

Mindfulness and stereotype threat in social media: unexpected effects for women's leadership aspirations

Mindfulness
and stereotype
threat

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Abstract

Purpose – The purpose of this paper were to investigate whether gendered social media images reduce women's leadership aspirations (via reduced leadership self-efficacy) and whether state mindfulness buffers the effect of stereotype threat on women's leadership self-efficacy, and in turn, leadership aspirations.

Design/methodology/approach – Study 1 ($n = 53$) was a pilot study designed to test materials intended to induce stereotype threat via social media. Study 2 ($n = 144$) was an experimental study in which participants were randomly assigned to stereotype threat or control conditions. Stereotype threat was implicitly induced via a fictional Facebook timeline that incorporated gendered images.

Findings – Stereotype threat induced via social media predicted lower leadership aspirations for women, which was mediated by reduced leadership self-efficacy, as expected. State mindfulness moderated this mediated relationship in an unexpected way; stereotype threat effects on leadership self-efficacy and leadership aspirations were stronger for women higher in state mindfulness.

Originality/value – It is important to investigate stereotype threat induced via social media to understand the potential damage gendered images may have on women's leadership aspirations in a modern advertising context. This research shows that indeed gendered images in social media advertising decrease women's leadership self-efficacy and leadership aspirations. Interestingly, this study also found that mindfulness had a negative effect in relation to stereotype threat. Theoretical and practical implications are discussed.

Keywords Leadership aspirations, Leadership self-efficacy, Stereotype threat, Social media, Mindfulness

Paper type Research paper

A recent report by [McKinsey and Leanin.org \(2018\)](#) revealed that on average women reported having lower aspirations to become top executives than men, which raises questions about



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whether lower leadership aspirations explain the ongoing under-representation of women in leadership (Catalyst, 2018). Stereotype threat is one key contributor to women's lower aspirations to be leaders (Simon and Hoyt, 2012). Stereotype threat is "the concern of confirming or being reduced to a negative stereotype about one's group" (Kalokerinos *et al.*, 2014) and has been shown to reduce women's leadership aspirations. Given stereotype threat's harmful impacts on women's leadership aspirations, it is crucial to identify and understand when it happens and ways to mitigate stereotype threat for women.

Scholars have identified various resources to mitigate stereotype threat's effects on leadership performance and effectiveness such as providing strong female role models (Good *et al.*, 2010). However, few studies have examined how to mitigate the impact of stereotype threat on women's leadership aspirations (Davies *et al.*, 2005). In addition, more research is needed to identify cognitive resources that can be cultivated to capitalize on existing strengths and competencies (Hoyt and Murphy, 2016). The first goal of this study was to extend previous stereotype threat/leadership findings through a social media intervention. Social media refers to "internet-based platforms that allow the creation and exchange of user-generated content, usually using either mobile or web-based technologies" (Margetts *et al.*, 2015, p. 5). Around the world, use of social media is rising; studies suggest that internet users spend an average of 2 h, 15 min on social media every day, and this amount is continually increasing, especially in younger demographics (Statista, 2019). Thus, extension in the context of this medium is important because young women, our potential future leaders, are likely to be viewing stereotypically feminine images through social media and doing so often. As part of this replication on social media, we investigate the mediator of leadership self-efficacy, as previous research suggests that self-evaluations are a key mechanism that explains the negative impact of gendered images (Simon and Hoyt, 2012).

Our secondary goal in this study was to examine a potential resource that may limit the effects of stereotype threat on leadership aspirations, namely, mindfulness. Mindfulness is defined as an "awareness that arises through paying attention in a particular way: on purpose, in the present moment, and non-judgmentally" (Kabat-Zinn, 1994, p. 4). In classic stereotype threat experiments, mindfulness has been shown to buffer the effects of stereotype threat on math test performance (Weger *et al.*, 2012). Thus, we aim to extend the benefits of mindfulness to organizations and how mindfulness mitigates the effects of stereotype threat in relation to leadership aspirations. In the current study, we aim to demonstrate how mindfulness allows women to retain leadership self-efficacy and thus leadership aspirations despite experiencing stereotype threat.

Stereotype threat and leadership aspirations

Role congruity theory suggests that stereotypes underlie and explain discrimination against women in leadership (Eagly and Karau, 2002). According to this theory, individuals tend to be perceived most positively when their characteristics align with stereotypes about their social group. In relation to women in leadership, feminine stereotypes typically associated with women (e.g. communal) are perceived as incompatible with leadership. Leadership is instead aligned with masculine stereotypes related to agency (Eagly and Karau, 2002). This advantages men in obtaining and succeeding in leadership positions at a faster rate than women.

Research on the effects of stereotype threat pertaining to women in leadership suggests that women are often highly aware of role incongruity which can induce stereotype threat responses. For example, being made explicitly aware of stereotype incongruence for women in leadership can induce stereotype threat and has been related to declines in women's performance on leadership tasks (Hoyt and Murphy, 2016). In a similar vein, research has shown that stereotype threat can also reduce women's aspirations to become leaders. The

research in this area has focused specifically on media advertisements on television and magazines. [Davies et al. \(2005\)](#) found that when exposed to gender-stereotypic television commercials, women were less likely to choose a leadership role in a subsequent task. [Simon and Hoyt \(2012\)](#) similarly found that when exposed to gender-stereotypic magazine advertisements, women had negative self-perceptions and lower leadership aspirations than women who were exposed to neutral advertisements.

Women today are less likely to watch television or read print magazines (as has been the focus of previous research on women's leadership aspirations [\(Simon and Hoyt, 2012\)](#), but other types of media may still be playing a profound role in perpetuating gender stereotypes. Average internet users are spending 2 h, 15 min on social media sites every day [\(Statista, 2019\)](#), and younger students report spending an average of 6.63 h on social media on a typical day [\(Vannucci et al., 2017\)](#). Individuals report spending less time watching television than on social media, and this trend is expected to continue [\(He, 2019\)](#). Considering magazine use as the only other type of media investigated in relation to stereotype threat in leadership, users report only 15 min per day reading magazines [\(Statista, 2015\)](#). Given that internet users are increasingly using social media for entertainment, in addition to using it as a source of news and current events, it is likely that images portrayed through social media advertisements may be having similar negative effects on leadership aspirations as television or print advertisements have been shown to have in previous research. Research demonstrates that the incongruence between female stereotypes and leadership exists in social media as well. For example, one study examining politicians in social media found that feminine traits portrayed in social media are not correlated with electoral success, but masculine traits were [\(Chen et al., 2020\)](#).

In addition, it is plausible that social media is an even more insidious source of gender stereotypes than traditional types of media because the more engaged social media users are, the more effective social media advertising is [\(Voorveld et al., 2018\)](#). Social media users are considered highly engaged, in that they feel highly connected in their experience of using social media platforms and gain intrinsic enjoyment from them [\(Rani, 2018\)](#). [Calder et al. \(2009\)](#) have shown that the social and interactive nature of social media platforms is distinct and accounts for advertising effectiveness within these channels. Furthermore, social media as an advertising tool has many features that other media channels may lack, such as the ability to target advertisements to users' demographics [\(Knoll, 2016\)](#). Thus, social media users expect social media advertising to be personalized [\(Eisend, 2019\)](#), and in turn the images portrayed may have enhanced meaning. A recent review of gender stereotypes in advertising [\(Grau and Zotos, 2016\)](#) states that an important future direction for this research area is to examine the role of gender stereotypes in digital advertising.

Leadership self-efficacy as a mediator

A key explanatory mechanism through which stereotype threat (namely, social media) negatively influences women's leadership aspirations is through reducing women's leadership self-efficacy [\(Hoyt and Murphy, 2016; Singer, 1989\)](#). [Singer \(1989\)](#) developed a model of leadership aspirations that explains women's likelihood of striving for and reaching leadership roles. [Singer \(1989\)](#) suggests that leadership self-efficacy, one's confidence in their ability to lead others, predicts how likely a woman is to prefer leadership positions and her intentions to pursue leadership in the future.

Leadership self-efficacy is dynamic and changes based on "events or barriers outside a woman's control" [\(Devnew et al., 2017, p. 171\)](#). In relation to the stereotypical images perpetuated within media, self-efficacy has been shown to shift when women are exposed to examples of role models that comment on or represent stereotype incongruence [\(Hoyt and Blascovich, 2010\)](#). [Hoyt and Simon \(2011\)](#), for example, found that exposure to highly

successful female politicians and chief executive officer's reduced women's perceptions of their own leadership abilities. It is likely that leadership self-efficacy is similarly influenced by the communication of feminine stereotypes through social media.

Stereotypically feminine images in social media influence leadership self-efficacy through its threat to women's self-integrity (Spencer *et al.*, 2016). Specifically, in a review of stereotype threat research, Spencer *et al.* (2016) discuss the mechanisms through which stereotype threat has its effects on outcomes. One of the ways stereotype threat negatively effects outcomes is through the actions individuals take to protect their self-worth (Spencer *et al.*, 2016). In the case of women's leadership self-efficacy, after viewing stereotypically feminine images, women do not see themselves as leaders and thus have reduced leadership self-efficacy, and they do this to protect their self-worth (Simon and Hoyt, 2012).

For example, Simon and Hoyt (2012), in a study of the impact of stereotypically feminine magazine advertisements on women's leadership aspirations, investigated whether women's negative self-perceptions mediated this relationship. These negative self-perceptions included reduced self-esteem and concern about their leadership performance. As expected, they found that exposure to stereotypically feminine magazine advertisements increased negative self-perceptions, which reduced the women's intentions to pursue leadership positions in the future. We extend these findings by proposing that leadership self-efficacy, as a context-specific aspect of self-evaluation, would also be reduced by exposure to stereotypically feminine images. Thus, we hypothesize (see Figure 1):

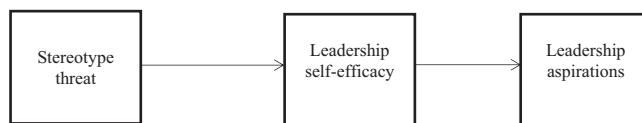
- H1.* Feminine stereotypes communicated through social media (through stereotypically feminine images in advertising) reduce leadership aspirations for women, which is mediated through reduced leadership self-efficacy.

Addressing stereotype threat: mindfulness

Finding that stereotype threat is induced through social media, and thus lowers leadership aspirations is important, but it does not address what can be done to mitigate those effects. Thus, it is important to also identify malleable resources that can be developed to address stereotype threat in a positive way (Hoyt and Murphy, 2016). Developing mindful awareness is one malleable resource that may address stereotype threat's negative impacts on leadership aspirations for women. Mindfulness can be cultivated through practices such as meditation. In the current study, we focus on natural variations in state mindfulness given the short-term context of our experimental methods (Brown and Ryan, 2003).

Importantly, mindfulness could be useful as a resource to help women combat stereotype threat in relation to leadership aspirations. For instance, one study found that in a classic stereotype threat experiment (i.e. women performing math tests), mindfulness meditation helped to improve performance when stereotype threat was induced (Weger *et al.*, 2012). Specifically, women retained high performance on a math test despite being reminded of the stereotype that men are better than women at math. Weger *et al.* (2012) suggested that

Figure 1.
Visual summary of
hypothesized
relationships (*H1*) for
women in stereotype
threat condition



mindfulness allowed for better cognitive and emotion regulation when faced with stereotype threat. In these classic experiments, for example, negative emotions and stress can decrease performance. However, the authors proposed that mindful awareness interrupted these negative processes and allowed women to retain focus on the task and to perform well despite stereotype threat (Weger *et al.*, 2012).

In related research, mindfulness has been shown to dampen automatic behavioral outcomes in response to negative work events. In a study of organizational justice, for example, Long and Christian (2015) found that mindfulness buffered the relationship between injustice and negative emotion to predict lower likelihood of retaliation against the organization. Liang *et al.* (2016) also found that mindfulness reduced a leaders' likelihood to enact abusive supervision when subordinates performed badly by improving self-regulation. Taken together, these findings suggest that mindfulness can allow individuals to detach from aggravating or stressful events at work and better retain self-control to refrain from impulsive actions. In relation to stereotype threat, lowered leadership performance or leadership aspirations are automatic responses for those experiencing stereotype threat in the leadership domain. In a similar vein, we suggest that a mindful state would similarly allow women to de-center from their automatic internal response of lowered leadership self-efficacy and leadership aspirations when viewing gendered social media images (see Figure 2).

H2. Mindfulness will buffer the relationship between stereotype threat and leadership aspirations (mediated by leadership self-efficacy) such that this relationship will be weaker for those higher in mindfulness.

Method

Study 1: pilot study

The purpose of the pilot study was to ensure that the social media advertisements used as part of a fictional social media timeline were perceived as gender-neutral or stereotypically feminine as intended. A mix of gender-stereotypical and neutral ads needed to be used in Study 2 to avoid demand characteristics (Simon and Hoyt, 2012). Ten neutral images and four feminine images were tested on a sample of 53 undergraduate students at a Canadian university. Following previous research (Davies *et al.*, 2005; Simon and Hoyt, 2012), neutral images did not depict humans and were not advertising gender-stereotypic products or companies. The feminine images portrayed women in stereotypical roles, such as sex symbols, mothers and homemakers. Each image was rated from 1 to 7 on both masculinity and femininity.

A series of paired sample *t*-test analyses revealed that the feminine images were significantly more feminine than a paired neutral image. The feminine images were rated significantly more feminine than masculine images. The neutral images were rated equally feminine and masculine (see Table 1).

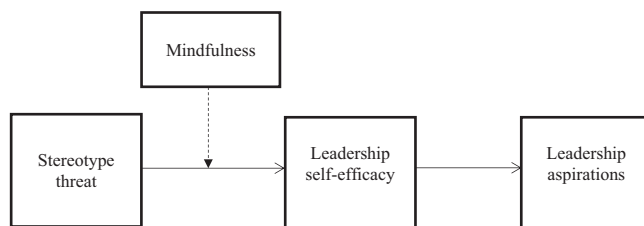


Figure 2.
Visual summary of
hypothesized
relationships (*H2*) for
women in stereotype
threat condition

Image no.	Image type	Feminine		Masculine	
		Mean	SD	Mean	SD
1	Neutral image	2.66	1.82	2.30	1.32
2	Neutral image	2.40	1.39	3.21	1.85
3	Fem image	6.62	0.69	1.45	0.722
4	Fem image	6.26	1.04	2.26	1.57
5	Neutral image	2.75	1.78	3.00	1.65
6	Neutral image	2.42	1.57	2.13	1.34
7	Neutral image	2.85	1.80	2.45	1.42
8	Neutral image	2.60	1.57	2.77	1.82
9	Neutral image	2.23	1.48	2.60	1.74
10	Neutral image	1.98	1.26	3.53	2.21
11	Neutral image	2.23	1.40	3.11	2.09
12	Neutral image	2.42	1.42	3.00	2.01
13	Fem image	6.68	0.61	1.42	0.91
14	Fem image	6.42	0.95	1.91	1.20

Table 1.

Means and standard deviations of image testing (Study 1)

Notes: A series of *t*-tests were conducted to ensure neutrality and femininity of appropriate images. Given the high number of tests, descriptive statistics only are reported here, and tests are available from the authors upon request. Fem = feminine

Study 2

Materials. Using the images that had been tested in Study 1, fictional Facebook timelines were created to implicitly induce stereotype threat via social media [1]. See Table 2 for a list of all images and in which conditions they appeared. In the control condition, only neutral images were used in the Facebook timeline (ten images total). In the experimental condition, four feminine images and six neutral images were used. This proportion of gender to neutral images is similar to past research (Davies *et al.*, 2005) and reduces the likelihood that participants would be aware of the purpose of the study.

Image description	Neutral timeline (control condition)	Gendered timeline (experimental condition)
<i>Neutral images</i>		
Contact lenses	X	
Black dog	X	
Ice cream	X	X
Bank/credit card	X	
Food delivery app	X	X
Forest fire	X	X
Apple	X	
Soap	X	X
Plates of fried food	X	X
River/scenery	X	X
<i>Gendered images</i>		
Mother holding a baby		X
Lingerie models		X
Woman doing laundry		X
Pregnant woman modeling maternity clothing		X

Table 2.

Description of images used in experimental and control conditions

Sample. A sample of 144 women who were on average 26.02 years old (SD = 11.01) were recruited through both mTurk ($n = 50$) and a mid-sized Canadian university ($n = 94$).

Procedure. To avoid revealing the purpose of the study and to ensure attention to the images, participants were told they were participating in a study of working memory in advertising. They completed state, trait and demographic measures and were then randomly assigned to either the experimental or control condition. In both conditions, participants viewed the fictional Facebook timeline for 3 min. After exposure to the timeline, participants completed measures of domain identification (manipulation check), leadership self-efficacy and leadership aspirations.

Measures. State mindfulness. [Brown and Ryan's \(2003\)](#) five-item state mindfulness scale was used to measure state mindfulness. Sample items include "I am finding it difficult to stay focused on what's happening in the present", and "I am rushing through activities without being really attentive to them". Ratings were provided using a six-point Likert scale of not at all (1) to very much (7). This scale was reverse coded so that high scores were high mindfulness.

Leadership self-efficacy. Participants responded to ten items from [Murphy \(1992\)](#), such as "I am confident of my ability to influence a work group that I lead" and "I know how to encourage good group performance" using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5).

Leadership aspirations. Participants responded to two items including "I will actively pursue leadership positions in the future" and "I would work hard to be selected as a leader" using a seven-point Likert scale of strongly disagree (1) to strongly agree (7) ([Simon and Hoyt, 2012](#)).

Domain identification. Participants responded to four items from [Hoyt and Blascovich \(2010\)](#) that assessed their identification with leadership using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). An example item is "I am a leadership-oriented person".

Controls. We controlled for data source (students or mTurk) to account for the differences between the student and mTurk samples that we combined for our analysis.

Results. Means, standard deviations, alphas and correlations of all variables can be seen in [Table 3 \[2\]](#). The data were tested using standard ordinary least squares regression procedures as implemented through [Hayes' \(2018\) PROCESS 3.1](#). Following [Hayes' \(2018\)](#) recommendations, unstandardized regression coefficients are reported throughout. Statistical significance of the indirect effects was evaluated using bias-corrected 95% confidence intervals (CI), with each analysis based upon 5,000 bootstrapped resamples. All analyses were implemented using SPSS 25. A dummy variable of sample sources (i.e. mTurk vs student) was also included as a control to control for differences between the samples.

Measures	<i>M</i>	<i>SD</i>	α	1	2	3	4	5
1. Age	26.02	11.01	–					
2. Condition	1.52	0.79	0.95	–0.09				
3. Leadership self-efficacy	3.69	0.72	0.92	–0.06	–0.17*			
4. Leadership aspirations	4.81	1.59	0.90	–0.32**	–0.14	0.62**		
5. State mindfulness	4.73	1.53	0.97	0.43**	–0.05	–0.05	–0.22**	
6. Data source	0.35	0.48	–	0.72**	–0.03	–0.17*	–0.27**	0.34**

Notes: $N = 144$, **correlation is significant at 0.01 (two-tailed); *correlation is significant at 0.05 (two-tailed). Condition is coded as 1 = control condition (no stereotype threat), 2 = experimental condition (stereotype threat). Data source is coded as 0 = students, 1 = mTurk

Table 3.
Descriptive statistics
and correlations

Stereotype threat in women was examined by comparing the control ($M = 3.63$; $SD = 0.79$) and experimental ($M = 3.34$; $SD = 0.99$) condition in terms of their domain identification: $t(142) = 1.90, p = 0.03$. These results demonstrate that, as intended, women in the experimental condition identify with leadership less than women in the control condition.

In line with $H1$, being in the stereotype threat condition reduced leadership aspirations which was mediated by reduced leadership self-efficacy (point estimate: $-0.33, SE = 0.16, CI[-0.64, -0.02]$; see [Table 4](#) for direct effects). In regard to $H2$, mindfulness moderated the relationship between stereotype threat and leadership self-efficacy ($b = -0.17, p < 0.05$; [Table 5](#)). However, this relationship was the opposite of what was expected; high mindfulness strengthened the mediated relationship between stereotype threat, leadership self-efficacy and leadership aspirations, where those higher in mindfulness had the lowest leadership self-efficacy ([Figure 3](#); see [Table 6](#) for conditional indirect effects).

Discussion

This study contributes to the literature on stereotype threat, leadership aspirations and mindfulness. We found that stereotype threat induced implicitly via social media reduces women’s leadership aspirations, as mediated by reduced leadership self-efficacy. As adults

Table 4. Direct and indirect effects model coefficients for effects of stereotype exposure condition on leadership aspirations ($N = 144$)

Antecedent	Consequent									
	Leadership self-efficacy (M)					Leadership aspirations (Y)				
	Coeff	SE	<i>p</i>	LLCI	ULCI	Coeff	SE	<i>p</i>	LLCI	ULCI
Leadership self-efficacy (M)	–	–	–	–	–	1.29	0.15	<0.01	1.00	1.58
Condition (X)	–0.25	0.12	0.03	–0.48	–0.02	–0.15	0.21	0.49	–0.56	0.27
Data source (C)	–0.27	0.12	0.03	–0.51	–0.02	–0.55	0.22	<0.01	–0.99	–0.12
	$R^2 = 0.06$					$R^2 = 0.41$				
	$F(2, 141) = 4.51, p < 0.05$					$F(3, 140) = 32.60, p < 0.01$				

Notes: X = independent variable (Condition where 1 = control; 2 = stereotype threat exposure); Y = outcome (leadership aspirations); M = mediator (leadership self-efficacy); C = covariate (age); LLCI = lower level of confidence interval; ULCI = upper limit of confidence interval. Data source is coded as 0 = students, 1 = mTurk

Table 5. Regression results (moderated mediation)

Antecedent	Consequent									
	Leadership self-efficacy (M)					Leadership aspirations (Y)				
	Coeff	SE	<i>P</i>	LLCI	ULCI	Coeff	SE	<i>P</i>	LLCI	ULCI
Leadership self-efficacy (M)	–	–	–	–	–	1.29	0.15	<0.001	0.99	1.58
Condition (X)	–0.54	0.38	0.15	–0.20	1.29	–0.15	0.21	0.49	–0.56	0.27
State mindfulness (W)	0.25	0.12	<0.05	0.01	0.49	–	–	–	–	–
Condition*State mindfulness (I)	–0.17	0.08	<0.05	–0.32	–0.02	–	–	–	–	–
Data source (C)	–0.25	0.13	0.05	–0.51	0.00	–0.55	0.22	<0.05	–0.99	–0.12
	$R^2 = 0.09$					$R^2 = 0.41$				
	$F(4, 139) = 3.52, p < 0.01$					$F(3, 140) = 32.60, p < 0.001$				

Notes: X = independent variable (Condition where 1 = control; 2 = stereotype threat exposure); Y = outcome; M = mediator (leadership self-efficacy); W = Moderator I = Interaction; C = covariate; LLCI = lower level of confidence interval; ULCI = upper limit of confidence interval. Data source is coded as 0 = students, 1 = mTurk

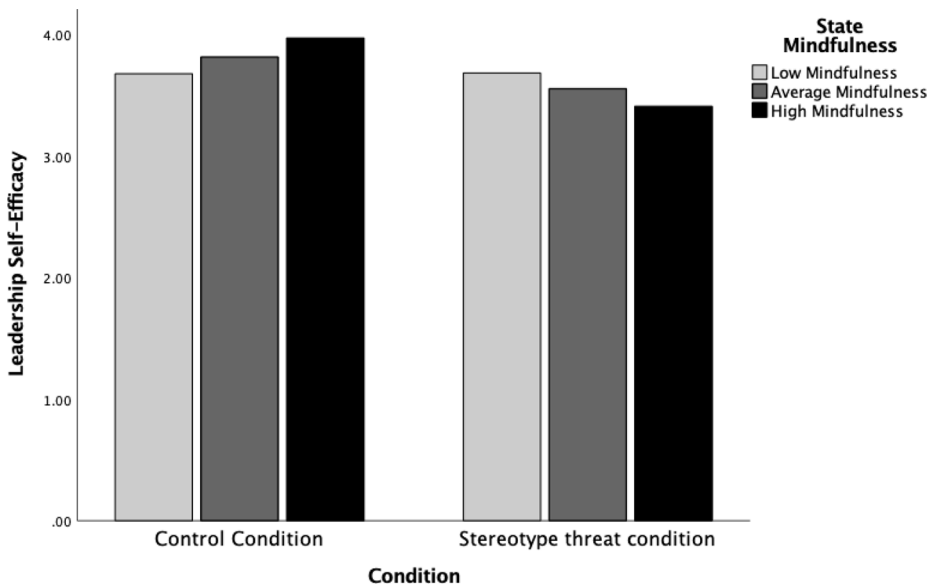


Figure 3. Moderating effect of state mindfulness on the relationship between stereotype threat and leadership self-efficacy

Consequent: leadership aspirations

Conditional indirect effects: leadership self-efficacy (mediator)

	Indirect effect	SE	LLCI	UCLI
Low mindfulness	0.01	0.23	-0.46	0.44
Average mindfulness	-0.34	0.15	-0.66	-0.05
High mindfulness	-0.72	0.28	-1.27	-0.17

Table 6. Conditional indirect effects of stereotype threat on leadership aspirations (moderated mediation)

spend more time than ever on social media (Statista, 2019), our findings are concerning in terms of the potential impacts of social media on women’s leadership aspirations and ultimately women’s equal representation in leadership over time. Mindfulness moderated the mediated relationship between stereotype and leadership aspirations (mediated by leadership self-efficacy); however, the findings were opposite as hypothesized. Instead of buffering this mediated relationship, higher levels of mindfulness strengthened the mediated relationship between stereotype threat, leadership self-efficacy and leadership aspirations.

Theoretical and practical implications

Our research contributes to the literature on women’s leadership aspirations. As discussed in our introduction, leadership aspirations are a critical issue that potentially contributes to women’s underrepresentation in leadership. If women are not aspiring to leadership at the same rate as men, this could reduce the number of women in the leadership pipeline. Although many studies have focused on gender and leadership perceptions, very few studies have sought to understand factors impacting women’s leadership aspirations. Some studies find that women tend to have lower leadership aspirations than their male counterparts (Elprana et al., 2015), which is often attributed to essentialist explanations such

as a tendency for women to “lean out” of their careers to care for their families (Sandberg, 2014) or less inherent interest in leadership. Other studies have looked at gender differences in socialization (Schoon and Duckworth, 2012) or in the value placed on extrinsic rewards (Lechner *et al.*, 2018).

Our findings suggest that an alternative explanation, gender stereotypes communicated to women via social media, may be contributing to women’s reduced leadership aspirations. By investigating stereotype threat (induced implicitly by social media images) as an antecedent to women’s reduced leadership aspirations, our findings challenge essentialist perceptions that women avoid seeking leadership positions for stereotypically “feminine” reasons of balancing work/family responsibilities or for having inherently different values than men. Rather, as suggested by role congruity theory (Eagly and Karau, 2002), when women are reminded of the misalignment between the feminine stereotype and leadership stereotype (i.e. stereotype threat), they have reduced leadership aspirations. Our research provides evidence that social media, a source of communication, connection and news for many individuals, may be an important alternative factor to consider when seeking to understand and address women’s underrepresentation in leadership positions.

Evidently, the types of images women are exposed to via social media through advertisements may be one of the many complex societal factors contributing to women’s lower leadership aspirations. In turn, this research may have implications for organizations who advertise on social media and for the individuals who consume content on social media. For organizations, this research demonstrates the importance of considering whether imaging is stereotypical and the impacts this could be having on women who might otherwise aspire to leadership roles. In recent years, counter-stereotypical advertising is gaining popularity, for example, featuring men as homemakers for household products such as laundry detergent (LaMagna, 2016). The current study, in addition to Simon and Hoyt’s (2012) exploration of counter stereotypical advertising in magazines, suggests that using increasingly empowering images in advertising can be one part of organizations’ efforts to promote diversity on a broad level.

This study contributes to research on stereotype threat by inducing stereotype threat implicitly through social media. Given that users are increasingly using social media for informational and social purposes (Vannucci *et al.*, 2017), this addresses a significant gap in the literature. Overall, these results demonstrate that gender stereotypic advertising in social media is damaging to women’s leadership aspirations. Future research should examine whether similar effects would arise for leadership performance as well, to understand whether social media could be limiting women’s performance in the important area of leadership where their contributions and voice are needed. Other identities that may be perceived as incongruent with leadership would be of interest in future studies as well, such as race or sexual orientation. As well, research indicates that girls want to be less female online (Oberst *et al.*, 2016). Future research could address the important question of what this could mean for gender typical advertising in the social media space.

In relation to the stereotype threat and leadership literature, very few studies have examined moderators related to stereotype threat in leadership. Although the intention of this study was to address Hoyt and Murphy’s (2016) call for ways to mitigate stereotype threat in leadership, we unexpectedly found that mindfulness may exacerbate stereotype threat effects for women in relation to social media and leadership aspirations. This could plausibly be due to the potential for mindfulness to heighten women’s attention to negative cues (i.e. the role incongruence between being the feminine stereotype and leadership; Eagly and Karau, 2002) in the stereotype threat condition. In turn, this heightened attention to gender stereotypical imaging may have momentarily reduced leadership self-efficacy and

leadership aspirations. Past research has demonstrated that mindfulness does lead to heightened information processing (Eisenbeiss and van Knippenberg, 2015), which suggests that women who are mindful may be particularly attuned to the implicit stereotype threat induced via social media. That is, they have heightened awareness of the role incongruence between the feminine stereotype and leadership.

In turn, this research contributes to this growing area highlighting potential downsides of mindfulness at work. The vast majority of mindfulness research has been in the areas of clinical psychology, finding that mindfulness predicts primarily positive outcomes such as stress reduction and well-being (Brown and Ryan, 2003). In addition, the vast majority of work-related mindfulness literature has shown many positive outcomes of mindfulness as well, such as improved leadership and work-related well-being (Good *et al.*, 2016). However, there are a small number of studies recognizing the potential “dark” side of mindfulness at work. Burton and Barber (2019) found in two studies that both state and trait mindfulness exacerbated the relationship between abusive supervision and reduced interactional justice. Similarly, Walsh and Arnold (2020) found that employee mindfulness heightened the negative relationship between abusive supervision and employee well-being. Evidently, mindfulness may heighten negative reactions to stressful work situations, making a focus on reducing stressors (in contrast to building mindful awareness to deal with stressors) potentially more productive for workplaces. This is suggested to be because mindfulness heightens awareness of moment-to-moment experiences (Burton and Barber, 2019) and that heightened awareness makes individuals more attune to negative experiences. Thus, rather than focusing on mindfulness as potential way to make women more resilient to this threat, the focus should be on reducing stereotype threat within social media to help reduce negative effects on women’s leadership self-efficacy and leadership aspirations.

It is worth noting that the relatively few studies of mindfulness and stereotype threat have induced mindfulness to assess the effects of meditation specifically in reducing stereotype threat (Weger *et al.*, 2012). In contrast, our study investigated natural variations in state mindfulness across stereotype threat and control groups and did not induce mindfulness. Despite strong evidence that state mindfulness correlates highly with mindfulness practices such as meditation (Brown and Ryan, 2003), it is important to explore this unexpected finding in future research.

Limitations and future research

Despite several theoretical and practical contributions, this research does have limitations to note. First, the Facebook timeline used in our study was static; the image looked like a typical Facebook timeline where users could scroll up and down, but the content was not interactive. This may have reduced the realism of the study in that the content was more controlled than most users’ typical social media experiences. However, this choice was optimal as it ensured that participants were looking at the same, controlled content (i.e. internal validity), rather than rapidly interacting with other content through a more interactive approach.

Second, the Facebook timelines consisted of only gender-stereotypical and neutral ads. It is plausible that counter-stereotypical ads would be presented on individual’s real Facebook timeline as well (Simon and Hoyt, 2012). This could have potentially made the timelines seem unrealistic compared to the average users’ experience. However, given that the role of counter-stereotypical ads was not the focus of this investigation, balancing participants’ exposure to both gendered and neutral advertisements was consistent with past research investigating other types of media. Future work could incorporate these types of social media images in addition to stereotypical images.

One final area for future research could be to examine generational difference in mindfulness and how that might impact important outcomes such as leadership aspirations. There is some research suggesting the older adults are more mindful (Geiger *et al.*, 2016). Indeed, while not the focus of the current study, the MTurk sample which was older did report higher levels of mindfulness than the younger student sample.

Conclusion

We found that stereotype threat induced through social media reduces women's leadership aspirations, through negative effects on leadership self-efficacy. We also found, unexpectedly, that mindfulness exacerbates these effects. Given the increasing use of social media, the potential for social media to impact women's leadership aspirations is an important direction for future research. Overall, our research shows that social media could be implicitly contributing the underrepresentation of women in leadership and that building mindful awareness may be one potential strategy for overcoming this everyday barrier for women's leadership aspirations.

Notes

1. Images used are available from the first author upon request.
2. The VIF was examined to assess multicollinearity. Acceptable VIF levels are less than 3 (Thompson *et al.*, 2017) and in the current study $VIF = 1$ and thus multicollinearity is not a problem.

References

- Brown, K.W. and Ryan, R.M. (2003), "The benefits of being present: mindfulness and its role in psychological well-being", *Journal of Personality and Social Psychology*, Vol. 84 No. 4, pp. 822-848.
- Burton, J.P. and Barber, L.K. (2019), "The role of mindfulness in response to abusive supervision", *Journal of Managerial Psychology*, Vol. 34 No. 5, pp. 339-352.
- Calder, B.J., Malthouse, E.C. and Schaedel, U. (2009), "Engagement with online media and advertising effectiveness", *Journal of Interactive Marketing*, Vol. 23 No. 4, pp. 321-331.
- Catalyst. (2018), "Quick take: women in the workforce- global", New York: Catalyst, Vol. October, available at: www.catalyst.org/knowledge/women-workforce-global (accessed 3 January 2019).
- Chen, D., Park, K. and Joo, J. (2020), "Understanding gender stereotypes and electoral success from visual self-presentations of politicians in social media", *Joint Workshop on Aesthetic and Technical Quality Assessment of Multimedia and Media Analytics for Societal Trends*, pp. 21-25.
- Davies, P.G., Spencer, S.J. and Steele, C.M. (2005), "Clearing the air: identity safety moderates the effects of stereotype threat on women's leadership aspirations", *Journal of Personality and Social Psychology*, Vol. 88 No. 2, p. 276.
- Devnew, L.E., Berghout Austin, A.M., Le Ber, M.J. and Shapiro, M. (2017), "Women's leadership aspirations", in Masden, S. (Ed.), *Handbook of Research on Gender and Leadership*, Edward Elgar Publishing, United Kingdom of Great Britain and Northern Ireland.
- Eagly, A.H. and Karau, S.J. (2002), "Role congruity theory of prejudice toward female leaders", *Psychological Review*, Vol. 109 No. 3, pp. 573-598.

- Eisenbeiss, S.A. and van Knippenberg, D. (2015), "On ethical leadership impact: the role of follower mindfulness and moral emotions", *Journal of Organizational Behavior*, Vol. 36 No. 2, pp. 182-195.
- Eisend, M. (2019), "Gender roles", *Journal of Advertising*, Vol. 48 No. 1, pp. 72-80.
- Elprana, G., Felfe, J., Stiehl, S.K. and Gatzka, M.B. (2015), "Exploring the sex difference in affective motivation to lead", *Journal of Personnel Psychology*, Vol. 14 No. 3, pp. 142-152.
- Geiger, P.J., Boggero, I.A., Brake, C.A., Caldera, C.A., Combs, H.L., Peters, J.R. and Baer, R.A. (2016), "Mindfulness-based interventions for older adults: a review of the effects on physical and emotional well-being", *Mindfulness*, Vol. 7 No. 2, pp. 296-307.
- Good, D.J., Lyddy, C.J., Glomb, T.M., Bono, J.E., Brown, K.W., Duffy, M.K., Baer, R.A., Brewer, J.A. and Lazar, S.W. (2016), "Contemplating mindfulness at work: an integrative review", *Journal of Management*, Vol. 42 No. 1, pp. 114-142.
- Good, J.J., Woodzicka, J.A. and Wingfield, L.C. (2010), "The effects of gender stereotypic and counter-stereotypic textbook images on science performance", *The Journal of Social Psychology*, Vol. 150 No. 2, pp. 132-247.
- Grau, S.L. and Zotos, Y.C. (2016), "Gender stereotypes in advertising: a review of current research", *International Journal of Advertising*, Vol. 35 No. 5, pp. 761-770.
- Hayes, A.F. (2018), *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*, 2nd ed., Guilford Press, New York, NY.
- He, A. (2019), "Average US time spent with mobile in 2019 has increased", *Emarketer*, available at: www.emarketer.com/content/average-us-time-spent-with-mobile-in-2019-has-increased
- Hoyt, C.L. and Blascovich, J. (2010), "The role of leadership self-efficacy and stereotype activation on cardiovascular, behavioral and self-report responses in the leadership domain", *The Leadership Quarterly*, Vol. 21 No. 1, pp. 89-103.
- Hoyt, C.L. and Murphy, S.E. (2016), "Managing to clear the air: stereotype threat, women and leadership", *The Leadership Quarterly*, Vol. 27 No. 3, pp. 387-399.
- Hoyt, C.L. and Simon, S. (2011), "Female leaders: injurious or inspiring role models for women?", *Psychology of Women Quarterly*, Vol. 25 No. 1, pp. 143-157.
- Kabat-Zinn, J. (1994), *Wherever You Go There You Are: Mindfulness Meditation in Everyday Life*, Hyperion, New York, NY.
- Kalokerinos, E.K., von Hippel, C. and Zacher, H. (2014), "Is stereotype threat a useful construct for organizational psychology research and practice?", *Industrial and Organizational Psychology*, Vol. 7 No. 3, pp. 381-402.
- Knoll, J. (2016), "Advertising in social media: a review of empirical evidence", *International Journal of Advertising*, Vol. 35 No. 2, pp. 266-300.
- LaMagna, M. (2016), "Bizarre new fronts in the battle of the sexes", *Marketwatch*, Vol. March, available at: www.marketwatch.com/story/why-companies-are-making-laundry-detergent-just-for-men-2016-02-17 (accessed 20 March 2019).
- Lechner, C.M., Sorthheil, F.M., Obschonka, M. and Salmela-Aro, K. (2018), "What drives future business leaders? How work values and gender shape young adults' entrepreneurial leadership aspirations", *Journal of Vocational Behavior*, Vol. 107, pp. 57-70.
- Liang, L.H., Lian, H., Brown, D., Ferris, D.L., Hanig, S. and Keeping, L. (2016), "Why are abusive supervisors abusive? A dual-system self-control model", *Academy of Management Journal*, Vol. 59 No. 4, pp. 1385-1406.
- Long, E.C. and Christian, M.S. (2015), "Mindfulness buffers retaliatory responses to injustice: a regulatory approach", *Journal of Applied Psychology*, Vol. 100 No. 5, pp. 1409-1422.
- McKinsey and Leanin.org (2018), "Women in the workplace", available at: www.mckinsey.com/featured-insights/gender-equality/women-in-the-workplace-2018

- Margetts, H., John, P., Hale, S. and Yasseri, T. (2015), *Political Turbulence: How Social Media Shape Collective Action*, Princeton University Press, Princeton and Oxford.
- Murphy, S.E. (1992), "The contribution of leadership experience and self-efficacy to group performance under evaluation apprehension", Unpublished doctoral dissertation, University of Washington, Seattle.
- Oberst, U., Renau, V., Chamarro, A. and Carbonell, X. (2016), "Gender stereotypes in Facebook profiles: are women more female online?", *Computers in Human Behavior*, Vol. 60, pp. 559-564.
- Rani, A. (2018), "Young customers insight on social media engagement", *International Journal of Marketing and Business Communication*, Vol. 7 No. 1, pp. 18-25.
- Sandberg, S. (2014), *Lean in: Women, Work and the Will to Lead*, Alfred A. Knopf, New York, NY.
- Schoon, I. and Duckworth, K. (2012), "Who becomes an entrepreneur? Early life experiences as predictors of entrepreneurship", *Developmental Psychology*, Vol. 48 No. 6, pp. 1719-1726.
- Simon, S. and Hoyt, C.L. (2012), "Exploring the effect of media images on women's leadership self-perceptions and aspirations", *Group Processes and Intergroup Relations*, Vol. 16 No. 2, pp. 232-245.
- Singer, M.S. (1989), "Individual differences in leadership aspirations: an exploratory study from valence, self-efficacy and attribution perspectives", *Journal of Social Behavior and Personality*, Vol. 4 No. 3, pp. 253-262.
- Spencer, S.J., Logel, C. and Davies, P.G. (2016), "Stereotype threat", *Annual Review of Psychology*, Vol. 67 No. 1, pp. 415-437.
- Statista. (2015), "Daily time spent reading magazines per capita in the United States from 2010 to 2018", available at: www.statista.com/statistics/186944/us-magazine-reading-habits-since-2002/
- Statista (2019), "Daily time spent on social networking by internet users worldwide from 2012 to 2017 (in minutes)", available at: www.statista.com/statistics/433871/daily-social-media-usage-worldwide/
- Vannucci, A., Flannery, K.M. and Ohannessian, C.M.C. (2017), "Social media use and anxiety in emerging adults", *Journal of Affective Disorders*, Vol. 207, pp. 163-166.
- Voorveld, H.A., Van Noort, G., Muntinga, D.G. and Bronner, F. (2018), "Engagement with social media and social media advertising: the differentiating role of platform type", *Journal of Advertising*, Vol. 47 No. 1, pp. 38-54.
- Walsh, M.M. and Arnold, K.A. (2020), "The bright and dark sides of employee mindfulness: leadership style and employee well-being", *Stress and Health*, Vol. 36 No. 3, pp. 287-298.
- Weger, U.W., Hooper, N., Meier, B.P. and Hothrow, T. (2012), "Mindful maths: reducing the impact of stereotype threat through a mindfulness exercise", *Consciousness and Cognition*, Vol. 21 No. 1, pp. 471-475.

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