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FlashReport

Successful female leaders empower women's behavior in leadership tasks

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HIGHLIGHTS

- We examined the effect of successful role models on behavior in a leadership task.
- Exposures to female role models empowered women's behavior and self-evaluations.
- Exposure to female role models eliminated the gender performance gap.
- Role models did not affect men's leadership behavior.

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ABSTRACT

Women are less likely than men to be associated with leadership, and the awareness of this stereotype may undermine women's performance in leadership tasks. One way to circumvent this stereotype threat is to expose women to highly successful female role models. Although such exposures are known to decrease women's leadership aspirations and self-evaluations, it is currently unknown what the effects of role models are on actual behavior during a challenging leadership task. We investigated whether highly successful female role models empower women's behavior in a leadership task. In a virtual reality environment, 149 male and female students gave a public speech, while being subtly exposed to either a picture of Hillary Clinton, Angela Merkel, Bill Clinton, or no picture. We recorded the length of speeches as an objective measure of empowered behavior in a stressful leadership task. Perceived speech quality was also coded by independent raters. Women spoke less than men when a Bill Clinton picture or no picture was presented. This gender difference disappeared when a picture of Hillary Clinton or Angela Merkel was presented, with women showing a significant increase when exposed to a female role model compared to a male role model or no role models. Longer speaking times also translated into higher perceived speech quality for female participants. Empowered behavior also mediated the effects of female role models on women's self-evaluated performance. In sum, subtle exposures to highly successful female leaders inspired women's behavior and self-evaluations in stressful leadership tasks.

Introduction

The political leadership of our world is undergoing a change. Although in most countries women are still far behind, and worldwide only 19.6% of members of parliament are female (Quotaproject, 2012), there are more women than ever in top leadership positions. German chancellor Angela Merkel is currently the de-facto leader of the European Union. Brazilian Dilma Rousseff and Argentinean Christina Fernandez are the respective presidents of the world's fifth and eighth largest countries, and Hillary Clinton is the Secretary of State of the USA. What is the effect of such extremely successful women on women faced with leadership tasks?

This question is especially relevant in science and leadership domains in which women are under-represented and which are stereotypically seen as masculine. For instance, despite some progress in the last few decades, leader stereotypes are predominantly masculine (Koenig, Eagly, Mitchell, & Ristikari, 2011). Whereas these gender-occupational stereotypes protect men (Walton & Cohen, 2003), they can threaten women, a phenomenon known as stereotype threat (Steele, 1997). For example, the awareness that women are less likely to succeed in leadership can undermine women's performance on leadership-related tasks such as motivating employees (Hoyt & Blascovich, 2010; von Hippel, Wiryakusuma, Bowden, & Shochet, 2011), managerial decision-making (Bergeron, Block, & Echtenkamp, 2006), or negotiating (Kray, Thompson, & Galinsky, 2001; Tellhed & Björklund, 2011).

One way to counteract such negative effects of stereotypes is to expose women to counterstereotypic exemplars of their own group: women who succeeded, thus disproving the stereotype. This strategy has proven to be successful in stereotypically masculine domains such as math and science, in which successful role models tend to have positive effects on women's self-related cognitions (Stout,

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Dasgupta, Hunsinger, & McManus, 2011) and performance (Marx & Roman, 2002; Taylor, Lord, McIntyre, & Paulson, 2011).

However, within leadership domains, highly successful female role models tend to threaten women — at least when it comes to self-related cognitions. For example, women who were exposed to high-level female leaders before performing a leadership task reported lower self-evaluations, greater feelings of inferiority, and lower leadership aspirations compared to women who were exposed to high-level male leaders or controls (Hoyt & Simon, 2011). Women's self-ratings of competence also suffered after exposures to a highly successful female CEO (Parks-Stamm, Heilman, & Hearns, 2008). Similarly, women who were primed with women occupying high-power positions (e.g., president of a financial division, business professor, or surgeon) were less likely to associate the self with leadership and showed less interest in masculine jobs (Rudman & Phelan, 2010). There are some exceptions to this pattern of findings, in which successful female role models inspire women's self-views, but only when the role models are presented as similar to the participant (Asgari, Dasgupta, & Stout, 2012; Lockwood, 2006).

However, there are no studies that investigated or reported the effects of role models on women's *actual behavior* in leadership tasks, and based on the current literature, it is unclear whether we should expect positive or negative effects. In the current study we ask whether subtle exposures to female leadership icons have a beneficial or detrimental impact on women's behavior during a stressful leadership task. Additionally, we investigate how the effects of female role models on women's behavior extend to women's self-evaluations in a leadership task.

The current study

In the current study we attempt to explore the effects of highly successful role models on women's behavior during a leadership task, by subtly exposing (priming) women with images of successful female political leaders — in particular, Hillary Clinton and Angela Merkel. We compare this priming with a control condition (where no picture is shown) and one where a male politician (Bill Clinton) is shown. We included two female role model conditions and two control conditions in order to rule out that effects are due solely to idiosyncrasies of the chosen politicians.

The leadership task was to give a persuasive public speech in front of a 12-person audience in a Virtual Reality Environment. This technology allowed us to study actual behavior in an experimentally controlled yet subtly changed environment. As a measure of empowered behavior, we recorded the length of participants' speeches. We expected that in the absence of a female role model, men would speak longer than women, consistent with stereotype threat findings (Hoyt & Blascovich, 2010). If female role models empower women's

Fig. 1. Participants' perspective while delivering the speech in the virtual reality environment, for each of the four conditions.

behavior in leadership tasks, this difference should disappear when female participants are exposed to a female role model.

Speaking time was chosen because it is an expression of a person's dominance and power (Schmid Mast, 2002), and it is exactly gender stereotypes prescribing women to be modest, reserved, and quiet that help maintain the status-quo of men in leadership situations. Importantly, speech time is an objective measure that does not depend on evaluators' biases or stereotypical beliefs. Additionally, the longer people speak, the more influential they are perceived (Chaiken, Liberman, & Eagly, 1989).

We had independent coders who rated the quality of speeches and predicted that perceived speech quality would be correlated with speaking time. Also, if female role models empower women's objective behavior (speaking time), this should also extend to others' perceptions of women while delivering the speech. In other words, we should see that longer speaking time as a result of exposure to female role models should, in turn, lead to higher perceived speech quality for female participants. That is, increased speaking time should mediate the relationship between role model priming and perceived speech quality.

Finally, we were interested in how role models influence self-evaluated performance. Because participants assessed their performance after having performed the task, self-evaluations may also be influenced by participants' actual behavior during the task. Therefore, role models may influence women's self-evaluated performance through behavior, such that behavior would mediate the relationship between role models and self-evaluations. This is consistent with Bem (1972), according to which people infer their internal states by observing their own overt behavior. Thus, if role models empower behavior, women should, in turn, feel better about their performance. If models threaten behavior, women's self-evaluations should consequently suffer.

Most research on female role models has focused on women's performance on math tasks. Within leadership, the focus has been on women's leadership aspirations and self-evaluations. Our research is novel in that it examined, for the first time, how very subtle manipulations of role models affect women's actual behavior during a stressful leadership task.

Method

Participants and procedure

Participants were 149 (mean age 24, 81 women) students recruited at a Swiss university. Their task was to give a persuasive political speech arguing against an increase of student fees. The speech was videotaped. Immediately after the speech, we measured participants' self-evaluations of performance. Data were collected in two different semesters as part of two different studies, but given the identical procedure, all data were considered together.

The setting in which the task took place was designed using Immersive Virtual Environment Technology (IVET). The virtual reality room was programmed to depict a room that included an audience and the priming manipulation (see Fig. 1 for the participants' perspective). The participants wore a head-mounted display (HMD) through which the virtual room was rendered. They were able to move around and be completely immersed in the virtual world, thanks to a 4-camera tracking system (WorldViz) and a real-time rendering system (Vizard Virtual Reality Toolkit). The participants delivered their speech in front of 12 avatars (6 women) that were programmed to follow the participants' movements with their eyes and heads.

We used IVET because it combines realism with experimental control (Blascovich et al., 2002) and allows for standardizing audience reactions towards female and male participants. Second, stress levels when delivering a speech in IVET are high, mimicking those expected in real settings (Pertaub, Slater, & Barker, 2001).

Depending on the randomly assigned condition, a picture of Bill Clinton, Hillary Clinton, Angela Merkel or no picture hung on the virtual wall opposite the participant. As a cover story, we told the participants (except those in the no picture condition) that they were randomly assigned to one of the rooms of the university's Political Science department, in which a picture of a different famous politician was displayed in each room.

In a pretest, 51 participants were exposed to the pictures of Bill Clinton, Hillary Clinton, and Angela Merkel that we used as primes in the experiment. We found that neither female nor male participants perceived the primes to differ in terms of liking, competence, and power (all $Fs < 1.17$, all $ps > .32$).

Measures

Speaking time

The experimenter recorded the length of the participants' speeches using a timer, starting from the first uttered word until the last word of the speech. Length was measured in seconds.

Perceived speech quality

Coders blind to the experimental conditions watched each videotape (video and sound) in its full length and rated the overall quality of the speech using a 5-point global impression coding scale. For this rating, the coders were instructed to pay attention to the structure and fluency of the discourse, but also nonverbal behaviors such as body posture and voice quality, which are reliable indicators of power and dominance (Hall, Coats, & LeBeau, 2005). Coding reliability was assessed with a second coder for a subset of 8 videos, $r = .69$. Speech quality was significantly correlated with speaking time, suggesting that longer speeches were perceived more positively, $r = .46$, $p < .001$.

Self-evaluated performance

The participants rated four items (Cronbach's $\alpha = .87$) regarding their speech performance (e.g., "I was successful in communicating my message during the oral presentation") on a scale from 1 (not at all) to 5 (very much).[1]

Results

Effects of role models on behavior and perceived speech quality

A 2 (Participant's gender) × 4 (Role model condition: no prime vs. Bill Clinton vs. Hillary Clinton vs. Angela Merkel) between-subjects ANOVA revealed a significant main effect of role models, $F(3, 141) = 4.18$, $p = .007$, with participants in the Angela Merkel condition ($M = 256.20$, $SD = 68.11$) speaking longer than those in the no prime ($M = 210.05$, $SD = 77.92$) and Bill Clinton condition ($M = 202.94$, $SD = 78.88$). There was also a main effect of participant's gender, $F(1, 141) = 5.96$, $p = .02$, with male participants ($M = 236.09$, $SD = 63.88$) speaking longer than female participants ($M = 215.81$, $SD = 83.00$). These main effects were qualified by the predicted significant interaction between role models and participant's sex, $F(3, 141) = 3.34$, $p = .02$ (Fig. 2).

We first analyzed the interaction in terms of the gender gap across role model priming conditions. In the absence of any role model, men spoke longer than women, contrast $t = 2.94$, $p = .004$, $d = 0.84$. Priming with Bill Clinton showed the same gender difference as in the control condition, contrast $t = 2.54$, $p = .01$, $d = 0.95$. However, priming with Hillary Clinton or Angela Merkel provided an empowerment boost to women and eliminated the gender gap, contrast $t = -0.03$, $p = .97$, $d = 0.01$ and contrast $t = -0.64$, $p = .52$, $d = 0.21$, respectively. Priming with Hillary Clinton and Angela Merkel increased female

[1] Due to a computer error, data from ten participants was missing on this measure.

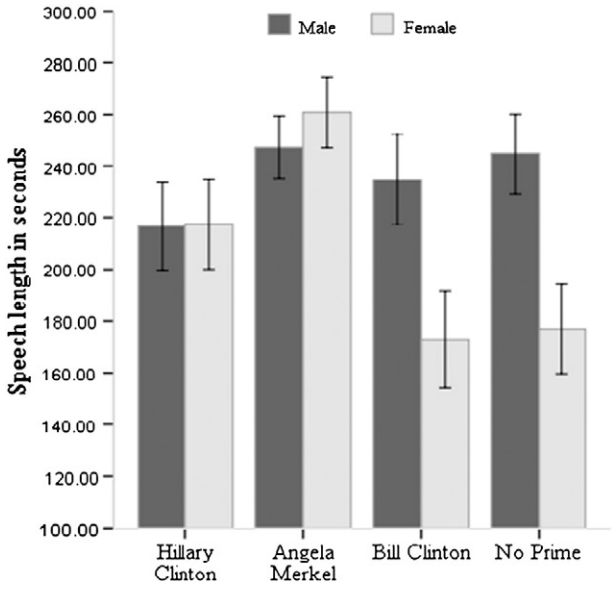

Fig. 2. The effects of role model priming on empowered behavior (speaking time) for male and female participants. Error bars represent one standard error.

speaking time by 24% and 49% respectively, compared to the average of the control conditions.

Second, we analyzed the interaction by computing contrast analyses between the female role model conditions (Hillary Clinton and Angela Merkel) and the control conditions (no prime and Bill Clinton). Findings revealed a significant effect for women, $t = 3.68$, $p < .001$, $d = .88$, but not for men, $t = -0.49$, $p = .62$, $d = .12$. Women spoke significantly longer when primed with a successful female politician than when primed with a male politician or no role models.

This contrast was also replicated for perceived speech quality, with women's speeches being rated superior in the female role model conditions ($M = 3.02$, $SD = 0.74$) compared to the controls ($M = 2.61$, $SD = 1.02$), contrast $t = 2.02$, $p = .048$, $d = .47$. The effect was not significant for male participants, contrast $t = 0.40$, $p = .69$, $d = .10$ ($M = 3.38$, $SD = 0.82$ for female role models vs. $M = 3.29$, $SD = 1.04$ for controls). A mediation analysis using the INDIRECT macro for testing indirect effects with bootstrapped confidence intervals (Preacher & Hayes, 2008) indicated that women primed with female role models spoke longer, and longer speeches were rated as higher quality. Speaking time mediated the effect of female role models on the perceived quality of women's speeches, 95% CI [.20, .74] with 5000 bootstrap samples (Fig. 3, panel A).

Effects of role models on self-evaluations

We also investigated how role models affect women's self-evaluated performance through actual behavior (Fig. 3, panel B). We found that women primed with female role models spoke longer, and the longer they spoke, the more positively they themselves evaluated their own performance. Speaking time mediated the relationship between role model priming and self-evaluated performance, as suggested by a significant indirect effect, 95% CI [.12, .66] with 5000 bootstrap samples.

Discussion

The goal of the current study was to uncover whether subtle exposures to successful female politicians empower or threaten women's behavior in leadership tasks. We found that subtle reminders of other successful women improved women's behavior, thus closing the gender gap in performance. Role models inspired women's behavior in leadership: women who were exposed to highly successful

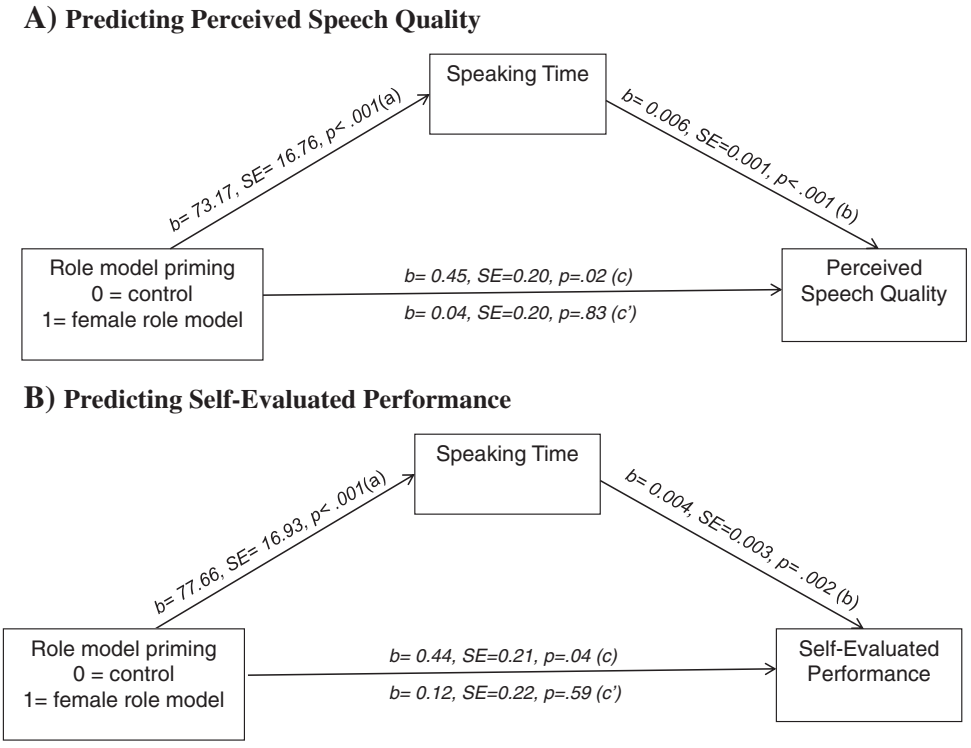

Fig. 3. Mediation analyses for female participants, showing that empowered behavior (speaking time) mediates the relationships between role model priming (dummy coded; 0 = Bill Clinton and no prime conditions; 1 = Hillary Clinton and Angela Merkel conditions) and perceived speech quality (panel A) as well as self-evaluated performance (panel B). The c path represents the total effect of female role model priming on the dependent variable, whereas the c′ path represents the direct effect after controlling for speaking time.

female politicians displayed more empowered objective behavior (speaking time), which in turn extended to women being perceived as more empowered by external raters (perceived speech quality) and to women perceiving their own performance in a more positive light (self-evaluated performance).

We believe these findings are important because although a wealth of research has studied the effects of role models on academic and math performance, there is no research that investigates the effect of female political role models on successful leadership behavior. Yet, exactly such behavior is crucial because not only is an increase in female politicians the goal of equality, it can also be (as our results show) the engine that drives it. Female political role models can inspire women and help them cope with stressful situations that they encounter in their careers, such as public speaking. A lack of female powerful role models leads to a vicious circle, because if women fail to take leadership positions, they also fail to provide role models for junior women to follow. Fortunately, as our study shows, by highlighting successful female politicians as potential role models, women can overcome the effect of negative stereotypes.

We also found that the positive effects of role models on behavior translate into better self-evaluated performance, in contrast with some of the previous research (e.g., Hoyt & Simon, 2011; Rudman & Phelan, 2010). The design of our task may account for this difference. Unlike in previous studies, the role model in our task was continuously presented and extremely pertinent to the task. But most importantly, we gave women the opportunity to act before measuring their self-evaluated performance. Consistent with self-perception theory (Bem, 1972), women observed a boost in behavior and consequently felt better about their performance. Instead of drawing inferences about the self by comparing themselves directly with the female role models (which may have detrimental effects), women may have used their actual behavior as a cue. Thus, it seems important to give women the opportunity to actually perform a challenging task in order to boost their task-related self-confidence.

Whether they were exposed to male or female role models, men performed equally well, showing that the gender of role models is not as important for men, possibly because they encounter less gender-related obstacles in their career (Lockwood, 2006). Alternatively, a successful woman may not represent a threat, given that leadership stereotypes are decisively masculine (Koenig et al., 2011).

It is important to note that it is unlikely that the problem of women's lack of power solves itself by merely exposing women to existing female role models, given that men continue to occupy most top leadership positions. In order to reduce stereotype threat, active steps should be taken in order to increase the number of women in leadership positions, which would consequently increase their visibility and empower other women on their path to leadership.

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