



Published in final edited form as:

*Acad Med.* 2012 April ; 87(4): 506–512. doi:10.1097/ACM.0b013e318248f718.

## Does Stereotype Threat Affect Women in Academic Medicine?

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### Abstract

Multiple complex factors contribute to the slow pace of women's advancement into leadership positions in academic medicine. In this article, the authors propose that stereotype threat--under which individuals who are members of a group characterized by negative stereotypes in a particular domain perform below their actual abilities in that domain when group membership is emphasized--may play an important role in the underrepresentation of women in leadership positions in academic medicine. Research to objectively assess the impact of stereotype threat for women in academic medicine is feasible and necessary to confirm this hypothesis. Still, a number of conditions present in the academic medicine community today have been shown to trigger stereotype threat in other settings, and stereotype threat fits with existing research on gender in academic medicine. In the meantime, academic health centers should implement relatively simple measures supported by experimental evidence from other settings to reduce the risk of stereotype threat, including: (1) introducing the concept of stereotype threat to the academic medicine community; (2) engaging all stakeholders, male and female, to promote identity safety by enacting and making faculty aware of policies to monitor potential instances of discrimination, and training faculty to provide performance feedback that is free of gender bias; (3) counteracting the effects of

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*Other disclosures:* None.

*Ethical approval:* Not applicable.

*Disclaimer:* The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the United States government.

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sex segregation at academic health centers by increasing exposure to successful female leaders; (4) reducing gender stereotype priming by avoiding stereotypically male criteria for promotion, grants, and awards; and (5) building leadership efficacy among female physicians and scientists.

In a classic social psychology experiment, male and female undergraduates at a top university, all of whom saw themselves as strong math students, took a test made up of difficult questions from the math section of the Graduate Record Examinations. Half of these students were told that the questions showed gender differences; the other half were told that the questions showed no gender differences. Remarkably, female students performed worse than their male counterparts when the test was described as showing gender differences but performed equally well when the test was described as showing no gender differences.<sup>1</sup> This and related studies illustrate the phenomenon now known as *stereotype threat*, in which individuals who are members of a group characterized by negative stereotypes in a particular domain perform below their actual abilities in that domain when group membership is made salient.<sup>2-4</sup>

Over 300 experiments have now shown that stereotype threat leads to stress,<sup>5</sup> negative mood (i.e. anxiety, frustration, disappointment, and sadness),<sup>6,7</sup> increased monitoring of one's behavior, greater emotional regulation, a reduction in mental capacity, and a decrease in motivation--all of which impair performance.<sup>8,9</sup> In other words, under the threat of confirming a group stereotype, talented and competent individuals may become "deskilled" and perform below their abilities.<sup>3,4</sup> In addition, stereotype threat may decrease individual motivation and engagement in a particular domain. For example, in one experiment, women under stereotype threat had lower leadership aspirations than women who did not experience that threat.<sup>10</sup> Individuals may be conscious of stress and anxiety under these circumstances but often are not aware of its etiology, so are likely to attribute their anxiety to their own deficits rather than to the situation.<sup>11</sup>

A large achievement gap exists between men and women at the highest levels of leadership in academic medicine.<sup>12,13</sup> As recently as 2009, only 19% of full professors, 13% of department chairs, and 13% of deans were women.<sup>14</sup> In this article, we consider the contribution of stereotype threat to this achievement gap and suggest strategies for closing it.

## Stereotypes that Threaten Women's Performance

Gender stereotypes have both *descriptive* and *prescriptive* components. The *descriptive* component consists of beliefs about the inherent characteristics of men and women. Central to these beliefs is the idea that women are *communal* (i.e., nurturing, kind, sympathetic, sensitive, agreeable, warm, and caring) and that men are *agentic* (i.e., assertive, aggressive, ambitious, competitive, independent, and outspoken).<sup>15,16</sup> The *prescriptive* component consists of beliefs--which may be consciously endorsed or not--about the characteristics that men and women should and should not possess (i.e., women should be communal and should not be agentic).<sup>17</sup> Moreover, women who are perceived to violate these prescriptive gender stereotypes--by succeeding in a male-dominated field, for example--have been shown to elicit negative reactions, such as personal derogation and dislike, in their colleagues.<sup>18</sup>

These descriptive and prescriptive components leave women in academic medicine susceptible to stereotype threat in two ways. On the one hand, the assumption that women's communal nature makes them unfit for traditionally male (i.e., agentic) roles suggests that they are less able to lead than their male counterparts.<sup>15,16</sup> Indeed, qualitative studies describe female faculty members' attempts to counter stereotypical descriptive assumptions (i.e., that a mother cannot be sufficiently committed to a career and does not desire, or

cannot fulfill, leadership opportunities).<sup>19</sup> On the other hand, agentic female leaders in male-dominated fields who appear ambitious and competitive face violating prescriptive gender stereotypes and being viewed as unlikable and interpersonally hostile.<sup>17,19,20</sup> Women in academic medicine describe being disapproved of, if not openly rebuked, for behaviors commonly employed by and accepted in their male counterparts.<sup>19,20</sup> Women may go to great lengths to avoid violating prescriptive gender stereotypes (i.e., avoiding behavior that could be interpreted as bossy or immodest) and may thus spend precious mental resources on impression management to avoid the very real consequences of either confirming or violating female gender stereotypes<sup>19,20</sup> (see Figure 1).

## Stereotype Threat in Academic Medicine

No published studies have directly investigated stereotype threat among female medical school faculty. However, there is little reason to expect female faculty to be immune to environmental triggers both that have been demonstrated to induce stereotype threat in other settings and that prevail in academic medicine. Stereotype threat can occur in any environment and is exacerbated when: (1) an individual is faced with tasks that are inconsistent with the stereotypes of his or her group; (2) an individual's identity as a member of a devalued minority group is made obvious to him or her;<sup>4</sup> and/or (3) an individual's environment reinforces the stereotypes of his or her group.<sup>4,21</sup> Below we apply these three concepts to female faculty in academic medicine.

### Female gender stereotypes are inconsistent with leadership job requirements

Stereotype threat becomes an issue, and performance is impaired, when women are given tasks for which the criteria for success are framed in stereotypically male terms.<sup>22,23</sup> For example, in one study, women performed worse than men on a managerial task when their predecessor was described as a man with stereotypically male characteristics (i.e., with an aggressive style), but they performed equally well when their predecessor was described as a woman with stereotypically female characteristics (i.e., with a nurturing style).<sup>22</sup> There is considerable evidence that attributes for successful performance in academic medicine, particularly at the higher levels of leadership, are consistent with male gender stereotypes rather than with female gender stereotypes.<sup>15</sup> The mental model of a typical leader remains tenaciously male, especially in traditionally male-dominated fields, like academic medicine.<sup>15</sup> Studies of actual leadership effectiveness find little to no difference in the effectiveness of male versus female leaders,<sup>24,25</sup> but many experimental studies confirm the assumption that men are more competent than women with identical credentials in high authority positions.<sup>15,26,27</sup> Schein coined the term “think-manager-think-male” to describe this phenomenon.<sup>28</sup>

In a series of studies, the experimental manipulations used to trigger stereotype threat among women in leadership roles, which consisted of written and experiential reminders that few women are top leaders, mirror the experience of female faculty in academic medicine.<sup>29-31</sup> Women see few role models of female leaders in their work environments. The job requirements and criteria for promotion in academic medicine also reinforce the idea that success in the field requires stereotypically male qualities. For instance, a study found that tenure criteria from the 24 top-ranked medical schools included far more descriptors associated with stereotypically male behaviors than with female or neutral behaviors.<sup>32</sup> This same study found that schools with tenure criteria containing the word “leader” had fewer gains in the number of tenured women compared with schools whose tenure criteria did not contain the word “leader.”<sup>32</sup> It is possible that stereotype threat resulting from the negative performance expectations that the word “leader” evokes contributed to this difference by reducing female faculty members' motivation to enter a tenure track.<sup>32</sup> Similarly, a reduction in stereotype threat might have contributed to the marked increase in the number

of female scientists who applied for and received the National Institutes of Health Director's Pioneer Award after the emphasis on risk-taking, a stereotypically male attribute, was removed from the selection criteria.<sup>33,34</sup>

### Women's gender identity stems from their minority status

Stereotype threat is more likely to occur when an individual is the only one from his or her group ("solo") or is in a token minority (<15%) involved in an activity, because this status increases the salience of the group membership to himself or herself and to others.<sup>35-39</sup> Studies have found that women, but not men, expect to be negatively stereotyped<sup>40</sup> and have lower performance expectations<sup>41</sup> when they are relatively isolated from their same-gender peers. In one experiment, women randomly assigned to the solo condition performed more poorly on a difficult math test than those assigned to the non-solo condition, likely due to stereotype threat.<sup>36</sup> Women who occupy leadership roles in academic medicine are likely to find themselves in the minority, since women account for only 19% of full professors and 13% of deans in academic medicine.<sup>14</sup>

### The environment in academic medicine reinforces gender stereotypes

We contend that the environment in academic medicine reinforces gender stereotypes in three ways: (1) occupational sex segregation; (2) the persistence of overt sexism, discrimination, and sexual harassment; and (3) social penalties for women who violate prescriptive gender stereotypes.

**Occupational sex segregation**—Cejka and Eagly<sup>42</sup> demonstrated that the actual distribution of sexes in an occupation predicts beliefs about the gender attributes stereotypically required for success in that occupation. They found that in occupations with 75% or more women, raters believed that success required stereotypically female attributes, such as being gentle, nurturing, and kind, whereas in occupations with 75% or more men, raters believed that success required stereotypically male attributes, such as being competitive, dominant, and aggressive.<sup>42</sup> In clinical environments, which are integral to academic health centers (AHCs), most women to whom faculty are exposed are in predominantly female occupations (i.e. nursing, social work, allied health professions) in roles subordinate to predominantly male physicians. Within medical disciplines, women are more likely to be in primary care or non-procedure oriented specialties, such as endocrinology and rheumatology, rather than surgery, cardiology, or critical care, for example. The occupational sex segregation throughout academic medicine provides continuous reinforcement of descriptive male and female gender stereotypes and multiple opportunities for gender stereotype *priming*, in which gender stereotypes are "activated" in people's minds thereby increasing the likelihood that women or men will be perceived in terms of those stereotypes.<sup>43</sup>

**Overt sexism, discrimination, and harassment**—Sexism and discrimination, which are not uncommon in academic medicine,<sup>20,44,45</sup> can lead to stereotype threat.<sup>46</sup> In a series of experiments, female engineering students who interacted with male actors who were trained to behave in a sexist manner performed more poorly on an engineering test than women who interacted with men who did not behave in a sexist manner.<sup>46</sup> A subsequent experiment demonstrated that women who interacted with sexist men also expended cognitive resources suppressing concerns about being judged in terms of gender stereotypes.<sup>46</sup> These findings are consistent with those of another series of experiments in which female students' performance and feelings of social belonging decreased in the presence of a sexist male experimenter.<sup>47</sup>

**Penalties for women who violate prescriptive gender stereotypes**—Evidence suggests that female faculty members may suffer social reprisals for violating the prescriptive gender stereotypes that women should be deferential and not challenge authority. In one qualitative study of five medical schools, female faculty members reported “feeling as if they were treated like teenagers...or singled out as ‘disruptive to the department when they spoke up.’”<sup>48</sup> In another study, female residents felt pressured to avoid a “bossy” or “aggressive” tone when directing patient care. In the words of one senior male resident: “I’ve seen men able to say things in just terrible tones, but its just accepted. Whereas if a woman tried that...”<sup>49</sup> Apprehension of the negative consequences of transgressing prescriptive gender stereotypes can lead to self-silencing, in which female faculty “play it safe” and avoid speaking up in departmental meetings and other forums.<sup>19</sup> According to one female faculty member: “Until you got way, way, way, way at the top, much higher than a man would need to get, you were wise to just keep your nose clean.”

## How to Eliminate Stereotype Threat at AHCs

Many studies have identified interventions that reduce or eliminate stereotype threat.<sup>4</sup> Yet, researchers have conducted many of these studies in laboratory settings with undergraduate students; although some were conducted with business students and women in the workplace. If we are committed to ensuring that all faculty have an equal opportunity to contribute to the future of academic medicine, then we must conduct studies to identify interventions that eliminate stereotype threat in academic medicine environments. In advance of such research, we suggest that leaders at AHCs employ relatively small, concrete interventions based on existing evidence to insulate female faculty members from the negative effects of stereotype threat (see Table 1). In presenting these interventions, we note that the causes of stereotype threat are complex and are not easily reduced to a single culprit, such as men in leadership positions. Instead, we concur with social psychologist Claude Steeles image of stereotype threat as a “threat in the air” that both “can affect the members of any group about whom a negative stereotype exists” and can be reduced through changes to the environment.<sup>10, 50, 51</sup> Such changes to the environment, we believe, might well involve all members of an AHC, from the highest levels of leadership to the administrative staff, all of whom have the potential to behave in ways that promote or undermine *identity safety*, in which individuals believe that they will be not be judged in terms of the negative stereotypes associated with their social identities.<sup>4,5</sup> The following are strategies to reduce stereotype threat for female faculty members at AHCs.

### Introduce the concept of stereotype threat to the academic medicine community

One of the most effective interventions to reduce stereotype threat is to tell members of the target group about its existence, thus providing external attribution for task anxiety. For example, Johns and colleagues found that telling female students that stereotypes about gender and math ability might cause anxiety that has nothing to do with ones actual ability eliminated the under-performance of the female students, compared to the male students, that was seen in the control group (who were not given such instructions).<sup>11</sup> In another study, women, who were both told explicitly about the effects of gender stereotypes on negotiation skills and advised to work against those negative stereotypes, performed as well as men and better than controls in a negotiation task.<sup>52</sup> Other interventions that provide clear external attribution for anxiety about difficult academic tasks also reduced the impact of stereotype threat on female students math scores.<sup>53</sup> Taken together, research supports the benefit of educating female faculty in academic medicine about stereotype threat. To accelerate the process of reducing stereotype threat in academic medicine, however, we believe it is advisable to educate both male and female faculty about stereotype threat. In addition, providing structured opportunities for female faculty members to share experiences

can reinforce the message that difficulties faced by women in academic medicine are related to the features in the environment that may be triggering stereotype threat and not due to a lack of competence.

### **Engage all stakeholders, male and female, to promote identity safety**

The likelihood that stereotype threat will occur is reduced in the presence of contextual cues that signal an identity-safe environment (i.e., high female representation, valuing of diversity) but is increased by cues indicating identity threat (i.e., low female representation, indications of sexism).<sup>46,50</sup> Continued attention to reducing overt gender discrimination and sexual harassment is fundamental to creating identity-safe environments with clear policies of what conduct is acceptable and how to report violations.<sup>45,54</sup> For instance, in one study, providing information about the existence of auditing practices that guard against discrimination increased trust and reduced identity threat, even in settings with cues that signaled stereotype threat.<sup>50</sup>

Specific messages about the ability of men and women to be effective leaders can also promote an identity safe environment. In one experiment, women were first exposed to either a neutral advertisement or to a sexist advertisement (that had been previously shown to elicit stereotype threat) and were then asked to indicate whether they preferred a female or a male leader. Half of the women in the “sexist advertisement” condition were also given a statement to read that men and women performed equally well as leaders (the “identity safe” group), while the other half in the same condition were not given this information (the “identity vulnerable” group). Strikingly, the identity vulnerable group, but not the identity safe group, exposed to the sexist advertisement had diminished leadership aspirations compared to the women who were exposed to the neutral advertisement.<sup>10</sup> Likewise, workgroups of medical students who, before selecting a leader, were given an identity safe message that encouraged individuals without leadership experience to volunteer (stating that “this is a safe environment” and that it did not matter “whether you’re male or female”), were significantly more likely to choose female leaders than groups that were not given this message.<sup>55</sup>

It is also important that those in charge of evaluating the performance of female faculty members receive specific training in how to provide feedback that is free of gender bias and that does not evoke negative stereotypes. Until these changes become a regular part of performance evaluation systems, it may be necessary to monitor such feedback to reinforce the training. Evidence from two experiments suggests that performance feedback is least likely to activate stereotype threat when it communicates high performance standards with assurance that the individual is capable of meeting those standards.<sup>56</sup> This finding is consistent with the recommendation from the Association of American Medical Colleges Increasing Womens Leadership Project Implementation Committee that medical schools “target womens professional development needs within the context of helping all faculty maximize their faculty appointments, including helping men become more effective mentors of women.”<sup>12</sup> Thus, departments should consider offering specific training for faculty in how to provide feedback that is free of gender bias and that does not evoke negative stereotypes.

### **Counteract the effects of occupational sex segregation at AHCs**

The assumption that specific jobs require stereotypically male or female traits dissipates when the minority gender constitutes more than 25% of the profession.<sup>39,42</sup> Increasing the total number of female faculty members and the number of female faculty in top leadership positions should be a key part of any long-term strategy to improve the environment for women in academic medicine. Although women now exceed 25% of junior faculty

nationally,<sup>57</sup> their marked underrepresentation as chairs and deans continues both to reinforce the assumption that male traits are required for success in these roles and to strengthen the role that gender plays. No change will occur if women remain associate deans and assistants to the top leadership, particularly if these positions hold little authority at the institution or prevent women from building academic careers.<sup>39</sup> When women are only seen in roles subordinate to male leaders, it may actually reinforce rather than dispel gender stereotypes. Bakken and colleagues, for instance, found that their earlier findings<sup>57</sup> of a gender gap in research self-efficacy among female faculty members was not present when the women were faculty, rather than staff in subordinate positions.<sup>58</sup>

To increase the successful recruitment of women to top leadership positions, AHCs should implement hiring practices that have been shown to reduce inadvertent gender bias.<sup>59</sup> For example, researchers at one institution found that workshops for members of search committees that discussed the impact of gender stereotypes on decision-making were associated with an increase in the number of female faculty who were recruited.<sup>60</sup>

### **Reduce gender stereotype priming**

In the absence of gender parity among faculty leaders, devising alternative ways to increase the presence of successful female role models is necessary.<sup>61</sup> In two studies, simply reading about successful women in male-dominated fields eliminated the effect of stereotype threat on women's performance on a math test.<sup>51,62</sup> Likewise, female students who were exposed to images of female scientists performed better on a science test than those who were exposed to images of male scientists.<sup>63</sup> Similarly, exposure to negative stereotypes about women in math negatively affected female college students' math performance, whereas exposure to a positive, self-relevant stereotype (that college students are good at math) improved their performance.<sup>64</sup> In practical terms, leaders at AHCs should create forums to increase exposure to successful internal or external female role models. Institutions might also be well served by both examining the descriptors in competitions for grants, awards, and promotion, and replacing stereotypically male words, such as “distinguished senior scientist” and “risk-taker,” with more descriptive, gender neutral words (i.e., “developed a new line of research,” “published in peer-reviewed journals”).<sup>34</sup> Similarly, replacing “chairman” with “chair” or “head” might reduce the effects of gender stereotypes that favor male applicants.<sup>65,66</sup> The strategic placement of images of female leaders alongside the pictures of previous male leaders that line the walls of many academic buildings should be considered as well.

### **Build leadership efficacy among female physicians and scientists**

Positive performance in any domain builds self-efficacy,<sup>67</sup> which has been shown to consistently predict whether an individual will engage in a new task. Hoyt and colleagues have found that women with high leadership efficacy are less vulnerable to the negative effects of stereotype threat on performance than women with low leadership efficacy.<sup>29-31</sup> Leaders in academic medicine should offer opportunities for women to develop leadership efficacy and leadership skills throughout their careers.

## **In Conclusion**

In this article, we have argued that the current environment in academic medicine is conducive to stereotype threat for female faculty and may impede their advancement to leadership positions. Although no studies have directly documented the prevalence, antecedents, consequences, or means to eliminate stereotype threat to female faculty members in academic medicine specifically, we contend that now is the right time for a research agenda that compares faculty performance in the comprehensive set of domains

that advancement to senior leadership roles demands, under conditions that promote awareness of stereotype threat and counters its effects. These domains include the clinical, research, and administrative functions of successful leaders at AHCs. Gathering empirical evidence regarding the role of stereotype threat is feasible and necessary both to better understand its influence on working conditions for women in academic medicine and to develop interventions to minimize its effects.

## Acknowledgments

*Funding/support:* Dr. Carnes is funded in part by grants from the National Institutes of Health (R01 GM088477 and DP4 GM096822).

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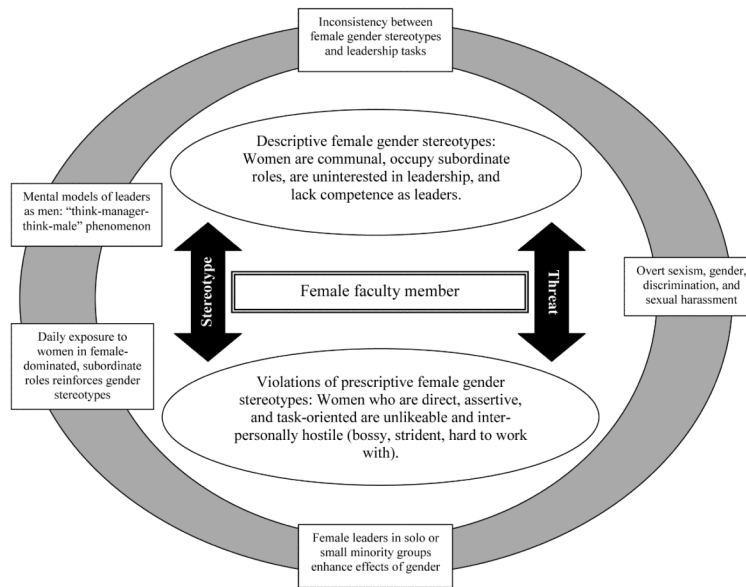
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**Figure 1.** How the academic medicine environment promotes stereotype threat for female faculty members

**Table 1**

### Concrete Strategies From the Literature to Reduce The Effects of Stereotype Threat For Female Faculty Members at Academic Health Centers

Strategy	Evidence
Introduce the concept of stereotype threat to the academic medicine community	
<ul style="list-style-type: none"> <li>Teach faculty members about stereotype threat and the impact of gender stereotypes on performance.</li> <li>Provide structured opportunities for female faculty members to share their experiences with each another.</li> </ul>	<ul style="list-style-type: none"> <li>Teaching women about stereotype threat and about the effects of gender stereotypes on stereotypically male tasks improved performance.<sup>11</sup></li> <li>Providing external attributions for task anxiety reduced stereotype threat.<sup>53</sup></li> </ul>
Engage all stakeholders, male and female, to promote identity safety	
<ul style="list-style-type: none"> <li>Take actions to reduce sexism, gender discrimination, and sexual harassment</li> <li>Promote the message that diversity is valued.</li> <li>Enact and make faculty aware of policies to monitor potential instances of discrimination.</li> <li>Train faculty to provide performance feedback that is free of gender bias and does not evoke negative stereotypes or sexism.</li> </ul>	<ul style="list-style-type: none"> <li>The effects of stereotype threat were greater and women performed worse in the presence of sexism and negative gender stereotypes.<sup>46</sup></li> <li>The effects of stereotype threat were reduced in the presence of cues indicating an identity safe environment,<sup>51, 61-63</sup> including information about the existence of auditing practices to monitor discrimination.<sup>50</sup></li> <li>Performance feedback was least likely to cause stereotype threat when it communicated high standards with assurance that the individual was capable of meeting those standards.<sup>56</sup></li> </ul>
Counteract the effects of occupational sex segregation at academic health centers	
<ul style="list-style-type: none"> <li>Recruit and retain female faculty members</li> <li>Increase the number of highly-qualified female faculty members in top leadership positions with authority (i.e. not only in subordinate roles, such as associate or assistant deans).</li> <li>Increase exposure to successful female leaders (i.e., by inviting such individuals to be outside speakers).</li> </ul>	<ul style="list-style-type: none"> <li>The effects of stereotype threat were greater and women performed worse when they were the only ones from their group (solo) or in a token minority participating in an activity.<sup>35, 38, 41</sup></li> <li>The effects of stereotype threat were reduced when women held faculty leadership positions that were not seen as subordinate to their male colleagues.<sup>57,58</sup></li> <li>Search committees that discussed the effects of gender stereotypes on decision-making recruited more female faculty members.<sup>60</sup></li> </ul>
Reduce gender stereotype priming	
<ul style="list-style-type: none"> <li>Avoid framing criteria for promotion, grants, and awards in terms of stereotypically male qualities (such as</li> </ul>	<ul style="list-style-type: none"> <li>The effects of stereotype threat were reduced and women performed better in the presence of same-race or same-gender role models (i.e., a woman with high competence in a stereotypically male role).<sup>61</sup></li> <li>Reading about successful women in male-dominated fields eliminated the effects of stereotype threat on women's performance on math tests.<sup>51,62,64</sup></li> <li>Female students exposed to images of female scientists performed better on a science test than those exposed to images of male scientists.<sup>63</sup></li> <li>The intentional selection of potential female role models as faculty in a research training program eliminated gender differences in self-efficacy found when all faculty speakers were men.<sup>57,58</sup></li> </ul>

Strategy	Evidence
risktaking or strength). Instead use gender-neutral language.	<ul style="list-style-type: none"> <li>The effects of stereotype threat were greater and women performed worse when tasks were described in terms that were consistent with male gender stereotypes.<sup>22-23</sup></li> </ul>
Build leadership efficacy among female physicians and scientists	
<ul style="list-style-type: none"> <li>Encourage leadership opportunities for female students because successful task performance builds self-efficacy.</li> </ul>	<ul style="list-style-type: none"> <li>Women with high leadership efficacy were less vulnerable to the negative effects of stereotype threat on performance than women with low leadership efficacy.<sup>29-31</sup></li> <li>Female medical students were more likely to volunteer to be workgroup leaders if they were encouraged to do so by an identity safe message than those who did not receive such encouragement.<sup>55</sup></li> </ul>