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Research Article

Leader self-awareness: An examination and implications of women's under-prediction

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Summary Self-awareness represents an important aspect of leadership. However, past research on leader self-awareness has focused on one component of self-awareness, self versus others' ratings, leaving the second component, the ability to anticipate the views of others, largely neglected. We examined this second component of self-awareness by focusing on women leaders who have been found to under-predict how others rate them. In two studies, we measured how women leaders anticipate the views of their bosses in regard to their leadership. In Study 1, 194 leaders rated their leadership, were rated by their bosses, and then predicted how their bosses rated their leadership. While we found that women under-predict their boss ratings compared with men, we did not find that boss gender or feedback played a role in this under-prediction. In Study 2, 76 female leaders identified (via open-ended questions) possible reasons and consequences of under-prediction for women in organizations. Results from Study 2 reveal the following: (1) the reasons for women's under-prediction include a lack of self-confidence, differences in feedback needs, learned gender roles, and self-sexism; and (2) the perceived consequences of under-prediction are negative for both women and the organization.

Keywords: gender differences; prediction; self-awareness; leadership; feedback

> They [women] assume they're under-qualified for positions, fail to demand the plum assignments and compensation they deserve and steer themselves off career tracks in anticipation of children they don't yet have. Sheryl Sandberg, COO Facebook

Women and men are entering businesses at similar rates, yet their workplace experiences and career paths quickly diverge (Becker & Wright, 2011), with women largely remaining stuck in middle management (Mainiero & Sullivan, 2005). As suggested by Sheryl Sandberg and research exploring gender differences in organizations (e.g., Institute of Leadership & Management, 2011, henceforth ILM), women may be unintentionally holding themselves back in their careers. For instance, the ILM found that women are more cautious than men in applying for jobs or promotions. Whereas women's reluctance to gain advancement in the workplace could be a result of less self-confidence compared with men (ILM, 2011), it could also be attributed to a perceptual issue that arises from their self-awareness of their own capabilities.

Specifically, there is preliminary evidence that women underestimate how others perceive them in organizations (Taylor & Hood, 2011). Taylor and Hood (2011) found that when employees were asked to predict how they were rated on socio-emotional competence by their subordinates, peers, and bosses, women's predicted ratings were significantly lower than those of their male counterparts, even though they self-rated similarly to men and were rated

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more favorably by others compared with men. While these findings demonstrate that women tend to anticipate that others will provide lower ratings of their socio-emotional competence, it also poses provocative questions: Do women under-predict how their bosses rate their leadership, which might in turn contribute to their advancement attempts? If this under-prediction of leadership occurs, what might be contributing to it?

The primary goal of this study is to understand how women leaders predict that their bosses will rate them on their leadership behaviors and the possible factors that may contribute to those predictions. With this goal, we respond to Becker, Ayman, and Korabik's (2002) call for more research on how perceptual discrepancies, especially those related to judgments of how individuals think they are viewed by others, may perpetuate possible problems for female leaders.

The ability to anticipate the views of others (i.e., metaperception) represents an important aspect of leader self-awareness (Taylor, 2010). However, most of the past empirical work examining leader self-awareness has only focused on one component of self-awareness, how leaders see themselves (e.g., strengths and weaknesses) and how they rate themselves in comparison with others' ratings of them. Meanwhile, the metaperception component of leader self-awareness, as evidenced by predicting others' ratings, has received little attention (Taylor, 2010; Taylor & Bright, 2011).

Self–other agreement (SOA) research (Fleenor, Smither, Atwater, Braddy, & Sturm, 2010) has examined the relationship between how people rate themselves and how they are rated by others and the resulting implications of rating agreement. According to Atwater and Yammarino (1997), in-agreement raters, who rate their strengths and weaknesses similar to how others rate them, are able to make more effective decisions related to their careers. If women are predicting lower ratings than their bosses assign to them, then women's predicted ratings are not in agreement with how they are actually viewed, which may result in fewer women asking for promotions or salary increases (Ostroff & Atwater, 2003). The present study seeks to explore this ostensibly important component of leader self-awareness by examining how leaders predict bosses' ratings of their leadership.

The important contributions we make in this study include the following: (1) expanding the self–other rating agreement field by describing the importance of prediction as a component of leader self-awareness; (2) testing variables, such as leadership behavior, boss gender, and feedback provision, that have not been addressed in previous prediction studies; and (3) extending prior self-awareness research by making the first empirical attempt to address the cognitive underpinnings of metaperception for women leaders. We achieve this third contribution by evaluating women's thoughts pertaining to the reasons and consequences of this under-prediction.

The remainder of this article is organized as follows. First, we review the extant literature on self-awareness and prediction to build the case that studying the prediction of others' ratings is important, especially for effective leadership. Next, we use social cognitive theory (Bandura, 1986) to investigate a number of variables that may be related to predicted-other ratings. Third, we present results of two studies and conclude with a discussion of theoretical and practical implications as well as provide suggestions for future research.

Self-awareness and Leadership

The ability to be self-aware, or to think consciously about oneself, is conceivably what distinguishes human beings from all other animals (Crook, 1980). This important psychological characteristic has been both explicitly and implicitly recognized in many styles of leadership, including, but not limited to, authentic (Avolio & Gardner, 2005), servant (Greenleaf, 1977), spiritual (Fry, 2003), and transcendent leadership (Crossan, Vera, & Nanjad, 2008). As such, self-awareness has been described as an important factor associated with leadership success (Leary & Buttermore, 2003); it has been shown to influence the decisions leaders make and how they influence others (e.g., Crossan et al., 2008; Taylor, 2010).

The classical theories of individual self-awareness (Buss, 1980; Carver & Scheier, 1982, 1998; Duval & Wicklund, 1972; Snyder & Gangestad, 1986) can be traced to early social, clinical, and developmental psychology. Collectively, these theories define self-awareness as having two primary components: (1) how people see themselves and the process by which people make assessments about themselves *and* (2) the ability to detect how they are

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perceived by others (Taylor, 2010). In his comprehensive review of the self-awareness literature, Baumeister (2005) affirmed this two-component conceptualization of self-awareness, defining self-awareness as "anticipating how others perceive you, evaluating yourself and your actions according to collective beliefs and values, and caring about how others evaluate you" (p. 7). Thus, for self-awareness to successfully develop, individuals must have not only an understanding of themselves but also an understanding of and appreciation for others' perceptions of them.

Objective self-awareness (OSA) theory (Duval & Wicklund, 1972; Silvia & Duval, 2001) suggests that humans can achieve self-awareness when they direct their attention inward and focus on themselves. This self-focused attention automatically results in self-evaluation against self-defined, subjective standards of correctness. According to OSA theory, if people find themselves lacking in comparison with their standards, they can change the standards, change themselves, or work to avoid their self-aware state.

Objective self-awareness is an individual-level theory of self-awareness, however, and does not take into account one's interactions with others, which is an inherent aspect of leadership. Drawing upon OSA, Taylor proposed a theory of *leader* self-awareness (Taylor, 2010; Taylor, Wang, & Zhan, 2012) that argues that a distinction exists between individual self-awareness and leader self-awareness due to the importance of the second component of self-awareness to leadership (i.e., the anticipation of how one is seen by others). Because leadership emerges from social systems and is a relational process that involves multiple individuals across levels, leaders must work to be aware of their influence on others in order to be effective (Taylor, 2010). Therefore, a large component of leader self-awareness involves being able to understand others' perceptions of himself or herself in order to maximize the effectiveness of his or her interactions with others.

Although important to the development of leader self-awareness, metaperception capability, or anticipating how one is perceived by others, has only recently begun to receive attention in leadership studies (e.g., Taylor & Hood, 2011; Taylor et al., 2012). In fact, the organizational sciences have largely ignored this second component of self-awareness while placing great emphasis on how one sees and evaluates oneself (Taylor, 2010; Taylor et al., 2012). Perhaps the greatest oversight is the lack of exploration of gender differences that may exist between men and women as it relates to the metaperception component of leader self-awareness. Taylor and Hood (2011) found not only that did women leaders under-predict how others perceive their abilities but also that the size of the discrepancy in women's predicted ratings versus others' actual ratings was nearly three times greater than that for men. This finding is interesting considering that self-ratings did not differ significantly between men and women.

In the present research, we draw upon Taylor's (2010) theory of leader self-awareness to examine leaders' ability to predict how others view their leadership behavior. In particular, we are interested in understanding the nature of women's ability to predict how their bosses view their leadership behavior. We operationalize the second component of leader self-awareness, as described in Taylor's theory, by comparing the leaders' predicted ratings with the actual ratings of their boss. Bosses' ratings were used in the comparisons, as we believe a leader's accurate perceptions of boss ratings could influence the leader's attempts to realize important outcomes (e.g., rewards).

Past and Present Research on Prediction

Early work to understand how people become aware of how others see them began with symbolic interactionism. The term "symbolic interaction" was coined by Herbert Blumer (1969) to describe an individual's relationship to society. The ideas behind the term came from several influences but are generally more heavily linked to Cooley's (1902) "looking glass self" and the work of Mead (1934). Cooley (1902) believed that one's interaction with others defines the self. Indeed, he proposed that "one's consciousness of himself is a reflection of the ideas about himself that he attributes to other minds; thus there can be no isolated selves" (Coser, 1977, p. 305). Mead (1934) took a stronger position by stating that the key to defining the self was the responses the individual receives from others in their interactions. In fact, he coined the term "the generalized other" and proposed that self-perceptions take on the perceptions that others hold of the individual.

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One of the earliest studies to test the tenants of symbolic interactionism was conducted by Miyamoto and Dornbusch (1956). In their study, they had participants rate themselves on four characteristics (intelligence, self-confidence, physical attractiveness, and likeableness) and had others rate each subject on the same four characteristics. Then, they had each participant predict how others would rate them. They found that self-ratings and how they predicted others would see them were very similar; this provided initial support for the notion of the generalized other.

The Miyamoto and Dornbusch study served as a catalyst for a meta-analysis conducted 23 years later by Shrauger and Schoeneman (1979), who concluded that individuals are actually not that good at using others' impressions of them to inform their self-knowledge. The authors explained that while many of the studies they reviewed reported congruence between self-ratings and predictions of others' ratings, there were a number of flaws and limitations discovered with many of these studies that "rendered the significance and validity of their findings questionable" (p. 565). Consequently, Shrauger and Schoeneman called into question the notion that self-perceptions take on the perceptions that others hold of the individual.

As a result of the questionable findings reported in the Shrauger and Schoeneman (1979) study, Kenny and DePaulo (1993) reviewed eight studies that contained data from over 500 subjects in order to understand how people form judgments of what others think of them. In contrast to the causality proposed by the symbolic interactionists, Kenny and DePaulo found that people's self-perceptions do not come from their metaperceptions, but instead, people's metaperceptions come from their self-perceptions; thus, how people view themselves essentially determines how they believe others view them.

Additionally, and most central to our work here, Kenny (1994) found discriminant validity for self-perceptions and metaperceptions; these two forms of perception may be correlated, but they are not the same. There is evidence, for example, that they are differentially affected by evaluative feedback (Kenny, 1994). In support of this important clarification about the distinct nature of self-perception compared with metaperception, the most recent research that has examined evaluative behaviors has shown that how leaders rate their own abilities is distinct from how they predict others will rate their abilities (Taylor & Hood, 2011; Taylor et al., 2012). This difference between self-ratings and predicted ratings offers support to the notion that self-perceptions and metaperceptions may be distinct cognitive processes. Further research is needed to better understand these important relationships. Our study responds to this need.

Predicted-other Ratings within a Leadership Context

The popularity of multirater assessments, coupled with the emergence of SOA research (Atwater & Yammarino, 1997; Fleenor et al., 2010), has prompted management scholars to begin to take a new look at prediction. Brutus, Fleenor, and Tisak (1999) posited that discrepancies between self-ratings and others' ratings allow for rare insight into a leader's interpersonal world. Predicting others' ratings of oneself adds another critical dimension because it provides insight into the leader's *intra*personal world. We believe that studying predicted-other ratings, which demonstrates the importance of metaperception in effective leadership, will yield additional insight into leader self-awareness and SOA research.

Gender and leadership

Current research as to why women are still underrepresented in senior-level leadership positions has shifted away from a focus on intentional efforts to exclude women to "consideration of so-called second-generation forms of gender bias, including the powerful yet often invisible barriers to women's advancement that arise from cultural beliefs about gender, as well as workplace structures, practices, and patterns of interaction that inadvertently favor men" (Ely, Ibarra, & Kolb, 2011, p. 475). These "invisible barriers" may cause female leaders to become overly concerned with meeting others' expectations (Quinn, 2004), which may manifest itself in a number of ways

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including under-prediction of others' ratings. However, in order to understand how women view others' perceptions of themselves, we must first understand how women self-rate compared with men.

While women may be experiencing these second-generation forms of gender bias, research suggests that once men and women achieve leadership positions in organizations, their socialization into the leadership role may take priority over their gender role (Eagly & Johnson, 1990), which may produce only trivial differences between them in terms of leadership behavior and effectiveness (Vecchio, 2002). This suggests that women and men will become socialized to perceive themselves as equals within leadership roles. According to Taylor and Hood's (2011) study on predicted-other ratings, male and female leaders self-rated their social–emotional competence similarly. As claimed by these authors, "Women were clearly not undervaluing themselves when they self-rated any more than men, a finding that aligns with previous research (e.g. Van Velsor, Taylor, & Leslie, 1993) and is encouraging given that this was less common two decades ago (e.g. Wohlers & London, 1989)" (Taylor & Hood, 2011, p. 640). Hence, while it was more common in the past for women to underestimate their own abilities, some current research suggests that women leaders presently view themselves as being equal to men.

In addition, not only do men and women now self-rate their competence in some areas similarly, but they are also rated by others to be similar (e.g., Van Velsor et al., 1993). In fact, current research suggests that compared with male leaders, top female leaders are evaluated more favorably by others on overall leader effectiveness (Rosette & Tost, 2010). Thus, we expect men and women leaders to self-rate their leadership similarly and be rated by their bosses similarly.

Hypothesis 1: Men's and women's self-ratings of leadership do not differ.

Hypothesis 2: Men's and women's boss ratings of leadership do not differ.

Gender, leadership, and prediction

Because predicted-other ratings is a new field of research for management scholars, there has been little examination of variables that may influence how women leaders predict their bosses will rate them. In their seminal article on SOA, Atwater and Yammarino (1997) listed several biographical and personality characteristics, cognitive processes, job-relevant experiences, and contextual factors that could influence the SOA process. The current paper seeks to explore two variables presented in Atwater and Yammarino's SOA model—rater gender and feedback—that can be related to the prediction process (especially in terms of investigating this under-prediction phenomenon found with women leaders).

We use social cognitive theory to examine how the aforementioned variables influence the prediction process. Social cognitive theory (e.g., Bandura, 1986; Fiske & Taylor, 1991) proposes that behavioral outcomes are a product of the individual, incoming information, and the interaction of the two. In general, social cognitive theories propose that portions of an individual's knowledge acquisition can be directly related to observing others within the context of social interactions, experiences, and outside influences (Bandura, 1986). Bandura perceived the human mind as being proactive and generative (not merely reactive) and, as such, assumed that social interactions can map into cognitive processes and consequently influence the way individuals see themselves, others, and reality. Therefore, the social cognitive perspective provides a means of acknowledging that some individuals may pay attention to different sources of information and that their behavior is shaped by their interaction with this information. In particular, because predicted-other ratings ask the rater to focus on a specific relationship (e.g., one's boss) and context (e.g., the workplace), it could be that women are paying attention to a different source of information compared with men when asked to predict how their boss would rate them. Social cognitive theories, including role congruity, stereotype fit, social identity, and relational demography, will be used to explore these gender issues in the prediction process.

According to research on the creation of the self-concept, individuals utilize three sources of information when developing perceptions of themselves: self-perceptions, reflected appraisals (reactions of others to them), and social comparisons (comparing themselves with others) (Burton & Hoobler, 2006; Gecas, 1982). To generate self-evaluative

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information about themselves, women are more likely to gather information from reflected appraisals, while men are more dependent on self-perceptions and social comparisons (Schwalbe & Staples, 1991). Thus, women tend to use the interpersonal domain to build their self-concept, while men are more likely to focus on self-esteem via the "achievement domain" (Whitley, 1983).

Given that women are more likely to use the interpersonal domain to create their self-concept, when they are asked to predict their bosses' ratings of their leadership, the interpersonal domain may become highly salient in their minds (cf. Kenny & DePaulo, 1993), resulting in women using external sources of information related to relationships to form their predicted-other judgments. This will be less likely for men. As a result, external information, including presumed stereotypes and biases, pertaining to leadership and relationships in general may influence women's predicted-other ratings more than their self-ratings and more than men's predicted-other ratings.

Leadership still represents a male endeavor to a certain degree (Becker et al., 2002; Eagly & Carli, 2007). Also, because subtle impediments to women's career progress will likely persist for the next several decades (Ely et al., 2011) because of gender being an exceptionally salient stimulus characteristic (Northcraft & Gutek, 1993), it is believed that these external factors will continue to influence women's predicted-other ratings. For example, role congruity theory (Eagly, 1987) asserts that being female and being a leader are not congruous. Thus, while females may believe that their leadership performance is high, the stereotype that leadership is still considered a male role (Schein, 2007) can create a cognitive imbalance for women as well as concern about validating negative stereotypes. This can lead women to worry about performance ratings they will receive from their boss (Cadinu, Maass, Rosabianca, & Kiesner, 2005; Croizet, Despres, Gauzins, Hugeut, & Leyens, 2004), influencing women's predicted ratings of their bosses' perception of them but not their actual self-ratings.

In addition, social cognitive theories such as stereotype fit and social identity theory suggest that individuals are perceived in a certain way because of the societal group to which they belong (e.g., women) (Fletcher, 1999; Lobel & St. Clair, 1992). Because gender groups have differential power and status relations compared with each other, women may think that others see them as less suitable for leadership positions, even though they do not think this is true; they may believe that others still perceive them as less suited for leadership positions because of the very fact that they are female (Eagly & Carli, 2007). As evidenced by social cognitive theory, women may fall prey to under-prediction because they are using this external information to form their predictions, and because of this, they might assume that others harbor negative stereotypes about female leaders even when they do not. As stated by Jost and Kay (2005), "social stereotypes are indeed powerful environmental stimuli that do not depend on conscious, personal endorsement for their effects to be palpable" (p. 498).

As a result of role incongruity and the concern about the negative stereotypes, social cognitive theory supports the contention that female leaders may predict lower boss ratings than male leaders, they may predict boss ratings to be lower than they actually are, and they may predict lower than their self-ratings.

Hypothesis 3: Men's and women's predicted boss ratings of leadership differ in that women predict lower than men.

Hypothesis 4: Women's predicted boss ratings of leadership are lower than their bosses' actual ratings.

Hypothesis 5: Women's predicted boss ratings of leadership are lower than their self-ratings.

The influence of boss gender

In addition to the gender of the individual playing a role in under-prediction, the gender of the boss may also play a role in how women believe their boss perceives them. The relational demography approach compares an individual's similarity or dissimilarity to others in a dyad or group (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Because women leaders are associated with their gender group of being female, the relational demography approach suggests that they may feel that their male bosses, in particular, view them as being different from men in terms of their leadership ability, because they belong to a different social group. Also, because organizational culture has evolved to favor men over women as leaders (Hoobler, Wayne, & Lemmon, 2009), women may think that their male bosses

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will rate their leadership ability lower because they believe that their male bosses are inclined to believe that men should be leaders, whether this is true or not. According to social cognitive theory (Bandura, 1986), which asserts that behavior is a function of the individual, external stimuli, and the interaction between the two, female leaders may feel that no matter what they do or how they behave, their male bosses will still rate them lower because of perceived gender stereotypes and roles. While this may not be the case, it can still influence women leaders' perceptions of how their bosses (male bosses specifically) will rate them. We do not think this will be as pronounced with female bosses because they are in the same social group as women leaders (e.g., Turner et al., 1987).

In addition to the issue of relational demography, social role theorists assert that female gender roles place constraints on leader roles in organizations (Eagly, Johannesen-Schmidt, & van Engen, 2003). Thus, while women may be more likely to under-predict bosses' perceptions of their capabilities because of associated role conflict in general, women leaders may feel more pressure to prove themselves to male bosses in particular. Because women leaders frequently find themselves in a situation where their gender has been perceived as being less associated with management effectiveness and, instead, more associated with nurturing, communal social roles (Hoobler et al., 2009), women may think that their bosses, especially their male bosses, adhere to these social roles as well. Hence, when there is a female leader and male boss, under-prediction may be exacerbated.

Hypothesis 6: Women under-predict their boss' ratings of leadership more when their boss is a man than when their boss is a woman.

The influence of feedback

As evidenced by the preceding social cognitive theories, there may be other variables that interact with gender and dispositional traits to produce possible discrepancies among self, other, and predicted-other ratings. In Atwater and Yammarino's (1997) SOA model, they suggested that feedback plays a role in SOA; it may also play a role in predicting others' ratings. Bailey and Fletcher (2002) found feedback to increase agreement between self-boss ratings and self-subordinate ratings. In addition, Ashford and Tsui (1991) suggested that individuals can increase their self-awareness by understanding how others perceive them in organizations through the use of feedback. Accordingly, there is reason to believe that feedback will play a role in predicting boss ratings.

The interpersonal domain and reflected appraisals (reactions of others to them) are important for women as they build their self-concepts (Burton & Hoobler, 2006; Schwalbe & Staples, 1991). As a result, women exhibit greater sensitivity to and a higher need for social approval (Burton & Hoobler, 2006). This is one reason why feedback may be of greater importance to the prediction process for women. Moreover, Burton and Hoobler (2006) found that women were more responsive to feedback from peers compared with men. In addition, social cognitive theory (e.g., Bandura, 1986) supports the notion that women will be more likely to use this external information (i.e., feedback) to inform their predicted-other ratings.

Given that women rely on relational aspects to generate their self-awareness, it follows that they would be more likely than men to seek feedback from others (Fletcher, 1999). However, while women may seek feedback from others, research suggests that they tend to receive less (candid) feedback compared with men (Heffernan, 2004). Moreover, because leadership roles were originally designed with men in mind (Ely et al., 2011), women may receive less feedback related to their leadership behaviors from their bosses. For instance, research demonstrates that although bosses acknowledge women's leadership competencies, they sometimes fail to recognize women's leadership potential (Cochran, 1999). Kabacoff (2000) found that bosses rate men and women leaders similarly on leadership characteristics, including those that are stereotypically masculine (e.g., forceful, assertive, and competitive); yet, bosses associated such stereotypically masculine characteristics with leadership effectiveness for men but not for women. While bosses rate women similarly to men in terms of their leadership competence, they may be less likely to provide women with additional feedback related to their leadership because of possible gender stereotypes about leadership effectiveness.

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In summary, although women may need more feedback from their bosses than men to establish leader self-awareness, they may actually receive less. We investigate how much feedback women reported receiving from their bosses as well as how much feedback their bosses reported providing to them.

Hypothesis 7: Women report receiving less feedback from their bosses than men.

Hypothesis 8: Bosses report providing less feedback to women than to men.

As men and women consider the amount and type of feedback they receive from their boss, individual differences between them and their boss may become salient and influence how they believe their boss perceives them. For example, the social cognitive theory of relational demography (e.g., Turner et al., 1987) supports the notion that women may see themselves as being dissimilar to their male bosses in particular because they belong to a different social (gender) group, and this experience might be heightened in regards to feedback behavior. Geddes and Konrad (2003) asserted that "women who see themselves as significantly different from their bosses may be concerned that these individuals are less able to understand them and their work and may employ stereotypes or various prejudicial and unfair practices in evaluations of their occupational efforts and outcomes" (p. 1486). As a result, these feedback dynamics in organizational life may make it more difficult for women to accurately predict their bosses' ratings compared with men, resulting in women under-predicting their bosses' ratings of their leadership—especially if they do not have enough feedback from their bosses.

Although there has been limited research investigating bosses' goals in the feedback process (Lizzio Wilson, Gilchrist, & Gallois, 2003), there is evidence that feedback increases employees' perceptions of their competence as well as the congruency between self and boss ratings (Bailey & Fletcher, 2002; Williams & Johnson, 2000). For women reporting that they receive less feedback from their bosses, we would expect their predicted boss ratings to be lower than their bosses' actual ratings (i.e., under-prediction).

Hypothesis 9: Women who report they receive less feedback from their boss will predict lower ratings from their boss than their boss' actual ratings.

Study 1

To test our hypotheses, we conducted a field study on a sample of employees with work experience in leadership positions (i.e., they have direct reports) from an array of industries, including banking, health services, education, financial services, and food and beverage. Because past studies examining prediction have been primarily experimental or used college student samples (Kenny, 1994), the work experience of the employees in our sample and the leadership context of our study make an important contribution to and extend prior research on prediction.

Procedure

This study had two phases. In Phase I, leaders were asked to take two brief online surveys. In terms of leadership, we chose to measure transformational leadership (TFL), which focuses on the leader seeking to influence others by understanding their motivations, values, and aspirations. The emphasis here is on the leader and follower forming a relationship of trust, admiration, respect, and commitment. TFL has been shown to predict a variety of important individual and organizational outcomes (Bass & Riggio, 2006). As a result, TFL has become one of the most popular, supported, and effective styles of leadership reported in the literature (Judge & Piccolo, 2004). The first survey was an assessment of the leader's self-ratings of TFL. The second survey included both feedback and demographic questions and then asked the leaders to request that their bosses rate them using the same leadership assessment. The bosses were also asked feedback-related and demographic questions.

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One week after Phase I was completed, Phase II commenced with an email to leaders requesting them to complete a final portion of the study. Specifically, leaders were asked to predict how their bosses rated them on the same leadership survey items that both they and their bosses had originally completed. The leaders were not told ahead of time that they would be predicting their bosses' ratings. In appreciation for their participation in the study, after all surveys were received, leaders were provided a personalized feedback report of their self-rated leadership survey results for their personal leadership development.

Participants

Data were collected from 257 leaders in the United States, all of whom had direct reports.

Of the 257 leaders who completed their leadership self-assessment and invited their boss to complete the leadership assessment on their behalf, 211 bosses completed the assessment. Thus, 82 percent of the leaders and their respective bosses completed the leadership assessment. Phase II required leaders to predict their boss' ratings. Our final sample for data analysis with complete self, boss, and predicted ratings was 194. Participating leaders consisted primarily of evening, working MBA students, executive MBA students, and a small number of leaders who were invited by the researchers of the study in attempts to increase the sample size; the proportions of men and women leaders in all of these groups were comparable. Respondents had an average age of 44 years; 50 percent were female, 80 percent were White, about 39 percent had some type of graduate degree, 62 percent reported having more than 15 years of work experience, and 96 percent said they had worked for their current boss for at least one year.

The participating leaders were asked to invite their bosses to also take part in the study. Leaders used an online survey system to list their bosses' name and email address. The system then sent an email invitation to the bosses who were informed that this assessment was for development purposes only and that responses would be kept confidential. Seventy-one percent of the bosses were men, 86 percent were White, 45 percent had some type of graduate degree, and 56 percent had 25 or more years of work experience.

Measures

Leadership

Sixteen items from Bass and Avolio's (1995) Multifactor Leadership Questionnaire (MLQ) Form 5X-Short were used to measure TFL. The MLQ was chosen for this study because it is one of the most widely used instruments in the literature for measuring TFL (Antonakis & House, 2002), and it has been shown to be a valid and reliable measure (Avolio & Bass, 2004). This measure uses a 5-point scale that ranges from 0 (*not at all*) to 4 (*frequently, if not always*). We converted this to a 1–5 scale. The MLQ measures the following: intellectual stimulation (e.g., "I suggest new ways of looking at how to complete assignments"), idealized influence (e.g., "I specify the importance of having a strong sense of purpose"), individualized consideration (e.g., "I treat others as individuals rather than just as members of the group"), and inspirational motivation (e.g., "I talk enthusiastically about what needs to be accomplished"). Consistent with previous research (e.g., Atwater, Wang, Smither, & Fleenor, 2009), we combined the ratings on the four dimensions into one overall composite measure of leadership. All three ratings of the TFL measure—self, boss, and predicted—had acceptable reliabilities with Cronbach's alphas of 0.79, 0.89, and 0.83, respectively.

Feedback

Using a scale of feedback behavior (VandeWalle, Challagalla, Ganesan, & Brown, 2000), we asked the leaders' bosses how frequently they provided feedback to the leaders (four items, $\alpha = 0.86$), and we also asked the leaders how frequently they believed their bosses provided them with feedback (four items, $\alpha = 0.84$). Specifically, the eight

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feedback items assessed feedback about the leaders' overall job performance, the technical aspects of their job, the expectations of their role, and their social behaviors. Response formats consisted of 6-point scales that were anchored by 1 (*almost never*) and 6 (*very frequently*).

Control variables

Because there has been little attention devoted to prediction in the leadership forum, there is not much theory to suggest which control variables may be of most importance. Given that the hypotheses in this study could be affected by the length of time (in years) the leader has worked with their current boss (Furnham & Stringfield, 1998), this was considered as a potential control variable. Taylor and Hood (2011) included race, education, and years of work experience in their study but did not control for them in their actual analyses. With this in mind, we empirically examined the relevance of these four potentially important control variables as suggested by Cohen, Cohen, West, and Aiken (2003) and determined that they did not need to be controlled for in our analyses; nonetheless, these variables are included in Table 1.

Results

Table 1 contains descriptive statistics and correlations for all study variables for our overall sample. Table 2 displays descriptive statistics and correlations for our primary study variables for men and women separately.

In support of Hypothesis 1, results of an independent-samples *t*-test revealed that the self-ratings of leadership for men ($N = 98$, $M = 4.17$, $SD = 0.44$) and women ($N = 97$, $M = 4.04$, $SD = 0.47$) were not significantly different, $t(193) = 1.88$, $p = .06$ (see Table 3 for effect size estimates). Similarly, an independent-samples *t*-test revealed that boss ratings of leadership were not significantly different for men ($N = 97$, $M = 4.12$, $SD = 0.59$) and women ($N = 97$, $M = 4.19$, $SD = 0.58$), $t(192) = -0.83$, $p = .40$, supporting Hypothesis 2.

In support of Hypothesis 3, an independent-samples *t*-test revealed that women's predicted boss ratings of leadership ($N = 87$, $M = 3.93$, $SD = 0.51$) were significantly lower than men's predicted boss ratings ($N = 85$, $M = 4.07$, $SD = 0.51$), $t(170) = 1.76$, $p = .04$. As predicted in Hypothesis 4, an independent-samples *t*-test revealed that women's predicted boss ratings of leadership ($N = 87$, $M = 3.93$, $SD = 0.51$) were also significantly lower than their bosses' actual ratings of their leadership ($N = 97$, $M = 4.19$, $SD = 0.58$), $t(182) = 3.18$, $p = .01$. Finally, a dependent-samples *t*-test revealed that women's ($N = 87$) predicted boss ratings of leadership ($M = 3.93$, $SD = 0.51$) were significantly lower than their self-ratings of their leadership ($M = 4.04$, $SD = 0.47$), $t(86) = 2.35$, $p = .01$. These results support Hypothesis 5. Because Hypotheses 3–5 were directional, they were tested using one-tailed significance tests.

In contrast to our prediction in Hypothesis 6, an independent-samples *t*-test revealed that predicted boss ratings of leadership were not significantly lower for women who had a male boss ($N = 58$, $M = 3.89$, $SD = 0.55$), as compared with women who had a female boss ($N = 27$, $M = 4.00$, $SD = 0.43$), $t(83) = -0.94$, $p = .35$, even though women with a male boss did predict somewhat lower ratings. Hypothesis 7 was not supported, as an independent-samples *t*-test revealed that men ($N = 96$, $M = 3.89$, $SD = 1.09$) did not report receiving significantly more feedback from their bosses than women ($N = 97$, $M = 3.86$, $SD = 1.22$), $t(191) = 0.22$, $p = .82$. Hypothesis 8 was also not supported, as an independent-samples *t*-test indicated that bosses did not provide significantly different levels of feedback to women ($N = 97$, $M = 4.71$, $SD = 0.95$) and men ($N = 97$, $M = 4.52$, $SD = 1.13$), $t(192) = -1.24$, $p = .22$.

Hypothesis 9 stated that women who report receiving less feedback from their bosses would be more likely to under-predict. Given that we were interested in the agreement between two dependent variables (predicted boss ratings and actual boss ratings) as a function of a continuous predictor (feedback), we followed the recommendations of Edwards (1995) and examined this hypothesis using multivariate regression. Our results indicated that there was no significant overall relationship between feedback and the linear weighted combination of predicted and actual boss ratings of leadership, Wilks' lambda = 0.72, $F(28, 142) = .89$, $p = .63$. Feedback received was also not significantly related to either dependent variable when considered individually. Thus, feedback was not related to the degree of under-predicting for women, and Hypothesis 9 was not supported.

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Table 1. Descriptive statistics and correlations for the overall sample.

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. Participant's gender	0.50	0.50	—										
2. Race	—	—	−.11	—									
3. Education	3.81	1.10	−.07	.05	—								
4. Years of full-time work experience	20.28	10.03	−.13	.22**	.18*	—							
5. Years with current boss	3.27	3.58	.18*	.14	.19*	.31**	—						
6. Boss' gender	0.29	0.45	.08	.11	.05	.09	.08	—					
7. Self-ratings of leadership	4.11	0.46	−.13	.01	−.15*	.18*	−.12	.01	.79				
8. Actual boss ratings of leadership	4.15	0.58	.06	−.04	−.03	.01	.03	.08	.07	.89			
9. Predicted boss ratings of leadership	4.00	0.51	−.13	−.08	−.12	.02	−.00	.08	.69**	.16*	.83		
10. Feedback provision by boss	4.62	1.04	.09	−.02	−.26**	−.17*	−.11	−.11	.20**	.14	.14	.86	
11. Feedback reported by participant	3.59	1.15	.04	−.17*	−.06	−.34**	−.17*	−.07	.04	.10	.09	.21**	.85

Note. Alphas are on the diagonal. $N = 194$. Gender and boss gender, *male* = 0, *female* = 1. Education, 5-point scale, 1 = *high school degree* to 5 = *graduate degree*. Leadership, 5-point scale assessing frequency of demonstration (1 = *not at all*; 5 = *frequently, if not always*). Feedback, 6-point scale assessing frequency of demonstration (1 = *almost never*; 6 = *very frequently*). $^{*}p < .05$; $^{**}p < .01$.

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Table 2. Descriptive statistics and correlations for primary study variables for men and women.

	M	*SD*	1	2	3	4	5	6
1. Boss's gender	0.25 (0.33)	0.44 (0.47)	—					
2. Self-ratings of leadership	4.17 (4.04)	0.44 (0.47)	.11 (−.06)	—				
3. Actual boss ratings of leadership	4.12 (4.19)	0.59 (0.58)	.12 (.02)	.07 (.09)	—			
4. Predicted boss ratings of leadership	4.07 (3.93)	0.51 (0.51)	.07 (.10)	.70** (.66**)	.27* (.08)	—		
5. Feedback provision by boss	4.52 (4.71)	1.13 (0.95)	−.21* (−.01)	.16 (.28**)	.01 (.29**)	.15 (.17)	—	
6. Feedback reported by participant	3.89 (3.86)	1.09 (1.22)	−.07 (.07)	.21* (.15)	.09 (.29**)	.28* (.20)	.35** (.25*)	—

Note. Statistics outside of the parentheses are for men; statistics inside of the parentheses are for women. Boss' gender: 0 = *male*; 1 = *female*.
*$p < .05$; **$p < .01$.

Table 3. Effect size estimates for Hypotheses 1–8.

	Cohen's *d*
Hypothesis 1	0.28
Hypothesis 2	0.12
Hypothesis 3	0.28
Hypothesis 4	0.47
Hypothesis 5	0.27
Hypothesis 6	0.21
Hypothesis 7	0.03
Hypothesis 8	0.18

Note. Absolute values are reported for Cohen's *d*. Small effects = 0.20, medium effects = 0.50, and large effects = 0.80. See Kirk (1999).

Discussion

Our results support the under-prediction effect presented in Taylor and Hood's (2011) study and found it to generalize to another construct: leadership behavior. Because prior research on prediction and metaperception has focused on dispositional characteristics, such as personality (Kenny & DePaulo 1993), our findings contribute to the literature by examining actual behavior. We found that women leaders predicted that their bosses would rate them lower on their leadership behaviors compared with men, even though they do not self-rate significantly differently from men and were rated by their bosses similarly to men. We also hypothesized that boss gender and feedback may play a role in why women under-predict, yet we did not find this to be the case. Thus, if these variables are not contributing to this under-prediction phenomenon, what is? According to Kenny and DePaulo's (1993) review of studies of metaperception, they concluded that individuals determine how others view them from their own theories about themselves and about social life. Therefore, this prompted us to conduct Study 2 in which we administered open-ended surveys to a new sample of female leaders to help us understand why women might under-predict and what the organizational consequences of this might be.

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Study 2

We conducted a qualitative study using open-ended survey questions to better understand what is contributing to under-prediction for women leaders and how this may affect women leaders in the workplace. We were interested to hear first-hand from women about their thoughts on this phenomenon and possible reasons for it.

Data collection

An open-ended survey designed to tap into women's thoughts about predicting boss ratings was administered to a convenience sample of 76 women. We used our business school networks to identify women who held leadership positions and invited them to complete the survey. The survey first asked participants to predict their boss ratings of their leadership as *same*, *lower*, or *higher than* their self-ratings. They were then asked to comment on the phenomenon of under-prediction. The surveys were administered primarily in a written format. Because of distance and time constraints, about 10 percent of the surveys were collected online. The job titles of respondents ranged from supervisor to senior executive, and the women came from a broad array of industries, ranging from education to financial services. Respondents were first asked the gender of their supervisor and were then asked the following question:

> Let's assume that we have asked you to assess your own leadership capability. Now, we would like you to predict as accurately as possible how your boss would assess your leadership capability. How do you think your prediction of your boss' assessments of your leadership will compare with your own assessment? (We realize this is a general question but try to think of how he or she would evaluate your leadership capability and skills in general). Please choose **only one** of the following three options:
>
> a. Do you think your boss assesses your leadership capability the same as you assess your leadership capability? SAME _____
> b. Do you think your boss assesses your leadership capability lower than you assess your leadership capability? BOSS LOWER THAN SELF _____
> c. Do you think your boss assesses your leadership capability higher than you assess your leadership capability? BOSS HIGHER THAN SELF _____

After the respondent answered this question, we asked the following two questions on the next page:

> In two different work environments, we have learned that when women are asked to assess themselves on their socio-emotional competence or leadership, they tend to assess themselves similarly to male leaders and similarly to the way their bosses actually assessed them. But when they are asked to predict how they would be assessed by their boss, many women under-predict how their boss would assess them. They believe their boss will assess them lower than they assessed themselves and lower than how their bosses actually assessed them.
>
> a. Why do you think this under-prediction occurs? (What are the reasons?)
> b. Do you think there may be consequences of this under-prediction? If so, what might they be?

There is strong evidence that self-assessments and self-evaluation in general tend to be inflated, biased, and unreliable regarding a person's ability to assess his or her own behavior, skills, or personality traits (Baumeister, 2005; Dunning, 2005). To avoid these pitfalls as much as possible, we asked women to focus on women in general rather than themselves when responding to the preceding questions. Moreover, asking women to focus on other women would help protect against possible social desirability responding.

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Coding procedure

Content analysis was used to quantify participants' answers to the second and third questions. A valid content analysis requires a thorough examination of all statements in which coding categories are created that allow each statement to fit into one category (Kerlinger, 1964). The categorization scheme for the *reasons* was first created by having two doctoral students who were unfamiliar with the study go through the survey responses and identify themes in the data. Then, the authors compared the two sets of themes from the coders, which were very similar, and established five categories of reasons women provided for under-prediction; these categories were low self-esteem/self-confidence, feedback issues (e.g., lack of feedback/acknowledgement/differences in feedback needs or styles), learned gender roles, self-sexism (e.g., believe it is the truth), and other (e.g., being too humble). In a few cases, more than one reason was given, while in other cases, the item was left blank.

The possible *consequences* of under-prediction were handled in a similar manner, and the two coders identified seven categories, including lack of advancement/salary, lower performance, decrease in self-efficacy/confidence, negative emotional responses, decreased assertiveness, gender inequality, and other.

Results

The results of the answers to the first question regarding the prediction of boss ratings compared with self (same, higher, or lower) are presented in Table 4. They confirm that the largest number reported *boss lower than self*. A chi-square test of independence was performed to determine whether the three answers were equally endorsed among women who had either a male or female boss. The results revealed a significant difference between the two groups of women; women with male bosses did not rate their boss ratings of their leadership compared with themselves the same as women with female bosses $\chi^2(2, N=76)=8.39$, $p<.05$. As seen in Table 4, women with female bosses had similar frequencies across the three categories, while women with male bosses did not. In order to test whether this difference was being driven by the women with male bosses, we conducted a chi-square test of goodness of fit. The results revealed a significant difference in how women with a male boss endorsed options from our three-category response scale, $\chi^2(2, N=38)=12.05$, $p<.01$, but this was not the case for women with a female boss, $\chi^2(2, N=38)=0.05$, n.s.

As evidenced by the preceding discussion, endorsement for the three categories was not equally distributed for women with male bosses. Although we cannot determine which category created the significant difference for women with male bosses, an examination of the observed and expected frequencies demonstrates that the difference could be generated from the women who reported either lower or higher or both. The expected frequency for each of the three categories was 12.67, but women reporting either lower or higher deviated from this number by more than seven points. For example, only 8 percent of women reported that they would predict their male boss ratings would be higher than their self-ratings, while more than half of the women, 53 percent, predicted their boss ratings would be lower. Although we do not know for sure if women with a male boss significantly predicted their bosses' ratings of their leadership to be lower, this possibility is interesting because it echoes one of our previous hypotheses. In Hypothesis 6, we suggested that predicted boss ratings of leadership would be lower for women who had a male boss compared with a female boss. While this was unsupported within our first study, the direction of the difference in Study 1 coupled with this additional qualitative data suggests that boss gender may influence the prediction process and warrants future investigation.

Table 4. Women's predictions of boss ratings compared to self-ratings of leadership.

Group of women	*N*	Lower than self	Same as self	Higher than self
With a male boss	38	20	15	3
With a female boss	38	12	13	13
Total	76	32	28	16

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Reasons for under-prediction

For the question that asked women to state possible reasons women under-predict, we had two additional doctoral student coders who were unfamiliar with the study place each of the responses into one of five categories. The initial agreement rate across responses among the two coders was 61 percent. The authors then went through the items where there was disagreement and selected what they thought was the best answer and then asked the two coders to discuss. After discussion, the agreement rate reached 97 percent for all items. Items where agreement could not be reached were included in the other category.

As shown in Table 5, about 33 percent of the reasons given were related to self-confidence and another 33 percent were related to feedback issues. About 10 percent of the responses were related to either learned gender roles or self-sexism. The remaining responses (about 23 percent) were classified as "other." These results are in line with social cognitive theory in that women listed factors related to the women themselves, incoming information, as well as the interaction of the two in regards to predicted-other ratings.

Potential consequences of under-prediction

The possible consequences of under-prediction (i.e., Question 3) were also coded by the two additional coders who reviewed the responses and placed them into one of seven categories. The initial agreement rate among the two coders was 81 percent but reached 100 percent after discussion. All of the consequences suggested were negative. Women did not see any positive consequences that might emerge from under-prediction. As can be seen from Table 6, 37 percent of the consequences included decreases in self-efficacy/confidence, while almost 20 percent related to lack of advancement/salary.

Discussion

The answers to the open-ended questions are quite revealing. A number of women believed that women lack confidence or believe they are seen as less qualified compared with how they see themselves. There was also an acknowledgement that leadership is still often perceived as a male domain. The findings about humility were unexpected but consistent with literature that suggests that boasting is not considered appropriate for women

Table 5. Reasons women under-predict leadership ratings.

Category	Number of responses	Examples
1. Low self-esteem/low self-confidence	20	"Lack of self-confidence," "Self- judgment/self-criticism," "Don't believe their boss sees them as competent," and "Women rarely see themselves as enough of what their boss wants, needs, and thinks is valuable"
2. Feedback (e.g., lack of feedback/ acknowledgement/differences in feedback needs or styles)	20	"Women rely more on feedback and reassurance and when it doesn't happen they interpret it as not being valued or appreciated," "Women are more in need of positive feedback," "Lack of feedback from boss," and "I wonder if the acknowledgement style and needs of women and men are different and women don't recognize positive feedback messages"
3. Learned gender roles	3	"Because of the role women have played as a housewife many women have been taught to believe that they are not male equals when this is not the case"
4. Self-sexism (e.g., believe it is the truth)	4	"Women believe they shouldn't be as competent as their boss" and "Because they have learned men have more status than women"
5. Other	14	"Tendency to be very humble"

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Table 6. Consequences of women under-predicting leadership ratings.

Category	Number of responses	Example
1. Lack of advancement/salary	11	"Someone may not go for a promotion because of it," "lower salary adjustments," "under-earning," and "less opportunity for advancement"
2. Lower performance	7	"Not contributing what I could" and "self-fulfilling prophecy… living up to only what you think they believe you can do—why bother to put out extra effort"
3. Decrease in self-efficacy/ confidence	21	"Less likelihood of going for positions of leadership because you think you can't do it," "The employee will feel powerless and shut down in an environment where they question their own competencies," and "Self-efficacy may be negatively impacted which could result in lower performance"
4. Negative emotional responses	4	"Low simmering resentment that sometimes comes out as jealousy"
5. Decreased assertiveness	8	"Unwillingness to assert self" and "Less likely to assert themselves for higher/better compensation"
6. Gender inequality	5	"Yes, women have to go above and beyond (work harder) to gain 'acceptance' to their expectations" and "There has been a historical covert message that women are not as strong and as competent as men"
7. Other	1	"Lack of self-fulfillment from person not being utilized as would like to be"

(Parks-Stamm, Heilman, & Hearns, 2008). Regarding the potential outcomes of this under-prediction, the answers suggest that, to some extent, women acknowledge that the views women have may create problems for themselves in the workplace. A few said that women obtain less credit, but many women stated that the negative consequences were in part due to women's lack of confidence and aggressiveness prompted by their insecurity in how they think they are perceived by their boss. As suggested by our opening quote from Sheryl Sandberg, chief operating officer of Facebook, women may unintentionally undermine themselves by assuming they are not qualified enough and by failing to ask for raises or promotions, even when they are deserved.

As is true in most data collection efforts, we cannot be sure that individuals considered the question in the way it was intended (i.e., were they commenting about under-prediction or lowered self-ratings?). While we cannot unravel all of the complexities in our data, the findings do suggest that women recognize that inaccurate metaperceptions are partially driven by women's own thoughts and beliefs.

General Discussion

The primary goal of this study was to understand how women leaders predict they will be rated by their bosses on leadership behaviors and the factors that contribute to those predictions. Our findings from Study 1 demonstrated that women under-predict their bosses' ratings of their leadership compared with men, even though they self-rate the same and are rated by their bosses similarly to men. Regarding our hypotheses about gender of the boss and prediction, the quantitative study did not support this prediction, but the data from Study 2 did. Similarly, while the quantitative data about the amount of feedback received did not relate to under-prediction in Study 1, it was identified as a possible reason by many women in the qualitative study. Perhaps the same amount of feedback is not seen as sufficient for women but it is for men, or it is not about the amount of feedback but rather its content (e.g., women need more external validation). In addition, the results demonstrate that women believe this under-prediction phenomenon is detrimental to both women and the organization because qualified women may be overlooked for promotions, they may not speak up, and so on. Because under-prediction can lead to negative individual-level and organizational-level outcomes for female leaders, our study contributes to leadership practice by demonstrating that women believe women's

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inaccurate perceptions of their bosses' ratings could be partially responsible for holding women back from advancement within the workplace. The findings also suggest that bosses may need to be more attentive to the feedback needs of women leaders.

Contributions to theory and practice

The under-prediction of boss ratings by women leaders is interesting. Thirty years ago, women would have had lower self-ratings (e.g., Wohlers & London, 1989) compared with men, which would have explained their lower predicted ratings. However, it appears that women are currently reporting that they are more confident in their leadership abilities, yet they perceive that their bosses will not see this to be the case—even though bosses do. The problem with this is that women may be experiencing negative consequences from these false perceptions. Asking women to predict how their boss would rate their leadership as well as their thoughts on under-prediction unearthed both interpersonal and intrapersonal factors that are important to women and their leadership, and this represents an important contribution to leadership theory and practice. For example, it would be valuable to add assessments of metaperceptions to leadership assessment and developmental activities. This could help women adjust their metaperceptions to more accurately reflect reality.

We provide some initial support to the notion that the discrepancy found among men and women for predicted-other ratings could be due to the fact that men and women do not translate their self-ratings into predictions in the same way. We utilized social cognitive theory (e.g., Bandura, 1986) to explain why this may be the case. Our study was the first empirical attempt to examine the cognitive underpinnings of metaperception for women leaders. Although we studied this indirectly (by having women respond about women in general and not themselves), future research may explore this cognitive phenomenon further by asking both men and women leaders to explain their thought processes when they are asked to predict in order to see if the discrepancy holds up across genders. Moreover, past studies on metaperception tended to investigate dispositional traits, such as personality and attractiveness, yet relatively few have assessed performance or behavioral dimensions (Kenny & DePaulo, 1993). Our study makes a unique contribution to prediction theory because we investigated leaders' metaperceptions of their actual behavior.

In addition to extending prior research on prediction (and metaperception) by examining it within a leadership context, this study also illustrates the importance of prediction in the development of leader self-awareness, which researchers have found to be associated with leader effectiveness (cf. Fleenor et al., 2010). Past research on leader self-awareness has focused on one component of self-awareness, self versus other ratings (Taylor, 2010; Taylor & Bright, 2011), and has not addressed the second component of self-awareness, which is the ability to anticipate the views of others (Taylor, 2010). In Hiller, DeChurch, Murase, and Doty's (2011) review of outcomes in leadership research, they assert that most of what we know about leadership is largely based on subordinates' perspectives of leadership, yet they articulate that "if most of what we know about leadership is from one point of view, or if there is no balance in perspective, we run the serious risk of failing to fully understand leadership phenomena and their link criteria" (p. 1140). Therefore, there is value in the consideration of multiple perspectives, and the extension of research related to prediction within the SOA field can prove to be beneficial for this endeavor in the leadership forum. As a result, the use of predicted-other ratings also contributes to SOA theory and research.

Our study extends past self-awareness research related to SOA, which often measured self-awareness almost exclusively as SOA (e.g., Van Velsor et al., 1993). As noted earlier, current interest in SOA research in the leadership domain has been organized around the understanding that the more congruent leaders' self-ratings are to others' ratings, the greater self-awareness the leaders possess. This way of measuring self-awareness has been shown to be associated with important organizational outcomes, including leader effectiveness (see a review in Fleenor et al., 2010). Unfortunately, much of this SOA research has focused primarily on the first component of leader self-awareness, that is, self versus others' ratings (Taylor, 2010; Taylor & Bright, 2011). Our study has expanded the notion of SOA by adding a new component, predicted-other ratings, thus addressing the second component of self-awareness, the ability to anticipate the views of others.

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Limitations

This study had at least three limitations. First, because we were interested in predicted-other ratings of those who could influence employees' advancement in the organization, we decided to investigate the prediction of boss ratings of leadership behavior. However, there is a possibility that bosses may not always have the most information about their subordinates' leadership behavior. Although this could be the case, we do not view this as a threat to our results because we collected data from two different samples on two different measures of leadership behavior. We examined TFL in Study 1 because these behaviors can be easily observed in the workplace. We asked women about their leadership behavior in general in Study 2 and found similar under-prediction results. In addition, we were interested in how women believed they were being perceived, regardless if this was actually true or not. Also, while bosses may not have the best information about a subordinate's leadership, they often have a great influence on his or her job-related outcomes and career advancement.

Second, in Study 2, we asked women to comment on "women in general." While some respondents personalized their answers and referred to themselves, most commented more generally. These answers could have been influenced by gender stereotypes. It is also possible that while women were asked about reasons for prediction, they interpreted the question as having to do, in part, with self-ratings.

A final limitation of Study 1 is that we examined Hypothesis 6 on a relatively small sample. Using the G*Power 3 program (Faul, Erdfelder, Lang, & Buchner, 2007), we estimated our statistical power to be 0.15, meaning that we had only a 15% probability of detecting statistical significance with our observed effect size, or Cohen's *d*, of 0.21 (Table 3). Future research should re-examine this hypothesis with a larger sample size that yields greater statistical power.

Implications for future research and practice

Given that predicted-other ratings is a new field of research in the leadership forum, there has been little examination of what variables may influence individuals' predictions of how their bosses or others will rate them. However, because prediction can be considered to be a facet of SOA, Atwater and Yammarino's (1997) model of possible biographical, individual, and personality characteristics that could influence the SOA process may be a useful starting place in exploring additional factors that may play a role in prediction. Also, as previously noted, future research could examine boss' gender in more detail to assess whether or not women significantly predict lowest when they have male bosses. Perhaps this is true early on in a supervisor–subordinate relationship but dissipates over time. In addition, future research could determine whether female leaders' levels of comfort in their leadership roles depend on the context in which they work. For example, in their study on gender and presentation of test scores, Larkin and Pines (2011) found women to be less comfortable and to experience more personal risk than men when they anticipated that their test scores would be made public. Thus, risky and public contexts may represent fruitful avenues for future research on prediction and how women may unknowingly hold themselves back from advancement within those contexts.

While the present study represents a theoretical footing upon which the new area of prediction and SOA research can continue to grow, it would be useful for future research to attempt to devise one overarching theory that can account for the gender differences found within predicted-other ratings and what this means for leader self-awareness. For example, Ames' (2004) research on how a sense of similarity to the target facilitates greater projection and less stereotyping and Biesanz's (2010) Social Accuracy Model of interpersonal perception both represent models of metaperception that can be expanded upon. However, for the time being, we have demonstrated that under-prediction occurs with female leaders, and women employees and bosses in the workforce should be aware of this finding. In addition, as women leaders understand where their own cognitive biases lie, they may be better able to define their impression management strategies to achieve further success in the workplace. In summary, predicted-other ratings can play an important role in organizations and should not only be considered in research but also in practice.

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