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Female leaders: Injurious or inspiring role models for women?

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Abstract

The impact of female role models on women's leadership aspirations and self-perceptions after a leadership task were assessed across two laboratory studies. These studies tested the prediction that upward social comparisons to high-level female leaders will have a relatively detrimental impact on women's self-perceptions and leadership aspirations compared to male and less elite female leaders. In Study 1 (N = 60), women were presented with both female and male leaders before serving as leaders of ostensible three-person groups in an immersive virtual environment. This study established the relatively deflating impact of high-level female leaders, compared to high-level male leaders and the control condition, on participants' self-perceptions. Using a similar methodology, Study 2 (N = 57) further demonstrated that the impact of elite female leaders on participants' self-perceptions in turn adversely affects their leadership aspirations. This study also showed more positive responses to non-elite female leaders with whom participants more strongly identify and who increase counter-stereotypic thinking. Taken together, these studies point to a potential dark side of elite female leaders as role models in a domain where individuals are possible targets of a negative stereotype. However, they also point to the relatively more beneficial impact of female role models who disconfirm the negative stereotype.

Keywords: Role models, Leadership, Stereotyped attitudes, Stereotype threat, Social comparison, Social groups, Sex role attitudes, Gender

Female leaders: Injurious or inspiring role models for women?

Top-level leaders have far-reaching influence that ultimately transforms the world around us. However, a number of voices are underrepresented amongst the powerful elite, including those of women. Their under-representation stems in part from negative stereotypes and discrimination against women in the leadership domain (Eagly & Carli, 2007). One approach to counteracting these negative stereotypes is through exposure to counterstereotypic role models, such as female leaders (Dasgupta & Asgari, 2004; Rios, Stewart, & Winter, 2010). However, research has shown in a variety of domains that exposure to extremely successful role models has the potential to have self-deflating effects when their level of success seems unattainable (Buunk, Collins, Taylor, VanYperen & Dakof, 1990; Major, Testa & Bylsma, 1991; Lockwood & Kunda, 1997).

Across two studies, our research investigates the impact of female leaders as role models by examining their impact on women's self-perceptions during a leadership task as well as their leadership aspirations. Specifically, we tested predictions that high-level leaders will have a less positive impact on women's own leadership perceptions and aspirations when the role models are elite female leaders compared to when they are male leaders or mid-level female leaders. Based on previous research suggesting that women might view these high-level female leaders' success as unattainable and thus discount them as exceptions to the norm, we predicted that less-elite female leaders will have a more beneficial effect in part because women can identify with them more than with elite female leaders, and also because they are not seen as exceptions to women in general, they serve to disconfirm the gender-leader stereotype.

Women and Leadership

Women belong to a social group that historically and currently occupies a non-dominant

position in society relative to men. As members of a low status group in society, women face stereotypes and discriminatory exclusion from power; in short, women are stigmatized (Major & O'Brien, 2005). The negativity women encounter from others makes reaching influential leadership positions in the public sphere difficult for them. Although women are making considerable strides in attaining top leadership roles, the sex disparity in elite leadership positions illuminates the numerous barriers, "the leadership labyrinth," through which women must pass (Eagly, 2007; Eagly & Carli, 2007; Hoyt, 2010a, 2010b; Hoyt & Chemers, 2008). The leadership labyrinth (Eagly & Carli, 2007) refers to the unsanctioned barriers preventing women from securing top leadership roles. Replacing the image of the glass ceiling, the labyrinth metaphor conveys the impression that the journey is riddled with challenges throughout (not just at one single indiscernible barrier), but that it ultimately has the potential for successful navigation.

Although empirical work indicates there are a few gender differences in leadership style and effectiveness, these differences do not disadvantage women and, if anything, may offer a slight advantage (Hoyt, 2010a, 2010b). For example, women's leadership tends to be somewhat more transformational than men's – an effect that is driven primarily by women engaging more in the supportive and mentoring aspects of this style – and transformational leadership is associated with contemporary notions of effective leadership (Eagly, Johannesen-Schmidt, & van Engen, 2003; van Engen & Willemsen, 2004). On the other hand, the perception that leadership roles are agentic and masculine remains pervasive. This perception results in prejudice against female leaders that in turn contributes to the underrepresentation of women among the powerful elite (Eagly & Carli, 2007; Eagly & Karau, 2002; Hoyt & Blascovich, 2007). Ample empirical evidence underscores prejudice and discrimination against female leaders from perceptions of

women as less able to fulfill leadership duties to worse evaluations of women than men for identical leadership performances (Eagly & Carli, 2007; Phelan, Moss-Racusin, & Rudman, 2008).

Gender stereotypes both describe stereotypic beliefs about the attributes of women and men as well as prescribe how men and women should, or ought to, be (Burgess & Borgida, 1999). Although women and men are viewed as differing on other traits (Deaux & Lewis, 1984; Eckes, 1994), agentic and communal stereotypical attributes directly relate to the leadership domain. According to role congruity theory, prejudice against female leaders results from the incongruity between the *take charge*, or agentic, stereotype linked with leadership and the *take care*, or communal, stereotype associated with women (Eagly & Karau, 2002). That is, the stereotypical image of a leader is someone who has agentic, masculine traits. Thus prejudice against female leaders stems from the perceived lack of fit between the agentic traits that are stereotypical of leaders and the communal traits that are stereotypical of women. This perceived incongruity also affects women's emergence as leaders in group situations. For instance, research by Ritter and Yoder (2004) has demonstrated that even when a woman was more agentic than a male partner, the man was still more likely to emerge as the leader in masculine-typed tasks.

Female leaders or women who aspire to leadership roles not only are targets of negative stereotypes, prejudice, and discrimination, but also are aware of the devaluation of their social group – which can then impact their thoughts, feelings, and behaviors (Hoyt & Blascovich, 2007, 2010). For example, Davies, Spencer, and Steele (2005) found that women who were exposed to gender-stereotypic commercials were less likely to aspire to a leadership position than those women not exposed to the gender stereotype. Fortunately, researchers have started to identify approaches to undermine the negative effect of gender stereotypes on leadership aspirations. For

example, Davies et al. (2005) found that aspirations for a leadership role could be restored by assuring women that their gender is not a barrier to success on the task – in their study, by simply telling participants there were no gender differences on the task.

Alternatively, Dasgupta and Greenwald (2001) suggested that another approach to thwarting the deleterious effect of the gender-leader stereotype on women is to de-activate women's automatic gender stereotyping. To that end, role models can be an effective tool in decreasing automatic stereotyping. Across both a laboratory study and a field study, Dasgupta and Asgari (2004) found that exposure to counter-stereotypic female leaders undermined women's automatic, nonconscious, stereotypical associations between gender and leadership – though their explicit, self-reported beliefs about gender were not altered. Although exposure to these extremely successful role models decreased automatic gender stereotyping, this same exposure might come with a cost to self-perceptions. That is, there may be a hidden dark side to these high-level counter-stereotypical role models. People may have a difficult time identifying with these extremely successful individuals whose success may seem unattainable. Indeed, these elite role models may serve to explicitly activate, but not disconfirm, the gender-leader stereotype. Thus, social comparison processes with these role models may result in a demoralizing, as opposed to inspiring, effect.

Female Leaders as Role Models and Social Comparison Processes

There is an assumption that role models positively impact people's aspirations and self-perceptions through social comparison processes, a process which is deemed particularly important for disadvantaged individuals and those underrepresented in various professions. Indeed, there is a strong push to provide young women with successful role models in mathematics, the sciences, and leadership. Moreover, recent research suggests that women are

more inspired by female, as opposed to male, career role models who demonstrate that women can overcome gender barriers to achieve career success (Lockwood, 2006). Although the social psychological literature is replete with research on social comparison processes, the majority of this literature is focused on examining with whom people choose to compare themselves across contexts (e.g., similar others; Festinger, 1954; Goethals & Darley, 1977; Wood, 1989). Although the research on the impact of upward social comparisons on one's self-perceptions is fairly limited, motivation and self-evaluations of competence are certainly influenced by social comparisons (Suls, Martin, & Wheeler, 2002).

Upward social comparisons can be self-enhancing, particularly when these comparisons focus on similarities with the superior other (Collins, 1996, 2000). According to Wood (1989), people have a self-improvement motive to engage in social comparisons. That is, people are motivated to compare themselves to superior role models in order to gain inspiration and hope. Lockwood and Kunda (1997) have shown experimentally that "superstar" role models (i.e., people who have attained outstanding success) can indeed be inspiring. For example, they demonstrated that aspiring accountants and teachers were inspired by superstars in the field and first-year students were inspired by exceptional graduating students.

However, comparisons to superior role models can also have negative effects on self-perceptions (Lockwood & Kunda, 1999). Indeed, the early social comparison literature assumed that upward social comparisons would invariably result in negative feelings about one's self (Buunk et al., 1990). For example, job applicants who were briefly exposed to another ostensible applicant with highly desirable qualities, such as appearing well-groomed and self-confident ("Mr. Clean"), showed decreases in their level of self-esteem (Morse & Gergen, 1970). Using a minimal group paradigm based on a bogus personality trait, Major, Sciacchitano, and Crocker

(1993) found that comparisons to superior others resulted in lowered self-esteem and ability attributions and higher depressed affect only when the comparison other was an ingroup, as opposed to outgroup, member. In reviewing the literature on social comparison processes, Major and colleagues (1991) proposed that superior others have positive effects on individuals when their own future performance is controllable (and thus success is attainable); however, these superior others have negative effects when individuals view future success for themselves as unattainable. Attempting to empirically verify the important role of attainability, Lockwood and Kunda (1997) examined the impact of superstar role models on people's self-perceptions by focusing on both relevance of the role model and their attainability of success. They found that relevant superstars have an inspiring impact on people when their success is seen as attainable, such as the effect of an exceptional graduate on first-year students discussed above. However, these superstars were shown to have somewhat of a self-deflation effect on fourth-year students who, by virtue of their advanced career stage, viewed the superstar's success as unattainable.

This research suggests that identifying with role models and perceiving that their level of success is attainable may be particularly important for individuals who are performing in a negatively stereotyped domain. Indeed, a simple comparison to similar and successful others can result in heightened performance on stereotype-relevant tasks. Investigating the gender-math stereotype, Marx, Stapel, and Muller (2005) found that women who compared themselves with a successful female math student performed better on a subsequent math test than those who compared themselves with an unsuccessful female math student. However, to the extent to which the role model's success is perceived as unattainable, the individual may not identify with the role model and exposure to the role model may result in self-deflating outcomes. Thus, exposure to successful counter-stereotypical role models has the potential to lead to positive responses

from women in the negatively stereotyped leadership domain when they are exposed to role models whose success appears attainable, with whom they can identify, and who disconfirm the gender stereotype. When women do not, however, perceive the success of female leaders as attainable – such as might be the case with top-level leaders – the impact might not be so positive. These leaders may fail to challenge the gender-leader stereotype and be subtyped as an exception to the norm. As Dasgupta and Asgari (2004) note, individuals are likely to discount elite female leaders as belonging to a nonrepresentative group before reporting their beliefs about women, unless they perceive the leaders' successes as attainable for themselves and most other women.

The Current Research

As reviewed above, previous research has demonstrated that role models can be both inspiring and injurious to others depending on a variety of factors, including whether the models are ingroup members, the perceived attainability of their success, and the extent to which they successfully disconfirm negative stereotypes. Across two experiments, the present research examines the impact of leadership role models on women's self-perceptions during a leadership task and on their future leadership aspirations. Study 1 tests the hypothesis that high-level female leaders, compared to high-level male leaders, will have a relatively deflating impact on women's self-perceptions during a leadership task (specifically on feelings of inferiority, perceived task performance, and perceived task difficulty). In Study 2, we extend our outcome measures to test the prediction that exposure to high-level female leaders will also have a relatively deflating impact on women's leadership aspirations and that this effect will be driven by their self-perceptions, specifically, feelings of inferiority. Furthermore, in Study 2, we test the hypotheses (a) that participants will identify more with mid-level (as compared to high-level) female leaders

and (b) that these mid-level leaders will activate counter-stereotypic thinking and have a more positive impact on the participants than the high-level female role models.

Study 1

In Study 1, female participants were presented with high-level (HL) female leaders, high-level (HL) male leaders, or combined HL female and HL male leaders before being assigned to the leadership position in a brief laboratory leadership task. This experiment tested the potential self-deflating impact of HL female role models, as compared to HL male role models, on female participants. This study examines three self-perception variables associated with performance on a leadership task: perceived performance, perceived task difficulty, and feelings of inferiority.

Method

Participants and design. Undergraduate women ($N = 60$) at a small U.S. East Coast liberal arts university were given \$10 for participation. Participants were 95% White, 2% African-American, and 3% Asian American, with a median age of 20 (range: 19-21; $SD = .74$). The experiment employed a four-group between-subjects design in which participants were randomly assigned to one of three role model conditions (HL female leaders, HL male leaders, Combined HL female and male leaders) or a control condition (pictures of flowers) with 15 participants per cell. After completing a leadership task participants completed measures indicating how well they believed they performed the task, how difficult they perceived the task to be, and their feelings of inferiority. Given the design of the study, its sample size, and an alpha level of .05, we have adequate statistical power, at the recommended .80 level, to detect large effect sizes (Faul, Erdfelder, Lang, & Buchner, 2007).

Procedure. Participants were told that they were taking part in an experiment looking at the leader's influence on group productivity. Although participants were run individually, they

were told that they were randomly assigned to the role of leader in the “group” and were brought into one of the laboratory rooms, assuming that two other participants would occupy two other experimental rooms. Participants were also told that, because they were assigned to the leader role, they were asked to arrive 10 minutes before the two other group members in order to complete additional questionnaires and that the group interactions would occur within an immersive virtual conference room.

After participants completed the consent form, the experimenter started a PowerPoint presentation that first informed the participants that the experiment was examining the role of memory and general knowledge in the leadership process. They then began the “memory” portion of the study with the presentation of descriptions and pictures of the leaders or flowers, and they were told to pay close attention to all of the information.

Leader manipulation. Participants were presented with one of three sets of 16 leaders (or flowers for those in the control condition). For the *High-Level Female Leaders*, we used Dasgupta and Asgari’s (2004) pictures and paragraph-long descriptions of women in leadership positions, including leaders such as Connie Chung (newscaster) and Supreme Court Justice Ruth Bader Ginsberg. Two leader comparison groups were used. In order to create *High-Level Male Leaders* stimuli, we followed the same procedures that Dasgupta and Asgari used in creating the female stimuli. Specifically, taking care to maintain similar racial, ethnic, and age diversity as well as represent the same occupational domains (e.g., science, business, politics) as we did with the female leaders, we selected 16 men who held high profile leadership positions, such as Bryant Gumbel (newscaster) and Alan Greenspan (government economist), and gathered their images from the internet. Next, we wrote descriptions of their accomplishments and converted pictures of them into gray scale and a standard size (Dasgupta & Asgari, 2004; see Appendix A

for sample leader descriptions). In the combined *HL Male and Female Leaders* condition, we used half the pictures and descriptions from each of the single-sex conditions (the leaders were selected to maintain the racial/ethnic and occupational diversity within the single-sex conditions). Finally in our control condition, we presented participants with images and paragraph-long descriptions of neutral content that is not related to leadership. We adopted the control stimuli (pictures and descriptions of flowers) used by Dasgupta and Asgari. To keep with the “memory” pretext, participants responded to a brief memory quiz after presentation of the stimuli.

Leadership task. Next, each participant listened to audio-recorded instructions about the group task that informed her that she would assume the fictitious leadership role of corporate “President of the Human Resources Department” whose charge was to chair a selection committee to hire a new junior associate (Hoyt, Aguilar, Kaiser, Blascovich, & Lee, 2007; Hoyt & Blascovich, 2007, 2010). As president, she would ostensibly be assisted by two Vice-Chairs in this task: two other supposed “participants” who would complete the hiring task after she met with them to explain the task and influence them to do an effective job. In actuality, there were no followers and thus the hiring task was never completed. The leader was given a memo (from the CEO of “James Frick Incorporated” explaining the need for the new associate) and two applicant packets containing personal statements, resumes, and letters of recommendation. The leader was further told that the two Vice-Chairs would be given the same information after she met with them. The leader’s job was to explain the hiring task to the followers, advise the followers on how they should go about accomplishing the task, and, generally, influence and motivate the followers to make the best hiring decision possible. Each participant was allowed five minutes to look over the materials and to prepare for a three-minute meeting with the Vice-

Chairs. The meeting took place within an immersive virtual environment which allowed for only one-way communication from the leader to the ostensible followers. This task was fashioned after the increasingly common virtual workplace.

We conducted this experiment in a laboratory that contained three rooms in which three people, each ostensibly located in a separate room, could interact together within a single virtual conference room. The immersive virtual conference room was created digitally (Blascovich et al., 2002). Our immersive virtual environment system (IVET) system consisted of three subsystems: (a) a body location and head tracker, (b) a graphics rendering computer, and (c) an audiovisual stereoscopic head-mounted display (HMD). Translation and orientation information regarding the user's body and head are sensed and recorded by trackers, which inform the rendering computer, which then generates and projects visual and auditory stimuli to the helmet-like HMD worn by the user. Immersive virtual environment technology is increasingly being used in basic psychological research primarily because of the number of methodological advantages it offers. For example, this technology provides superb control over the research confederates' (followers') behaviors and demographic characteristics (such as sex and ethnicity) and decreases the need for live research confederates thereby increasing control and efficiency in conducting experiments (see Blascovich et al., 2002 for a detailed description). This research tool facilitates a compelling and impactful manipulation, in place of other more common simulation techniques such as vignettes, role-playing, or research confederates.

The virtual conference room in this research consisted of three people (representations of the participant and the other group members) sitting around a conference table. Participants were led to believe that the "other participants" were in the two other rooms in the laboratory and that the three of them were networked together into one virtual conference. The two ostensible group

members, Michelle and Chris, were both portrayed as White, college-aged students and were programmed to generate realistic but random nonverbal body movements, including head movements, eye blinks, and small facial expressions. Participants were shown a picture of how they would be represented in the virtual world. Throughout the experiment, the experimenter checked on the “other group members” by audibly opening and shutting the laboratory doors in order to reduce participant suspicion and potential demand characteristics.

In a three-minute meeting, participants prepared their followers to undergo the hiring task by explaining the assignment and advising the followers about how they should go about accomplishing it. After this leadership task, participants completed the final questionnaires. During the post-experimental debriefing period, the experimenter probed for suspicion by asking participants what they thought the experiment was about and if they believed they were interacting with other participants during the task. Responses to this probing revealed that participants believed the experiment’s pretext. In addition to the confirmation during debriefing that participants believed they served as a leader of a three-person group, this task has been successfully used in previous research as a leadership task, activating leadership-based stereotype processes (Hoyt et al., 2007; Hoyt & Blascovich, 2007, 2010). Finally, participants were paid, debriefed, and thanked for their participation.

Measures. Participants responded to each of our three dependent measures on a 7-point Likert-type scale ranging from -3 (*strongly disagree*) to 0 (*neither agree nor disagree*) to 3 (*strongly agree*) and measures were computed by averaging item responses. They assessed their performance on the task by rating themselves on the following two items: “I performed well on the leadership task I just completed” and “I am content with how well I did the leadership task” ($r(58) = .73, p < .001$). They rated the difficulty of the task by responding to the following six

items: “This task was difficult,” “I felt a lot of pressure during this task,” “This task was hard,” “I felt I was under a lot of pressure during this task,” “The task was very demanding,” and “I was anxious about completing this task” ($\alpha = .95$). Finally, feelings of inferiority were assessed with 14 items adapted from depressed affect (the Multiple Affect Adjective Checklist [MAACL],; Lubin, Zuckerman, & Woodward, 1985) and self-esteem scales (e.g., the Heatherton and Polivy (1991) State Self-Esteem Scale). Sample items include: “I feel displeased with myself,” “On the whole, I am satisfied with myself” (reverse coded), “Right now I feel humiliated,” “I feel inferior to others at this moment,” and “Right now I feel mortified” ($\alpha = .85$). Higher scores indicate greater feelings of inferiority.

Results

To test for group differences, the self-perception dependent variables were analyzed with a one-way (Leaders: HL female leaders, HL male leaders, Combined HL female and male leaders; Control: Flowers) multivariate analysis of variance. The overall MANOVA revealed a multivariate main effect for condition, Wilks' $\lambda = .658$, $F(9, 132) = 2.74$, $p = .006$, $\eta^2 = .13$. Univariate ANOVA and post hoc tests were conducted as follow-up tests and are reported below.

Perceived performance. ANOVA results revealed a significant main effect for condition on perceptions of performance on the leadership task, $F(3, 56) = 3.59$, $p = .019$, $\eta^2 = .16$ (see Table 1). Protected LSD post hoc tests revealed that participants in the HL female leaders condition thought they did worse on the leadership task than those in control condition ($p = .034$). They also reported performing worse than those in the HL male leaders, however this did not quite reach statistical significance ($p = .059$), and they reported similar levels to those in the combined condition ($p = .632$). Also, participants in the combined condition reported lower levels than those in the male leaders ($p = .019$) and control ($p = .010$) conditions.

Perceived task difficulty. The univariate ANOVA on perceptions of task difficulty revealed a significant effect for condition, $F(3, 56) = 4.82, p = .005, \eta^2 = .21$ (see Table 1). Protected LSD post hoc tests revealed that women in the HL female leader condition reported greater task difficulty than those in the male ($p = .002$) and control ($p = .012$) conditions and similar levels to those in the combined condition ($p = .499$). Participants in the combined condition also reported greater task difficulty compared to the HL male leaders ($p = .012$) as well as the control condition, although the latter did not reach statistical significance ($p = .060$).

Feelings of inferiority. The final self-perception dependent measure showed a similar pattern of results. The ANOVA on feelings of inferiority revealed a significant main effect for condition, $F(3, 56) = 3.07, p = .035, \eta^2 = .14$ (Table 1). Post hoc tests showed that women in the HL female leaders condition reported greater feelings of inferiority than those in the HL male leaders ($p = .005$) and the control condition ($p = .036$), and they did not differ significantly from those in the combined condition ($p = .132$). Participants in the combined condition did not report significantly greater feelings of inferiority than those in the HL male leaders ($p = .169$) and control conditions ($p = .537$). It should be noted, however, that all means were below the scale mid-point (see Table 1) indicating that participants did not report feeling inferior per se; however, they did not disavow feelings of inferiority to the same extent as those in the HL male and control conditions.

Discussion

The primary goal of our study was to establish the impact of high-level female and male leaders on women's self-perceptions during a leadership task. Women exposed to the HL female leaders, even when combined with HL male leaders, reported more negative self-perceptions compared to those in the other two conditions. Specifically, women in the HL female leader

condition reported greater feelings of inferiority and perceived greater task difficulty than those in the HL male leader condition or in the control condition. Those in the HL female condition also reported performing worse than those in the control condition. Furthermore, those in the combined condition reported performing worse than those in the male leader condition and the control condition; they also reported greater task difficulty than those in the HL male leader condition. These results are consistent with previous research demonstrating that upward social comparisons, particularly with outstanding role models (Lockwood & Kunda, 1997) and with members of one's ingroup (Major et al., 1993), can have self-deflating effects. Women's self-perceptions were more positive, however, after exposure to HL male leaders who are not part of the women's ingroup and self-perceptions in this condition did not differ from the control condition. This finding is consistent with research demonstrating the importance of the group status of comparison others on self-evaluation (Major et al., 1993).

The relatively self-deflating effects of the HL female leaders likely stem, at least in part, from their success being seen as unattainable (Lockwood & Kunda, 1997). A further consequence of this perceived unattainability is that these leaders might not serve to successfully disconfirm the gender-leader stereotype because they may be seen as exceptions to the stereotype. Highly counter-stereotypic individuals are often grouped into a new subtype that is distinct from our mental representation of the rest of the group (Barden, Maddux, Petty & Brewer, 2004; Brewer, Dull, & Lui, 1981; Taylor, 1981). It is likely that participants perceived the HL leaders to be exceptions due to their high level of success. Thus, the gender-leader stereotype was not countered; rather, it was activated, resulting in participants' self-deflating responses. This finding is particularly important in our study because participants were in a position to potentially confirm a negative stereotype regarding women in leadership (Hoyt &

Chemers, 2008). Thus, less elite female leaders with whom women can identify and perceive their success as attainable may serve as more beneficial role models by effectively disconfirming the gender-leader stereotype. We explore this idea further in Study 2 by altering female leaders' level of success.

Study 2

This second experiment is a conceptual replication and extension of the self-deflating effects of HL female leaders on young women. These effects are similar to threatening responses individuals often experience when they perceive themselves to be at risk of confirming a negative stereotype about their group (i.e., stereotype threat; Campbell & Collaer, 2009; Steele & Aronson, 1995; Spencer, Steele, & Quinn, 1999) which, in our research, is the gender-leader stereotype. These self-deflating effects often are associated with lower identification with the given domain (Hoyt & Blascovich, 2007; Steele & Aronson, 1995), lower intention to engage within the domain in the future (Davies, Spencer, Steele, 2005; Hoyt & Blascovich, 2007), and eventual disengagement from the domain all together (Steele, 1997). Thus, Study 2 examines the effects of exposure to high-level female leaders on another important outcome: women's future leadership aspirations. Furthermore, we test the prediction that decreased self-perceptions (i.e., feelings of inferiority) mediate the impact of role models on leadership aspirations. Leadership aspirations are particularly important to consider because they suggest that exposure to certain role models (i.e., high-level female leaders) – that is, individuals who are assumed to inspire others to obtain similar achievements – may not actually have these positive effects on women's pursuit and desire to obtain leadership positions.

Additionally, in Study 2 we manipulated the level of success of the female leader by including a group of mid-level (ML) female leaders. Participants should be able to relate more to

these mid-level leaders which may, in turn, make them more effective role models. Furthermore, we predicted that these leaders would not be seen as exceptions to women in general and therefore would serve to disconfirm the gender-leader stereotype. To test this prediction we assessed gender-stereotype activation. Finally, we did not include a mid-level male leader condition because our goal was to further understand the impact of female leader role models on women. As shown in Study 1, the male role models did not have the same self-deflating effects as the female role models.

Method

Participants and design. Undergraduate women ($N = 60$) at the same private liberal arts college were given \$10 for participation. Participants were 78% White, 10% African-American, 2% Latina, 5% Asian-American, and 5% other with a median age of 20 (range: 18-43; $SD = 3.23$). The experiment employed a four-group between-subjects design with 15 participants randomly assigned to each condition (HL female leaders, HL male leaders, Mid-level female leaders, Control: Flowers). Three were excluded from analyses (two were suspicious and one had recently completed a similar experiment; one participant was lost from each of the three role model conditions) leaving a final sample size of 57. A power analysis revealed that with the design of the study, sample size, and alpha level, we have adequate statistical power to detect large effects (Faul et al., 2007).

Procedure and measures. The procedure for this experiment was essentially identical to Study 1 with minor exceptions. First, the combined condition consisting of both female and male HL leaders was replaced with a condition in which participants were exposed to ML female leaders. Next, after being presented with the leaders (the ostensible memory portion of the study), but before engaging in the leadership task described in Study 1, participants completed a

stereotype activation measure. Participants were told that one of the other group members arrived a little late and was still filling out the consent form. They were then asked if they would like to complete a small questionnaire for another study examining person perception while they were waiting. All participants consented to completing this measure. Finally, after finishing the leadership task, participants completed the remaining measures: feelings of inferiority, leadership aspirations, and identification with the leaders. In order to assess participants' leadership aspirations, they were led to believe that there would be another upcoming small group task.

Mid-level female leaders condition. We added the condition of a mid-level female leader to provide a comparison group of leaders whose success appeared more attainable. To create these stimuli, we used procedures similar to Dasgupta and Asgari's (2004), taking care to maintain similar racial and ethnic diversity as well as similar occupational domains (e.g., science, business, politics). In order to keep these factors consistent, and simply manipulate the level of perceived attainability, we created descriptions of these leaders' accomplishments that were very similar to the HL leaders but at an earlier stage in their career (see Appendix A for sample leader descriptions). Similar to the other leader conditions, these accomplishment descriptions were combined with photos of individuals (of similar race and ethnicity) that were converted into grayscale and a standard size.

Feelings of inferiority. We made a number of changes to the measures in Study 2 including adding an identification measure, a leadership aspiration measure, and including a long measure of counter-stereotype activation. In Study 2, the feelings of inferiority scale was modified to a four-item measure: "I feel inferior to others at this moment," "Right now I feel worthless," "At times I think I am no good at all," and "Right now I feel inferior to others" ($\alpha = .69$).

Identification with the leaders. Participants in the role model conditions were asked to briefly indicate the leader(s) with whom they identify the most. After that, they responded to the following two items adapted from Dasgupta and Asgari (2004): (a) using a 1 (*I don't identify with them at all*) to 11 (*I identify with them very much*) scale: "How much do you identify with the lives and accomplishments of the individuals you listed in the previous question?" and (b) using a 1 (*not at all likely*) to 11 (*very likely*) scale: "Think about the individuals whose pictures and descriptions you just viewed that you personally identify with. To what extent do you think that someday in the future, you might reach a similar level of success in your own field?" ($r(40) = .55, p < .001$).

Leadership aspirations. After completing leadership task in the immersive virtual environment, participants were told there would be another upcoming small group task. Participants responded to the following four questions on a 7-point Likert-type scale ranging from -3 (*strongly disagree*) to 3 (*strongly agree*): "I would like to be selected as leader of the upcoming group task," "I hope that I am NOT selected as leader of the upcoming group task (reverse coded)," "Leadership is important to me," and "It is important to me that I occupy leadership roles in my future endeavors" ($\alpha = .81$).

Measure of counter-stereotypic activation. Participants were asked to complete this measure as an ostensibly separate study examining person perception. They were asked to write one or two short, but complete, sentences describing people based on their occupation. Participants were asked to write complete sentences because we were not actually interested in the traits people wrote but rather their use of pronouns for those with gender-unspecified names in gendered occupations. To help ensure they used pronouns, they were shown two examples, "Melissa is a swimmer" and "Edward is a psychologist" and were given two possible responses

they could make for each such as “*She is active*” for Melissa and “*He is thoughtful*” for Edward. Participants were then asked to respond to 24 items: eight were filler items with gendered names paired with non-gendered occupations and the remaining 16 items used gender unspecific names (e.g., Jaden, Cameron, Lee) paired with gendered occupations (e.g., nanny being a female occupation and firefighter being a male occupation). Of those 16 target items, six were stereotypically masculine leadership occupations, five were male-dominated but not leadership (non-leader) occupations, and the remaining five were female-dominated occupations (see Appendix B). We coded participants’ use of pronouns on these 16 items, and specifically we assessed their use of counterstereotypical pronouns, such as referring to the nurse as a “he” or the pilot as a “she.” Because the task was long, requiring two sentences for each of the 24 items, many participants did not complete the entire measure; the mean number of responses to the 16 target items was 10.5 (ranging from 4 to 16; one participant failed to use pronouns). Thus, we created the dependent variable by recording the proportion of completed pronouns that were counter-stereotypical.

Results

The ML leader condition was designed to present participants with role models with whom they could identify more than the high-level female leaders and who would activate counter-stereotypic thoughts. First, we present the analyses on identification with the role model and gender counter-stereotypic activation and then we turn to examining the impact of the role models on the outcome variables.

Identification with the role models. A one-way (HL female leaders, HL male leaders, ML female leaders) univariate analysis of variance on identification revealed that participants reported varying levels of identification with across role model conditions, $F(2, 39) = 4.41, p =$

.019, $\eta^2 = .18$. Protected LSD post hoc tests revealed that participants identified more with the ML female leaders ($M = 8.07$, $SD = 2.35$) than they did with the HL female ($M = 6.39$, $SD = 1.79$; $p = .047$) or male leaders ($M = 5.71$, $SD = 2.30$; $p = .006$). Participants reported similar identification with the female and male HL leaders ($p = .411$).

Measure of gender counterstereotypical activation. An ANOVA with the stereotype activation measure revealed significant differences across conditions, $F(3, 52) = 5.14$, $p = .003$, $\eta^2 = .23$. Post hoc analyses revealed that participants in the ML female leaders condition used a significantly greater proportion of counter-stereotypical gender pronouns ($M = .31$, $SD = .18$) than did women in all other conditions: HL female leaders ($M = .14$, $SD = .12$, $p = .002$), HL male leaders ($M = .14$, $SD = .09$, $p = .002$), and control ($M = .16$, $SD = .13$, $p = .005$). None of the other conditions were significantly different from each other.

Further analyses examining the female- and male-leader occupations separately further confirmed that participants in the ML leaders condition used a significantly greater proportion of counter-stereotypical gender pronouns when describing people with female occupations, $F(3, 52) = 3.27$, $p = .028$, $\eta^2 = .16$, and those with male-leader occupations, $F(3, 52) = 3.32$, $p = .027$, $\eta^2 = .16$, compared to participants in the other conditions. Post hoc analyses for both tests replicated the post hoc findings for the combined test. Thus, participants in the ML leaders condition, compared to others, demonstrated an increased use of the pronoun “he” when describing individuals with stereotypically female occupations as well an increased use of the pronoun “she” when describing individuals with stereotypically male occupations.

Outcome variables. The dependent variables, feelings of inferiority and leadership aspirations, were analyzed with a one-way (HL female leaders, HL male leaders, ML female leaders, control) multivariate analysis of variance. The overall MANOVA revealed a

multivariate main effect for condition, Wilks' $\lambda = .788$, $F(6, 104) = 2.19$, $p = .0498$, $\eta^2 = .112$.

Univariate ANOVA and post hoc tests were conducted as follow-up tests and are reported below.

Feelings of inferiority. The ANOVA on feelings of inferiority revealed a main effect for condition, $F(3, 53) = 3.153$, $p = .032$, $\eta^2 = .151$. Post hoc tests showed that women in the HL female leaders condition reported greater feelings of inferiority ($M = -1.23$, $SD = 1.25$) than those in the HL male leaders ($M = -2.00$, $SD = .59$; $p = .028$) and although they reported greater levels than those in the ML leader condition ($M = -1.84$, $SD = .68$), this was not statistically significant ($p = .079$). Finally, they did not differ significantly from those in the control condition ($M = -1.17$; $SD = .92$; $p = .845$).

Leadership aspirations. Results from the one-way univariate analysis of variance on leadership aspirations indicate an overall main effect, $F(3, 53) = 2.85$, $p = .046$, $\eta^2 = .139$. Protected LSD post hoc tests revealed that those in the HL female leaders condition ($M = .21$, $SD = 1.27$) reported significantly lower levels of leadership aspirations than those in the HL male leaders ($M = 1.27$, $SD = .76$; $p = .013$) and ML female leaders conditions ($M = 1.14$, $SD = 1.19$; $p = .027$). Although women in the HL female leaders condition reported lower leadership aspirations than in the control condition ($M = .63$, $SD = 1.02$), this difference was not statistically significant ($p = .300$). Additionally, although the HL male leaders and ML female leaders conditions were both greater than the control condition, these too were not statistically significant ($p = .119$ and $p = .209$, respectively).

Mediational analyses. Finally, using mediational analyses, we tested the prediction that feelings of inferiority are related to lower leadership aspirations. The traditional Sobel test is known to have low power and to be especially problematic when used with small samples, thus to test our mediational hypotheses we used the bootstrapping approach as advocated by Shrout

and Bolger (2002) for such cases. We used Preacher and Hayes' (2008) macro to implement the bootstrapping approach in SPSS. In this procedure, we took 1,000 samples from the original data set (using sampling with replacement) thus yielding 1,000 estimates of each path coefficient (see Figure 1). These estimates were used to calculate estimates of the indirect effect of leader role model on leadership aspirations through the mediation of feelings of inferiority.

Because the categorical predictor has four levels, we created three dummy variables using HL female leader as the comparison group because that condition was expected to differ from the other three (for an overview of mediation with categorical predictors, see Frazier, Tix, & Barron, 2004). We ran the bootstrap macro three times, each time with one of the role model dummy variables as the independent variable and the other two dummy variables as covariates (Preacher & Hayes, 2008). In our bootstrapping analyses, we used a one-sided (directional) test which requires that the 5% cutoff value in the lower-tail of the bootstrap distribution of indirect effects be above zero to obtain significance. We found that this cutoff of the indirect effect of feelings of inferiority was, in fact, above zero both in the HL male leader and the ML female leader conditions – but not in the control condition (see Table 2). We therefore concluded that successful mediation was observed when comparing the HL female leader to both the HL male leader and ML female leaders conditions: exposure to the HL female leaders, compared to either the HL male leaders or the ML female leaders, resulted in lower leadership aspirations in the future and this was mediated by lowered self-perceptions (see Figure 1).

Discussion

In Study 2 we sought to replicate and extend the findings from Study 1 by including a condition of mid-level female leaders. As predicted, participants reported identifying significantly more with the mid-level leaders compared to the high-level women and high-level

men. Furthermore, the effects across leader conditions are consistent with findings from Study 1 revealing that, in comparison to the other leader conditions, exposure to high-level female leaders has a deflating impact on women's self-perceptions. Women exposed to the HL female leaders were less likely to aspire to leadership roles in the future compared to those in both of the other role model conditions. Furthermore, those in the HL female condition reported greater levels of inferiority compared to those in the HL male condition and although they also reported greater levels than those in the ML female condition, that difference was not statistically significant. Although the leader conditions were generally in line with predictions, responses from participants in the HL female leader condition did not significantly differ from the control condition. Furthermore, responses from those in the ML condition were not significantly more positive than those in the HL male leader condition indicating that although they have a more positive impact on women than the HL female leaders, they do not necessarily provide a more positive effect than role models who do not belong to the negatively stereotyped social group. Finally, mediational analyses indicated that the decreased leadership aspirations in the HL female leader condition, compared to the HL male leader and ML female leader conditions, were driven by decreases in self-perceptions.

Consistent with the idea that the highly counter-stereotypic HL female leaders may be subtyped as exceptions to the norm (Brewer et al., 1981; Taylor, 1981), exposure to these leaders did not increase counter-stereotypic associations, suggesting that these leaders did not successfully disconfirm the gender-leader stereotype. However, exposure to the ML leaders, who are moderately counter-stereotypic, did result in a subsequent increase in counter-stereotypic associations. Moreover, our findings that exposure to ML female leaders led to higher leadership aspirations than those exposed to the HL female leaders supports findings by Marx, Stapel, and

Muller (2005) that social comparisons have positive effects on individuals' performance when the person in comparison provides individuals with stereotype-inconsistent information. The findings from Study 2 suggest that less elite female leaders elicit more positive responses because they are not subtyped as exceptions and, thus, successfully disconfirm the stereotype holding that women are not compatible with, or capable of fulfilling, leadership roles (i.e., the gender-leader stereotype).

General Discussion

As members of a non-dominant, stigmatized social group, women are underrepresented in top positions in the public sphere. Compared to men, women are more likely to confront stereotyping, prejudice, and discrimination, making it more difficult for them to reach positions of influence, respect, and leadership. One way to potentially buffer women from the deleterious responses associated with performing in a stereotype-threatening domain is by presenting them with ingroup (i.e., female) role models. However, research on role models is equivocal – with some studies showing positive effects, such as decreases in automatic gender stereotyping (Dasgupta & Asgari, 2004), and others showing more negative effects including threats to self-perceptions (Lockwood & Kunda, 1997). The present research examines the effects of female leaders as role models on women's self-perceptions and aspirations in the leadership domain.

Study 1 established the relatively injurious impact of top-level female leaders on women's self-perceptions after performing a leadership task. Specifically, women exposed to these outstanding female role models before engaging in a leadership task reported lower levels of perceived performance, greater task difficulty, and greater feelings of inferiority compared to women exposed to outstanding male role models and those in the control condition. Because the self-deflating effect of the HL female leaders was shown even in comparison to the control

group, it is safe to say these leaders did more harm than good on women's self-perceptions. Study 2 corroborated this impact of top-level female leaders by revealing the comparatively less positive influence of these role models on leadership aspirations relative to top-level male leaders and mid-level female leaders. However, in this study responses in the HL female leader condition did not significantly differ from those in the control condition. Hence, these findings are consistent with the empirical literatures demonstrating the potential relatively self-deflating impact of ingroup role models (Major et al., 1993) and superstar role models (Lockwood & Kunda, 1997, 1999, 2000), especially when the models' successes seem unattainable.

Social psychological literature has clearly demonstrated that the impact of social comparisons on self-perceptions is multifaceted. Our findings are consistent with a social comparison contrast effect. According to Suls, Martin, and Wheeler (2002), exposure to superior others can have either a negative or a positive effect because it suggests both that one is relatively disadvantaged but also that one could improve. Thus, people can either assimilate to the superior other, resulting in positive emotions, or they can contrast themselves with the role model, resulting in less positive and even deleterious outcomes for the self. Our results are also consistent with Stapel and Suls (2004) findings that mere exposure to superior comparison others (i.e., implicit social comparisons), as opposed to explicitly making comparisons, results in less positive contrast effects.

Research by Dijksterhuis and van Knippenberg (1998) also supports our findings by suggesting that exposure to extreme exemplars activates positive constructs related to the exemplar and subsequently activates negative self-related concepts in comparison to the outstanding role model. Their research demonstrated that exposure to an extreme exemplar (Einstein) activated both intelligence and stupidity-related constructs through comparison with

the exemplar (e.g., “I am no Einstein, I am not smart, I am dumb”). We suggest that the relatively injurious impact of the elite female leaders was due to a similar comparison process in which these exemplars activated leader-related constructs, but comparison with these exemplars activated negative self-concepts (e.g., “I am no Oprah Winfrey, I am not a capable leader, I am incapable of being a leader”). The findings that exposure to HL female leaders adversely impacted female participants’ self-perceptions (relative to other conditions) is consistent with the notion that the extreme exemplars activated the gender-leader stereotype without explicitly disconfirming it, thus resulting in negative comparison effects (Dasgupta & Asgari, 2004; Dasgupta & Greenwald, 2001; Rudman & Glick, 2001).

Study 2 demonstrated that less elite female leaders have a more positive impact than the high-level female leaders. Women in the ML leader condition had higher leadership aspirations than those in the HL female leader condition. Furthermore, these women identified more with the role models and had greater activation of gender counter-stereotypes; both identification with the role model and overturning gender stereotypes are important aspects of role modeling especially for women in male-dominated professions (Lockwood, 2006; Ragins, 1997). Our findings support the argument that when performing in a stereotype-threatening domain, ingroup role models who fail to explicitly alter the stereotype and whose success does not seem attainable can have a relatively less positive impact compared to ingroup role models who activate counter-stereotypic thinking and whose success seems attainable. Thus, we conclude that ingroup role models are the least inspiring for women when they are extremely counter-stereotypical and thus do not explicitly disconfirm the gender-leader stereotype and when their success is not seen as attainable due to the activation of contrast social comparison processes.

Although the primary concern of our research was to better understand female role modeling, we also examined the effects of HL male leaders. Exposure to the HL male leaders resulted in more positive responses compared to exposure to HL female leaders, and in Study 2, it resulted in leadership aspirations indistinguishable from those of mid-level female leaders. However, the processes through which these two groups of role models impact women are not the same. First, exposure to the ML female leaders decreased women's stereotypic pronoun usage, whereas that did not occur with exposure to the male role models. Second, women identified more with the ML female leaders than with the male leaders. Thus, our findings corroborate the importance of the group status (ingroup or outgroup) of comparison others (Major et al., 1993) and suggest that when performing in a potentially stereotype-threatening domain, identifying with the role model and activating counterstereotypical thoughts is less important for outgroup role models than ingroup role models.

Limitations and Future Directions

The immersive virtual environment technology used in this research comes with both advantages (discussed in the method above) and potential limitations. The primary limitations associated with this advanced research methodology are the potential for suspicion amongst participants regarding the "other" participants as well as the limited generalizability of the findings. This virtual environment-based paradigm was successfully developed and employed in previous studies, and comprehensive debriefing procedures in this as well as previous research indicated that participants were not suspicious during the task (see also Hoyt & Blascovich, 2007, 2010a and Hoyt et al., 2007). Our findings may, however, be limited to virtual, non-face-to-face, contexts. That said, in this day of increasingly fewer face-to-face interactions, these findings have generalizability in regards to the current organizational trend of escalating virtual

workplaces. The success of using this technology to experimentally study leadership processes in our study and others signifies that it is a promising tool for experimental researchers that can bring many advantages, including the enhancement of ecological validity without the sacrifice of experimental control (see Blascovich et al., 2002).

Although the effects of exposure to these high-level female leaders have important implications for understanding women's attainment of, and aspiration for, leadership positions, participants were only exposed to leaders for a short period of time. Thus, the effects resulting from exposure to the female leaders may be limited to the immediate situation. Future research should explore the effects of these role models in "real world" situations, examining the effects of long-term exposure to role models. Moreover, although the high-level female leaders had less positive effects on our undergraduate participants than the other leaders, further research is needed to determine individual characteristics and situations in which these HL leaders are more or less likely to have positive effects. For example, women with more leadership experience or high levels of leadership self-efficacy (Hoyt & Blascovich, 2007) may consider the success of elite female leaders as attainable and, thus, they might be more likely to benefit from them. Also, past research demonstrating the positive impact of counter-stereotypic role models in women's daily lives suggests that frequent exposure to female leaders may make women less likely to experience any negative social comparison contrasts effects (Dasgupta & Asgari, 2004). More research is needed to examine the situational factors that increase the likelihood of women perceiving elite female leaders as inspiring.

Another limitation of our research is that the elite leaders' level of success may have been confounded with age and/or fame because we used older famous leaders, whereas the mid-level leaders were younger and not famous. It is possible that high-level female leaders who are

younger and/or not as well known to our participants would not have had similar effects.

However, we argue that this possibility is likely not a concern for two reasons. First, being older and well-known are often inherent aspects of having high-level leadership status. Second, the high-level male leaders were also older and famous, and they had relatively more positive effects than the high-level female leaders did. This comparison suggests that it was the high-level female leaders' ingroup status, rather than their age or fame per se, that drove the effect.

Future research is also needed that directly tests the underlying factors that make these elite female leaders less effective role models than male or less-elite female leaders. Research by Marx, et al. (2005) suggests that social comparisons to others who are stereotype-confirming elicit negative stereotype threat responses, whereas those who are stereotype-disconfirming eliminate the fear of acting in accordance with a negative stereotype and, thus, result in positive reactions. Hence, we suspect that the elite female leaders only served to activate the stereotype and, unlike the less-elite leaders, failed to successfully disconfirm the gender-leader stereotype. Under these conditions, participants might have heightened impression-related concerns about their individual performance which give rise to their social comparison contrast responses. Research that directly assesses the impact of role models who alter, or fail to alter, explicit gender stereotypic beliefs in situations that are potentially threatening versus safe for targeted individuals would be highly beneficial for understanding precise factors that make role models more or less effective for stigmatized individuals attempting to attain status in underrepresented domains. In addition, researchers should examine the extent to which these stereotype-relevant role-models can impact performance in domains other than the stereotype-relevant domain. Finally, although our research focused on the impact of role models for women in the negatively stereotyped leadership domain, future research should examine the generalizability of these

effects by examining how role models impact members of other social groups, such as men or racial/ethnic minorities, who are performing in a negatively stereotyped domain.

Conclusion

The present research examined the impact of female leaders on women's self-perceptions and leadership aspirations. Our findings provide a number of unique contributions to the literature by specifically looking at role models in a domain for which individuals are the targets of negative stereotypes held against their group. The present research provides further understanding as to the varying effects role models have on women's leadership aspirations and self-perceptions. Our findings show that exposure to outstanding female role models (i.e., top-level leaders) can have deflating effects, in terms of self-perceptions and, in turn, leadership aspirations, than exposure to male leaders or less-elite female leaders. Female leaders who explicitly disconfirm the negative self-relevant stereotype and with whom people strongly identify have a more positive impact on women. Thus, our findings offer a more detailed explanation for why outstanding female role models can have counterintuitive self-comparison effects on women's responses to leadership situations. This relatively deflating impact of elite female leaders compared to the other leaders on women's self-perceptions and leadership aspirations raises a cautionary point: if female leaders are subtyped as exceptions to the norm, they may cause more harm than help. Although our research points to the potential dark side of top-level role models who may evoke relatively negative contrast effects, this is not to say that these role models cannot be inspiring to women. Results from Study 2 suggest that role models at any level can be inspiring to the extent that individuals identify with them, deem their success as attainable, and they successfully disconfirm, at an explicit level, gender-stereotypical beliefs. This research offers an optimistic perspective for developing proactive strategies, such as those

designed to increase the perceived attainability of elite female leaders' success, aimed at closing the gender gap in high-level leadership positions by providing top-level, inspiring role models who can successfully lead them to the top.

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Table 1

Means, SDs and Results of post hoc Tests for Study 1's Dependent Variables

Variable	HL_Female	HL_Male	Combined	Flowers (Control)
Perceived Performance	0.40 (1.50) _{a,b}	1.20 (1.01) _{b,c}	0.20 (1.19) _a	1.30 (0.68) _c
Perceived Task Difficulty	1.09 (1.28) _c	-0.41 (1.27) _a	0.78 (1.13) _{c,b}	-0.10 (1.31) _{a,b}
Feelings of Inferiority	-0.46 (1.03) _b	-1.29 (0.84) _a	-0.90 (0.63) _{a,b}	-1.07 (0.50) _a

Note. Different subscripts across a row denote statistically significant mean differences ($p < .05$) as determined by Protected Least Significance Difference post hoc tests.

Table 2.

Bootstrap Analysis of Direction, Magnitude, and Statistical Significance of the Indirect Effects of Leader Role Model on Leadership Aspirations through Feelings of Inferiority

Leader Condition	Total/direct effects	Indirect effect: Product of path coefficients	5% cutoff value in the lower tail of the distribution of indirect effects
HL Male Leaders	1.05/.72	-.768*-.433 = .33	.0360
ML Female leaders	.93/.67	-.607*-.433 = .26	.0141
Flowers (Control)	.42/.45	.066 * -.433 = -.03	-.3176

Note. HL = high-level; ML = mid-level. Direct, indirect, and total effects are quantified with unstandardized regression weights. Leader conditions are compared to the HL female leader condition.

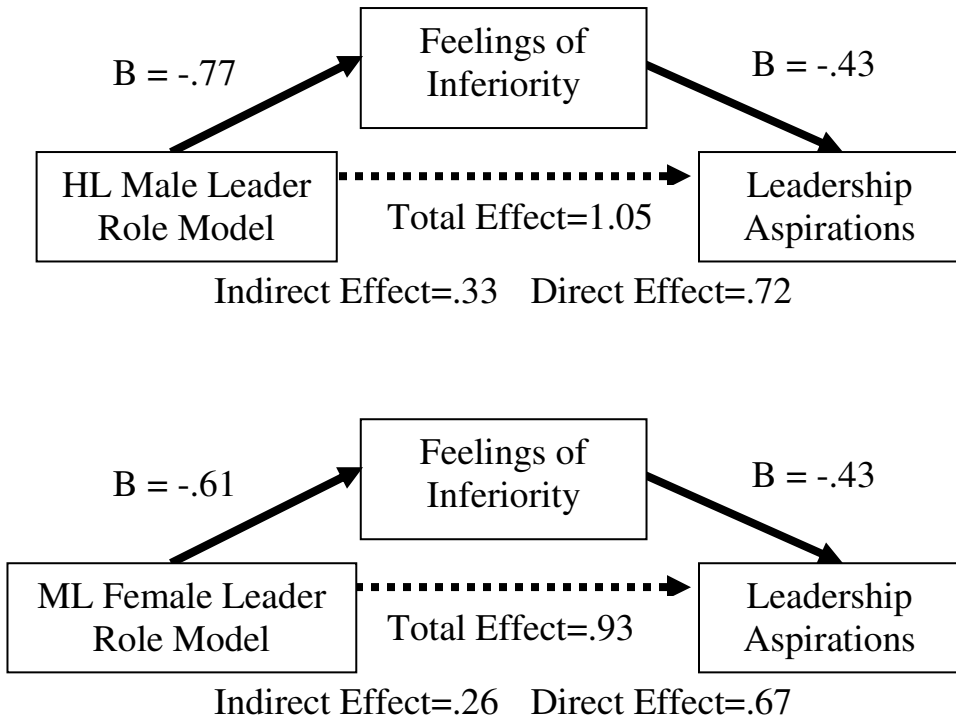


Figure 1. Feelings of inferiority as a mediator of exposure to high-level male or mid-level female compared to high-level female leader role models on participants' future leadership aspirations after completing a leadership task. Direct, indirect, and total effects are quantified with unstandardized regression weights.

Appendix A

Examples of Parallel Leader Descriptions (Journalists)

High-Level Female Leader:

Connie Chung became the first Asian American and the second woman ever to be named to the powerful post of nightly news anchor at a major network. Until 1995, Chung co-anchored the CBS Evening News with Dan Rather, as well as Eye to Eye with Connie Chung, a primetime news hour. Chung earned a degree in journalism from the University of Maryland, and her first job was with an independent television station where she worked as a copy person. She was hired by CBS in 1971 and went on to become one of a very small group of women who have achieved prominence in American national TV news. In 1990 she was chosen as the "favorite interviewer" in a national survey done by U.S. News & World Report's Best of America.

High-Level Male Leader:

Bryant Gumbel joined CBS News on March 13, 1997. Previously, he worked for NBC for nearly 25 years, serving as anchor of its Today show for an unprecedented tenure of 15 years. He also anchored that network's 1992 presidential election coverage and hosted NBC's primetime coverage of the 1988 Olympic Summer Games in Seoul, South Korea. He was a contributing anchor for Dateline, NBC News' primetime magazine. Most recently, he anchored Public Eye With Bryant Gumbel, a CBS News magazine, which received two Peabody Awards, an Overseas Press Club Award and an American Women in Radio and Television Award. Gumbel is also the host of HBO's critically acclaimed Emmy-winning program, Real Sports with Bryant Gumbel.

Mid-Level Female Leader:

Sara Mi graduated from New York University in 2003 with a double degree in Journalism and Mass Communication. She earned distinction with her involvement in NYU's media outlets, which culminated in her being selected for the position of head producer at NYU Channel 8 campus news station. Upon graduation, Mi was given an internship at a local New Jersey television station. From this position, she gained entry level secretarial work. Her determination paid off, and after three years, she was promoted to on-site reporter for the news division.

Appendix B

Stimuli for Counter-Stereotype Activation Measure

Filler items:

Amanda is a novelist.
 Matthew is a newsreader.
 Jessica is a student.
 David is an interpreter.
 Jennifer is an artist.
 Michael is a singer.
 Sarah is a musician.
 Joshua is a journalist.

Leader items:

Pat is a CEO.
 Terry is a Senator.
 Lee is a college President.
 Chris is a corporate leader.
 Casey is the editor-in-chief of a national paper.
 Jordan is a military commander.

Female gendered occupation items:

Jaden is a nanny. (95.6%)
 Avery is a secretary. (96.1%)
 Cameron is a florist. (73.4%)
 Skyler is a nurse. (88.7%)
 Dakota is a housekeeper. (89.8%)

Male gendered occupation items:

Jaime is a carpenter. (98.5%)
 Dana is a firefighter. (95.2%)
 Riley is a pilot. (97.4%)
 Jessie is an engineer. (civil: 89.6%; mech: 93.3%)
 Taylor is an electrician. (99%)

Note. The gender-unspecified names were counterbalanced across the female and male gendered occupations. The percentages of women and men occupying the female and male gendered occupations, respectively, are noted. These percentages were obtained from the U.S. Bureau of Labor Statistics, 2008.