 5.55, p = .02, \eta_p^2 = .09$. That is, for participants experiencing a group-as-target stereotype threat, the self-affirmation intervention did not increase performance relative to the no-intervention condition, $F < 1$. In contrast, the self-affirmation did lead to significantly better performance for those in the self-as-target stereotype threat condition compared with those in the no-intervention condition, $F(1, 57) = 6.16, p = .02, \eta_p^2 = .10$.

To compare performance in the control (no-stereotype threat, no-intervention) condition relative to the other conditions, we recoded the data to reflect one between-participants variable with five conditions. Specified contrast analyses comparing participants in the control (no-stereotype threat, no-intervention) condition to participants in the self-as-target stereotype threat (no-intervention) and the group-as-target stereotype threat (no-intervention) conditions revealed that consistent with previous research, participants in the control (no-stereotype threat, no-intervention) condition ($M = 9.71, SD = 3.55$) scored significantly higher on the test compared with participants in the stereotype threat conditions ($M = 7.31, SD = 2.96$), $F(1, 70) = 6.39, p = .01, \eta_p^2 = .08$.

To examine the influence of the self-affirmation intervention and its ability to protect participants against self-as-target stereotype threats, we performed a specified contrast analysis to compare participants' performance in the control (no-stereotype threat, no-intervention) condition to the condition in which self-as-target stereotype-threatened participants received the self-affirmation intervention. As expected, there was no difference in performance, $F < 1$, revealing that the self-affirmation intervention fully protected against self-as-target stereotype threats.

Discussion

In the present experiment, the performance of highly math-identified women STEM majors suffered as a function of both self-as-target and group-as-target stereotype threats. Consistent with Experiment 3, a self-affirmation intervention protected the performance of women experiencing a self-as-target stereotype threat but did not protect those experiencing a group-as-target stereotype threat.

General Discussion

Across four experiments, the present research offers evidence for the Multi-Threat Framework (Shapiro & Neuberg, 2007), demonstrating that stereotype threat is not a singular construct and that different interventions are necessary to reduce the different forms of stereotype threats. Experiments 1 and 2 revealed that a role model intervention protected against group-as-target stereotype threats but not self-as-target stereotype threats. Experiments 3 and 4 revealed that a self-affirmation intervention protected against self-as-target stereotype threats but not group-as-target stereotype threats. These findings emerged across different negatively stereotyped groups and domains—Black students in the domain of general intelligence (Experiments 1 and 3) and women students in the domain of STEM (Experiments 2 and 4)—and across different outcomes, including GRE-like tests in the stereotyped domain and interest in the stereotyped domain as a career or major.

Implications for Stereotype Threat Research

The present research advances stereotype threat theory and research in a number of ways. Traditionally, research has conceptualized stereotype threat as a single threat. The present research offers the first experimental evidence of the Multi-Threat Framework (Shapiro & Neuberg, 2007), demonstrating that stereotype threat is not just one single threat and that group-as-target and self-as-target stereotype threats are differentiable in important conceptual and practical ways.

In addition, the present research provides initial evidence for the processes that account for group-as-target and self-as-target stereotype threats. Role model and self-affirmation interventions—interventions believed to effectively reduce stereotype threat for different reasons (e.g., Marx et al., 2005; Sherman & Cohen, 2006)—worked only in the context of one type of stereotype threat, such that role models reduced only group-as-target stereotype threats and self-affirmation reduced only self-as-target stereotype threats. Thus, moderation across these studies provides evidence that these different interventions reduced the specific concerns brought about by each of the two types of stereotype threats: the fear of poorly representing the group (group-as-target stereotype threats) or personally being seen through the lens of a negative stereotype (self-as-target stereotype threats). If the processes underlying these types of stereotype threats were the same, role model and self-affirmation interventions would be similarly effective across these stereotype threat types (Spencer, Zanna, & Fong, 2005), yet these interventions were not interchangeable.

Second, these findings highlight a distinction between stereotype threat types as a function of the target of these stereotype threats. This distinction has been overlooked in prior research and has both theoretical and practical implications. To date, experiments exploring the effects of stereotype threat have not used a uniform or standardized set of stereotype threat manipulations. Operationalizations of stereotype threat tend to vary with stereotype threat definitions—focusing on the group or the self as the potential targets of stereotype threat—yet these different manipulations are widely characterized as capturing the same phenomenon. In the present research, we differentiated between two types of stereotype threat manipulations, and as anticipated, this differentiation produced different forms of stereotype threats. Ignoring these distinctions can therefore limit researchers' understanding of stereotype threat effects. For example, the present research suggests that findings from previous stereotype threat research (e.g., on the moderating situational or individual difference factors) may be relevant primarily to the one form of stereotype threat present in a given study and may not generalize beyond that one stereotype threat or to contexts that activate a different type of stereotype threat. As a result, it will be important for future research to identify the particular stereotype threat in question in order to most effectively interpret and translate findings.

In the present set of studies, a role model intervention and a self-affirmation intervention—two interventions that have garnered a great deal of support in prior research and are believed to be equally effective in the remediation of stereotype threat, broadly defined—only worked to halt the influence of a single type of stereotype threat. The practical implication here is clear: A failure to consider the different types of stereotype threats can lead to the application of an ineffective intervention. Moreover, it is also the case that ignoring the differences between stereotype threats can lead one to overlook a person's risk for stereotype threat, thus increasing the likelihood that an intervention will not be administered. As one example, previous research demonstrates differential risk for stereotype threat types between and within different negatively stereotyped groups (Shapiro, 2011). To illustrate, although women and racial minorities likely experience both self-as-target and group-as-target stereotype threats, individuals contending with mental illness stigma are less likely to report experiencing group-as-target stereotype threats compared with self-as-target stereotype threats. This is in part because mental illnesses are less likely to foster a strong sense of group identity. Thus, individuals contending with mental illness stigma are less likely to worry about poorly representing the group than personally being seen through the lens of a negative stereotype. As a result, if a group-as-target stereotype threat manipulation is used in an assessment of stereotype threat effects for individuals contending with such a stigma, these paradigms may suggest the absence of stereotype threat (and the absence of the associated harmful effects of stereotype threat), not because these individuals are immune to stereotype threat effects but because they have a lower risk for the particular stereotype threat(s) activated in that context.

In addition, if an intervention similar to in group role models is used in contexts that do not elicit group-as-target stereotype threats or for groups less likely to experience group-as-target stereotype threats, this intervention will be of questionable utility. For example, given that individuals contending with mental illness stigma are less likely to experience group-as-target stereotype threats than self-as-target stereotype threats (Shapiro, 2011), role model interventions are likely to be less effective than self-affirmation interventions. Indeed, an intervention may not only fail to buffer against the deleterious consequences of stereotype threat but also go unrecognized as having failed. A result is that interventionists and researchers alike may believe that the grip of stereotype threat has been released and that an individual's performance and interests are uninfluenced, when in fact stereotype threat maintains its hold on these behaviors and decisions. Thus, the consideration of multiple stereotype threats is particularly important when one is translating interventions from the lab to the field.

The present research demonstrates the predictive utility of the Multi-Threat Framework: The hypotheses tested across these four experiments could only be generated by considering the Multi-Threat Framework. The nuanced approach to stereotype threat taken by the Multi-Threat Framework offers a useful tool for developing more textured hypotheses regarding stereotype threats. Future research will benefit from a continued exploration of this framework.

Limitations and Future Directions

One limitation of the present research is its focus on only one dimension of stereotype threat—the target of stereotype threat. Although beyond the scope of this article, the Multi-Threat Framework identifies a second dimension—the source of the stereotype threat (the self, ingroup others, or outgroup others). In the present research, the source was not explicitly communicated to the research participants. However, it is likely that participants were considering both outgroup others and the self as the source of these stereotype threats. It will be important for future research to continue to explore the source of the stereotype threat and the implications of these different sources for intervention. We chose to focus on the target

of stereotype threats in this investigation primarily because most previous research has tended to characterize stereotype threat as a function of either the self or the group as the target. As a result, these findings serve to inform a large body of extant findings.

A second limitation of this research, and of stereotype threat intervention research more broadly, is that although the present research provides some insight into why role model and self-affirmation interventions eliminated the negative effects of stereotype threat, there is no explicit test of these mechanisms. However, the present findings do provide some evidence for the underlying factors. When the participants' mindset was that their performance would represent their group (group-as-target stereotype threats), role model interventions were more effective, which strongly suggests that role models work to reduce the burden of representing the group. When participants' mindset was that their performance would be used to represent their personal, potentially stereotypic abilities (self-as-target stereotype threats), self-affirmation interventions were more effective, which strongly suggests that self-affirmation works to reduce the consequences of personally being labeled as stereotypic. Both of these accounts are consistent with how previous research has characterized role model and self-affirmation interventions (e.g., Marx et al., 2005; Sherman & Cohen, 2006). Thus, the success and failure of particular interventions at particular moments provide initial evidence for the processes underlying each of these interventions (Spencer et al., 2005). However, future research would benefit from a more direct test of these processes.

Future research also would benefit from a deeper exploration of role model and self-affirmation interventions in the field. Previous research has revealed that role model and self-affirmation interventions are effective at reducing stereotype threat and protecting performance and interest in the field without the presence of a stereotype threat manipulation (see Cohen et al., 2006; 2009; Miyake et al., 2010; Stout et al., 2011). The use of a stereotype threat manipulation was necessary in the present research to test the distinct nature of group-as-target and self-as-target stereotype threats and the hypotheses regarding the divergent efficacy of each intervention. Future research will profit from exploring these stereotype threat interventions without the use of explicit stereotype threat manipulations in contexts that likely elicit either group-as-target or self-as-target stereotype threats.

Conclusions

The opening quotes from Arthur Ashe and Sidney Poitier highlight the different concerns that can emerge in stereotype-relevant situations—concerns that have been shown to undermine effort and interest in important life domains, such as test taking, career selection, and work performance. The focus of the present research was on the nuances that emerge when Ashe's and Poitier's comments are compared—whether one's actions in a stereotyped domain are believed to reflect on one's own personal talents or on the talents of one's group. The present research tested a prediction made based on the Multi-Threat Framework (Shapiro & Neuberg, 2007): Interventions will need to address the distinct forms of stereotype threats in order to effectively reduce their deleterious effects. To begin testing this hypothesis, in the present research, we explored the efficacy of two common stereotype threat interventions, ingroup role models and self-affirmation, in the context of group-as-target and self-as-target stereotype threats. Consistent with expectations, role model interventions were successful *only* at protecting against group-as-target stereotype threats, whereas self-affirmations were successful *only* at protecting against self-as-target stereotype threats. Through an appreciation of the distinct forms of stereotype threats and the ways in which interventions work to reduce these threats, it is hoped that this research facilitates a more complete understanding of stereotype threats, how to identify risk for stereotype threats, and how to develop the most effective interventions to reduce the pernicious effects of stereotype threats for all groups contending with negative stereotypes.

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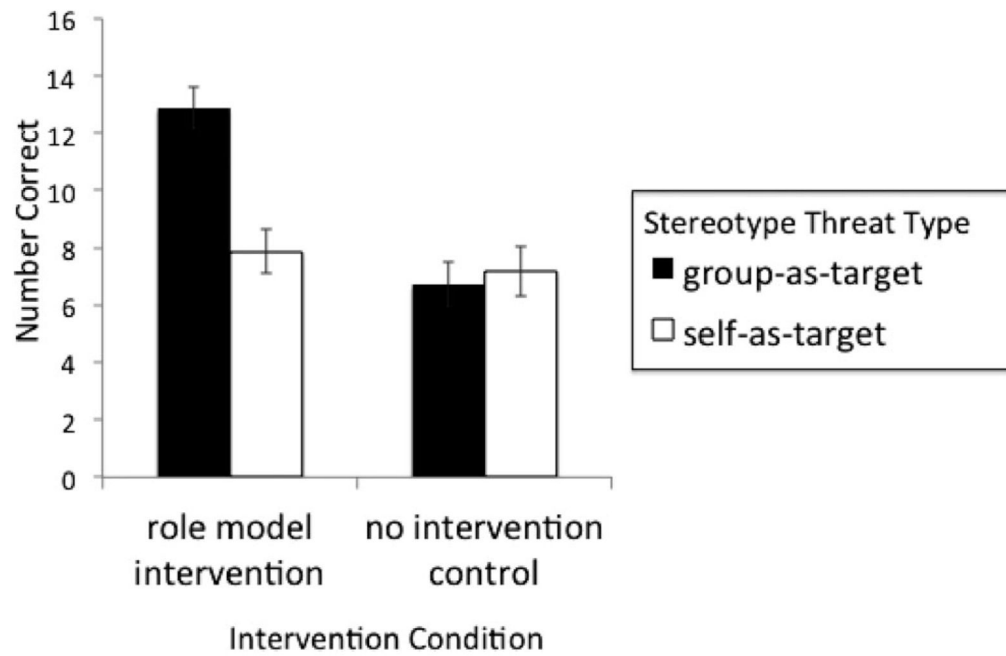


Figure 1. Black students' performance on a quantitative and verbal test similar to the Graduate Record Examination as a function of the type of stereotype threat and the role model intervention (Experiment 1).

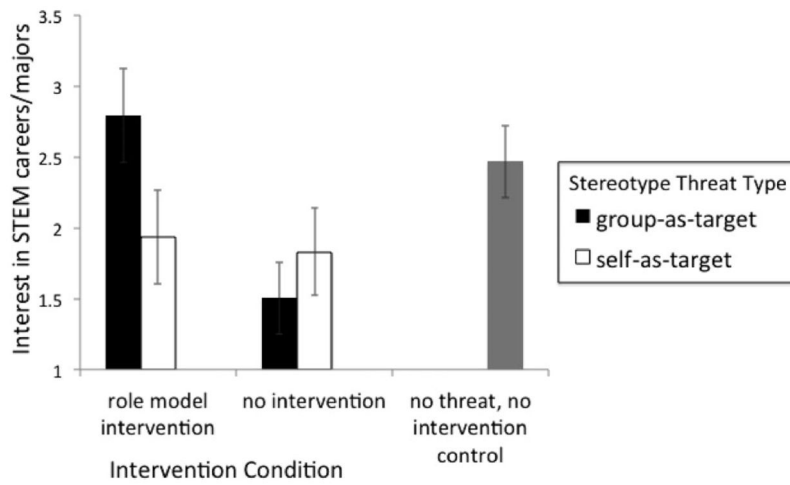


Figure 2. Women's interest in science, technology, engineering, and math (STEM) careers as a function of the type of stereotype threat and the role model intervention (Experiment 2).

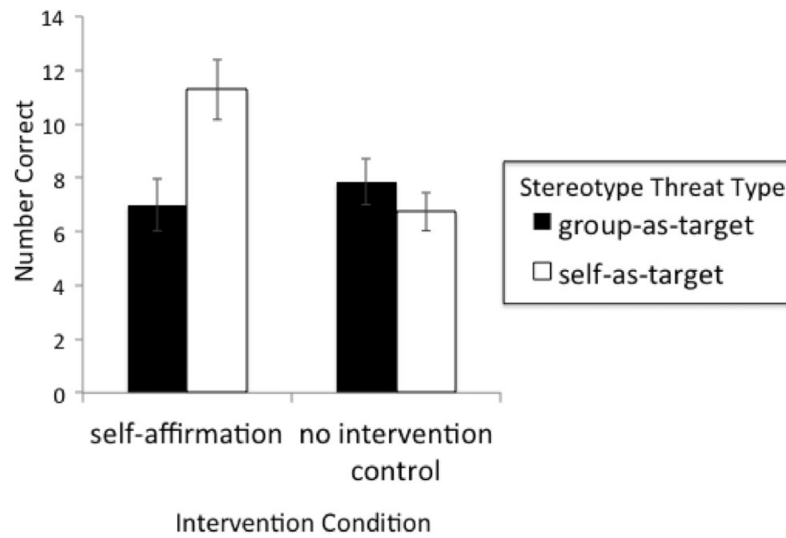


Figure 3. Black students' performance on a quantitative and verbal test similar to the Graduate Record Examination as a function of the type of stereotype threat and the self-affirmation intervention (Experiment 3).

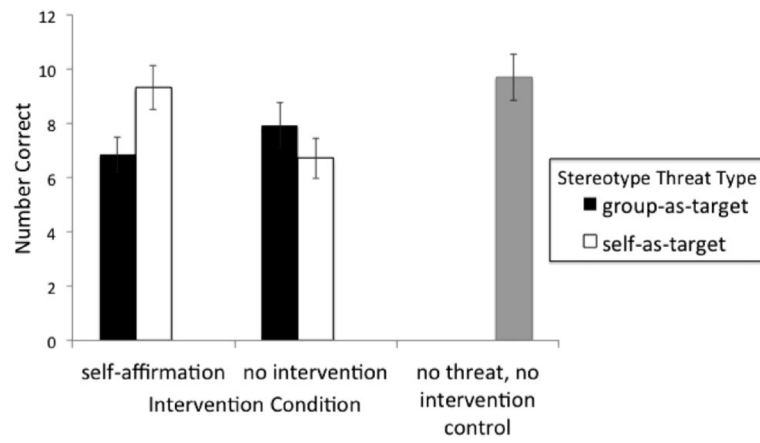


Figure 4. Performance on a quantitative test similar to the Graduate Record Examination by women majoring in science, technology, engineering, or math as a function of the type of stereotype threat and the self-affirmation intervention (Experiment 4).