Female first, leader second? Gender bias in the encoding of leadership behavior ☆

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Abstract

In the current paper we investigate whether gender affects the encoding of leadership behavior. In three studies we found evidence that perceivers had difficulty encoding leadership behaviors into their underlying prototypical leadership traits when the behavior implied an agentic trait and the behavior was enacted by a female. Using a lexical decision making task, in Study 1 we demonstrated that agentic leadership traits were less accessible than communal leadership traits when the leader was female. Additionally, Study 1 also demonstrated that agentic traits were less accessible when the leader was female versus male. In Studies 2a and 2b, we replicated the differences we found for agentic leadership behaviors using perceiver's self-ratings as the dependent variable. Results are discussed both in terms of their implications for future research on gender bias in leadership and their practical implications for eliminating gender bias against females who aspire to leadership positions.
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In recent years, a substantial amount of attention has been paid to the progress of females in the workforce, especially females in leadership positions. As a

whole, this work suggests that a considerable amount of bias exists against females. For example, despite holding 37% of all management positions (US Bureau of Labor Statistics, 2005), women hold only 7.9% of the highest corporate officer titles and make up only 5.2% of the top earners in Fortune 500 companies (Catalyst, 2002). Similarly, Canadian statistics indicate that women are better represented at lower managerial levels (36%) compared to more senior managerial positions (24%; Statistics Canada, 2004). Recent European data, which show that women hold only 30% of managerial positions and make up only 3% of CEOs in the top 50 publicly quoted companies (European Commission, 2005), suggest that gender bias may not be isolated to North America. Supporting these statistics, a series of recent meta-analyses has demonstrated that gender differences do exist, to varying degrees, in leadership emergence, effectiveness, evaluation, and style, most notably when the leadership position is defined to

be clearly masculine (Eagly & Johnson, 1990; Eagly & Karau, 1991; Eagly, Karau, & Makhijani, 1995; Eagly, Makhijani, & Klonsky, 1992), and that females are preferred less by decision makers for male sex-typed positions (e.g., leadership roles; Davison & Burke, 2000).

Previous leadership research into gender bias has focused on perceivers' biased memory (e.g., Martell, 1991, 1996), the process of making judgments about females in leadership roles (e.g., Heilman, Block, Martell, & Simon, 1989), and the incongruity between expected gender-role behavior and the definition of the leadership role (e.g., Eagly & Karau, 2002). Despite such varied approaches, little is known about whether gender bias may emerge earlier, when leadership behaviors are initially encountered and encoded by observers. Encoding is a basic stage of information processing in which environmental stimuli are translated (or encoded) into mental representations that can be operated upon and utilized by other components of the human cognitive architecture (Von Hippel, Sekaquaptewa, & Vargas, 1995). Hence, how behavior is encoded can significantly impact subsequent judgments, thoughts, and decisions about a target. Although some leadership scholars have proposed that gender information may bias the encoding of leadership behaviors (Lord & Maher, 1991), this possibility has not been empirically tested. In the present paper, we redress this gap and examine whether gender biases arise when leadership behaviors are initially encountered and encoded into their underlying traits by observers. We focus on traits not only because they are central to basic person perception processes, but also because they are the foundation upon which leadership perceptions are formed and decisions regarding managerial potential are made by observers (Lord & Maher, 1991).

To situate our research, we first review previous theoretical work on leadership perceptions, focusing on leadership categorization theory. Second, we review literature on gender bias in leadership, focusing on how gender role expectations and stereotypes may color reactions to female leaders. Third, we discuss how preexisting gender stereotypes can interfere with a perceiver's ability to encode leadership behavior. Finally, we present three studies that examine whether gender stereotypes undermine the extent to which perceivers encode leadership behaviors into their underlying trait concepts.

Leader categorization theory

Categorization theory posits that perceivers rely upon symbolic knowledge structures, called prototypes, to make sense of their environments (Rosch, 1978). Conceptually, prototypes are cognitive schemas that are stored in memory and that consist of the most representative features of a given category. As with other knowledge structures, prototypes assist perceivers to make sense of their surroundings (Weick, 1995) and generate adaptive behavioral responses (Johnson-Laird, 1989; Newell, Rosenbloom, & Laird, 1989). Although initial investigations focused on the examination of non-social prototypes, subsequent extensions have dealt with the role that prototypes play in categorizing leaders (e.g., Lord, Foti, & DeVader, 1984).

According to Lord and his colleagues, each individual holds within long-term memory a large and well-elaborated belief system, consisting of the features that distinguish leaders from non leaders (Lord, Foti, & Phillips, 1982; Phillips & Lord, 1981). This belief system is often referred to as an implicit leadership theory or leader prototype (Lord et al., 1984). Leadership prototypes allow individuals to both understand and respond to managerial behaviors (Epitropaki & Martin, 2004; Lord & Maher, 1991). Previous work has demonstrated that the leader prototype is a multidimensional, widely shared, trait-based knowledge structure that is formed very early in life (Epitropaki & Martin, 2004; Lord & Maher, 1991; Offermann, Kennedy, & Wirtz, 1994). Thus, from the perspective of categorization theory, leadership can be viewed as a social-cognitive category that organizes our memories of leadership, guides how leadership information is processed, and mediates our leadership perceptions (Lord et al., 1984; Lord & Maher, 1991).

Lord and Maher (1991) suggest that one of the ways in which leadership perceptions emerge is through recognition-based processing, which depends both upon exposure to a target's behavior and preexisting knowledge structures regarding the traits that underlie that behavior (i.e., leader prototype). Although recognition-based leadership perception processes can result from either controlled or automatic information processing, automatic recognition-based processing appears to be more typical. That is, during the normal flow of interpersonal activities behavior is automatically encoded, without intent, effort, or awareness, into preexisting knowledge structures (Lord & Maher, 1991). As such, automatic recognition-based leadership processes simplify the processing of incoming leader behavior by allowing perceivers to utilize the leader prototype.

Implicitly, the recognition process outlined by Lord and his colleagues (Lord & Maher, 1991) follows two-stages. Initially, observers process and encode a target's behaviors into their relevant traits and, following this, the traits associated with a target are compared to an observer's preexisting leader prototype (Lord et al., 1984; Rush & Russell, 1998). For example, after observing a manager staying late in the evening to finish a presentation, a perceiver must first encode the behavior into its underlying trait (i.e., dedicated) and subsequently, when a leadership judgment is needed, compare the encoded traits with those contained in his/her leader prototype. Thus, Lord's discussion of recognition based processes suggests that an individual could fail to be

perceived as 'leader-like' either because his/her behavior is not mapped into prototypical leadership traits (Stage 1: trait encoding and activation) or because the traits associated with a target do not match the perceiver's leadership prototype (Stage 2: recall and prototype matching). To date, most research into recognition processes has focused on the matching stage while relatively little attention has been paid to the encoding stage (Lord & Brown, 2004; for two exceptions see Phillips & Lord, 1981; Cronshaw & Lord, 1987).

Although behavioral encoding processes have largely been ignored by leadership categorization theorists, these processes have received extensive attention in the person perception literature. This work not only suggests that traits are a critical component of person perception and memory, but that behavior is rapidly and automatically encoded into its underlying traits when observers encounter trait-related behaviors (Uleman, Newman, & Moskowitz, 1996). Encoding a target's behavior in terms of traits is so natural that it occurs even when an observer is otherwise preoccupied (Gilbert, 1989) or has no intention to form an impression of a target (Winter & Uleman, 1984). As a result of this process, exposure to behavior activates relevant trait concepts, increasing their accessibility in the perceiver's mind (Van Overwalle, Drenth, & Marsman, 1999; Winter & Uleman, 1984). Simultaneously, activated traits are generalized to the actor and subsequently used to describe him/her (Van Overwalle et al., 1999). In the present paper, we utilize the automatic activation of traits during behavioral encoding (Uleman, Hon, Roman, & Moskowitz, 1996; Uleman, Newman et al., 1996) to investigate whether any gender bias arises against female leaders when observers initially encounter leadership behaviors. To understand how gender information may bias behavioral encoding processes we next discuss work on gender stereotypes and the leader prototype.

Gender stereotypes, leader prototypes, and behavioral encoding

An extensive amount of literature has investigated sex trait stereotypes, which refer to the psychological characteristics or behavioral traits that are believed to characterize men with much greater (or lesser) frequency than they characterize women (Williams & Best, 1990). Unlike investigations of actual gender differences in psychological traits (e.g., Feingold, 1994), gender trait stereotypes refer to beliefs regarding the traits that are thought to characterize men and women. Stereotypical beliefs about the attributes of men and women are pervasive, and widely shared by men and women (Broverman, Vogel, Broverman, Clarkson, & Rosenkrantz, 1972; Williams & Best, 1990). Although numerous dimensions have been proposed to differentiate male and female stereotypes (Deaux & Lewis, 1984), from a trait perspective women are typically thought to be communal and expressive in nature while men are typically thought to be agentic and instrumental in nature (Williams & Best, 1990). Generally, the female communal/expressive stereotype refers to an interpersonally sensitive orientation in which the individual is both concerned with the welfare of others and their connection to others. In line with this idea, women are typically assumed to be helpful, kind, and sympathetic as well as motivated by stronger needs for nurturance, affiliation, and succorance (Williams & Best, 1990). In contrast, the male agentic/instrumental stereotype reflects a self-interested, task focused orientation in which men are believed to strive to master, dominate, and control the self and the environment. In line with this position, men are stereotypically believed to be independent, ambitious, competent, and competitive as well as motivated by stronger needs for dominance, autonomy, aggression, achievement, and endurance (Williams & Best, 1990). In the current paper we utilize the labels agentic and communal to reflect male and female stereotypical characteristics, respectively.

During the past 30 years, a considerable amount of research has documented the dissimilarity that exists between perceivers' stereotypes of females and their prototypes of leaders (Eagly & Karau, 2002). For instance, cross-cultural research has demonstrated that although people generally perceive that substantial overlap exists between the traits associated with "male" and "manager", they see little overlap between the social categories "female" and "manager" (Brenner, Tomkiewicz, & Schein, 1989; Schein, 1975, 2001).[1] Other work has shown that labeling a female manager as "successful" serves to mitigate some of the bias demonstrated in past research. However, despite the increased congruence afforded by this label, females are still perceived to lack leadership and business acumen (Heilman et al., 1989). In part, it has been suggested that such biased judgments arise because while the female stereotype is communal (e.g., helpful, sensitive), the leader prototype primarily contains characteristics that are more closely aligned with the male stereotype (e.g., aggressive, dominant; Eagly & Karau, 2002; Heilman, 2001). Thus, because masculine views of leadership and leadership roles are widely held, a bias emerges against females because they are seen as a poor fit for such positions by observers (Eagly & Karau, 2002; Lord & Maher, 1991; Powell, Butterfield, & Parent, 2002).

Although the dissimilarity between female gender stereotypes and the leader prototype does appear to bias perceivers' judgments of a female's ability to assume a

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[1] In the current manuscript, we use the term manager to refer to an occupational title or role, one that includes leadership as a key role requirement.

leadership position (Eagly & Karau, 2002; Heilman, 2001), what remains less evident is whether gender stereotypes can bias leadership perceptions prior to judgment during encoding. Because incoming information is processed in terms of a single underlying cognitive structure (Malt, Ross, & Murphy, 1995) and gender stereotypes are easily and automatically activated by gender-related cues (Blair & Banaji, 1996; Brewer, 1998) it seems plausible that gender stereotypes may bias behavioral encoding. Further, given that the traits encompassed by the female gender stereotype are largely inconsistent with those associated with the leader prototype (Eagly & Karau, 2002; Lord & Maher, 1991) it seems reasonable that a bias against females will emerge. In fact, Lord and Maher (1991) suggest that when female gender stereotypes guide a perceiver's information processing, relevant leadership behaviors may not be encoded into prototypical leadership traits or may be done so more weakly by perceivers. Consistent with this view, recent work indicates that stereotypic beliefs can bias behavioral encoding (Dijksterhuis & van Knippenberg, 1996; Von Hippel et al., 1995; Wigboldus, Dijksterhuis, & van Knippenberg, 2003).

Previous research has shown that stereotypes both facilitate the encoding and subsequent activation of stereotype consistent traits (Devine, 1989; Stangor & Lange, 1994), as well as render inconsistent traits *less* accessible (Dijksterhuis & van Knippenberg, 1996). For instance, Dijksterhuis and van Knippenberg found that exposing participants to the image of a "soccer hooligan" increased the ease with which stereotype-consistent trait words (e.g., aggressive) were activated, but inhibited the activation of words inconsistent with the stereotype (e.g., intelligent). Wigboldus et al. (2003) extended the idea of trait inhibition, incorporating theory on behavioral encoding processes (Winter & Uleman, 1984) to determine whether basic information processing could be impeded by stereotype activation. Generally, their results demonstrated that behavioral encoding was disrupted by stereotype-inconsistent information such that participants encoded information in a manner that was consistent with their preexisting stereotypical beliefs.

The current research

The literature reviewed above leads us to propose that a leader's gender can bias the manner in which leadership behaviors are encoded by observers. Because behavior is automatically encoded into traits during behavioral encoding, and behavioral encoding increases the accessibility of behavior implying traits during encoding (e.g., Uleman et al., 1996; Uleman, Newman et al., 1996; Wigboldus et al., 2003), in each of the studies reported below we assess encoding bias in terms of trait activation. That is, following current conceptualizations, we assessed

encoding in terms of the extent to which leadership behaviors primed or increased the accessibility of relevant traits. Moreover, because increased accessibility can be operationalized in alternative ways, such as facilitated reaction times and judgments, we attempted to triangulate our findings by using alternative operationalizations of trait activation in each of our studies. Prior to discussing the methods and results of each study, we first present the focal hypotheses to be tested.

Study 1

Considering the prior literature, it seems plausible that a target's gender will influence the encoding of leadership behaviors into their underlying prototypical trait concepts. In this regard, the literature reviewed previously indicates that (a) behaviors are automatically encoded into relevant traits by perceivers (Van Overwalle et al., 1999; Wigboldus et al., 2003), (b) social category cues, such as gender, facilitate access to stereotype-consistent trait terms and inhibit access to stereotype-inconsistent trait terms (Von Hippel et al., 1995), (c) stereotypes can color behavioral encoding into traits (Wigboldus et al., 2003), and (d) the female gender stereotype, which is communal, is largely inconsistent with the leader prototype, which is agentic, but that the male stereotype is largely consistent with the leader prototype (Eagly & Karau, 2002; Heilman, 2001). Together, these findings lead us to propose that during encoding, perceivers will demonstrate a distinct processing disadvantage towards female targets, relative to male targets.

In large part, the proposed processing bias against female leaders should arise because the content of the female gender stereotype, which is communal, is inconsistent with the leadership prototype, which is largely agentic. This suggests that the behavioral encoding disadvantage for female targets will be isolated to only agentic leadership behaviors (i.e., behaviors that imply agentic traits). Although there is little doubt that the leader prototype primarily consists of agentic traits (Lord & Maher, 1991) previous research has revealed that there are a limited number of communal traits in the leader prototype. Research that has examined the structure of the leader prototype suggests that eight overarching dimensions underlie the prototype (Offermann et al., 1994). A close inspection of these dimensions, and their associated traits, reveals that while seven of the eight dimensions are consistent with agentic characteristics (i.e., masculine), one of the eight is quite clearly communal (i.e., sensitivity). Based on the logic outlined above, we anticipated that evidence for gender encoding biases in leadership would depend upon the match between the gender of the leader and the dimension under consideration (i.e., communal versus agentic). Based on this, we hypothesized:

Hypothesis 1. Encoding will depend upon the match between the leadership behavior and the gender of the leader. Participants will have more difficulty encoding leadership trait words when there is incongruence between the leadership behavior (agentic vs. communal) and the gender of the leader (male vs. female).

Method

Participants

One hundred and thirty-nine undergraduate students from a large Canadian university participated in this study in exchange for extra credit towards their introductory psychology course grade. Fifty-eight percent of participants were female and the mean age was 19.57 ($SD = 2.96$).

Procedure

The study design was a 2 (leadership behavior: agentic vs. communal) $\times$ 2 (target gender: male vs. female) within-subjects design.[2] To test our hypotheses, we adapted a lexical decision making paradigm used in previous trait inference research (e.g., Wigboldus et al., 2003). The lexical decision making task was created using Microexperimental Laboratory (MEL; Schneider, 1988). In this task, participants were presented with behavioral sentences paired with a letter string which was either a word or a nonword (each behavior letter string combination is labeled a trial). The general sequence of events as they unfolded for our participants within each behavior-letter string trial is outlined in Fig. 1. As displayed in Fig. 1, a behavioral sentence appeared on the computer screen for three seconds. At the end of the three seconds the sentence disappeared and was replaced by a letter string (either a trait-implying word or a nonword), which remained on the computer screen until participants registered a response. Participants were instructed to indicate whether the letter string was a word or nonword by pressing "1" on the computer keyboard if the letter string was a word, and "3" on the computer keyboard if the letter string was a non-
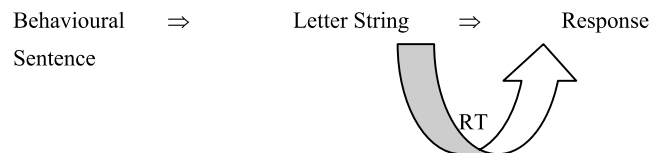

Fig. 1. The sequence of events in the lexical decision making task.

word. The more strongly that a behavior has been encoded into its underlying trait, the faster should be a participant's reaction time to the trait (Bassili, 2003). That is, the extent to which the trait has been encoded can be assessed by the degree to which the behavior primes the trait.

At the outset of the lexical decision making task, participants completed a series of 10 practice trials to acclimate themselves with the task. Reaction times to these first 10 trials were not recorded. Following this, participants completed 96 experimental trials. On 48 of these trials participants were presented with one of the leadership behavior sentences followed by the matched prototypical leadership trait. For half of these 48 trials (i.e., 24 trials) the target of the behavior was male while on the remaining half of these 48 trials the target of the behavior was female.[3] Thus, participants were presented with each of the 24 leadership behavior–trait combinations twice, once with a female target and once with a male target for a total of 48 trials. For example, each participant would read the sentence "Suzanne works relentlessly to solve difficult problems" and they would also read "William works relentlessly to solve difficult problems", in each case the trait determination (i.e., agentic trait) would serve as the letter string. Similarly, each participant would also read, "Jill encourages employees to approach her if a problem arises" and, "Russell encourages employees to approach him if a problem arises", in each case the trait understanding (i.e., communal trait) would serve as the letter string. On the remaining 48 trials, participants were presented with 24 neutral behavioral sentences twice, once with a

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[2] All participants completed the Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996) at least one month prior to participation. A quartile split was performed on the ASI scores and participants in the upper and lower 25 percent of the distribution were recruited to participate in the current study. Initially the study design was a 2 (leadership behavior: agentic vs. communal) $\times$ 2 (target gender: male vs. female) $\times$ 2 (sexism: high vs. low) mixed design. However, we found no main or moderating effects of the ASI. Given these null results, we removed the analysis from the manuscript.

[3] Research has demonstrated that differences do exist in terms of how names are perceived (Kasof, 1993); names convey information about both the potential age of a person as well as attractiveness. To ensure that all names used were perceived similarly by participants, we conducted a pilot study and asked 20 participants (10 males and 10 females) to assess each name used based on perceived age and attractiveness. Using repeated measures ANOVA we determined that there were no differences in perceived attractiveness ($F = .08$, $p > .05$; $M_{malenames} = 3.83$; $SD_{malenames} = .66$, $M_{femalenames} = 3.78$; $SD_{femalenames} = .63$) or age ($F = 2.92$, $p > .05$; $M_{malenames} = 2.78$; $SD_{malenames} = .74$, $M_{femalenames} = 2.93$; $SD_{femalenames} = .55$) for the names used in Study 1. We also conducted similar analyses with the names used in Studies 2a and 2b and again found null results for both attractiveness ($F = .10$, $p > .05$; $M_{malename} = 4.25$; $SD_{malename} = 1.25$, $M_{femalename} = 4.10$; $SD_{femalename} = 1.37$) and age ($F = 0$, $p > .05$; $M_{malename} = 2.70$; $SD_{malename} = 1.03$, $M_{femalename} = 2.70$; $SD_{femalename} = 1.17$).

male target and once with a female target. Each of these neutral behavioral sentences was paired with a nonword.[4] The order in which the sentences and their corresponding letter strings were presented was randomly generated by the computer program such that the order of presentation was unique for each participant. The amount of time participants took to make the word decision served as the dependent variable in the current study.

Measures and stimulus materials

Stimulus materials

Creation of the stimulus materials proceeded in three steps. First, 15 traits identified in previous research to be prototypical of leadership (e.g., Offermann et al., 1994) were selected (six communal and nine agentic) and two behavioral sentences were created for each. Initially, the authors and a research assistant went through several iterations to refine these sentences. Following this, 18 participants from the student center of a large Canadian university were recruited to evaluate these sentences in exchange for a candy bar. Participants were presented with the trait word (e.g., dedicated) and asked to indicate the extent to which each behavioral sentence (e.g., Worked late all week in order to finish the project) represented the trait using a seven-point Likert scale ("1" not at all representative—"4" neutral—"7" extremely representative). Means for each trait ranged from 4.94 to 6.23, suggesting that participants perceived that the behaviors reflected the intended traits. To assess whether each of these items was significantly above neutral, a one-sample *t*-test was conducted separately for each item (i.e., testing against 4.0). The results of this analysis indicated that all of the behaviors were viewed as being significantly higher than average in terms of the degree to which they were representative of the underlying trait (Average $t_{(17)} = 7.32$, $p < .01$). To maintain an equal number of agentic and communal traits, 12 traits (six communal and six agentic) were chosen from the initial 15 along with their two behavioral sentences (i.e., total of 24 sentences). Overall, the selected communal and agentic behavior-trait combinations did not differ in how representative they were deemed to be ($M_{communal} = 5.91$ versus $M_{agentic} = 5.71$).

The next step in evaluating the materials involved having volunteers rate the extent to which each of the traits was stereotypically masculine (i.e., agentic) or feminine (i.e., communal). To these ends, 18 volunteers were recruited and asked to rate the 12 traits identified in Step 1 along a seven-point scale ("1" = Very Masculine and "7" = Very Feminine). Overall, the results of this pilot investigation revealed that all of the traits trended in the expected direction and when tested using directional one sample *t*-tests (testing against the midpoint '4') all of these items were significantly different from neutral. Moreover, on average, the communal and agentic traits deviated from the midpoint roughly to the same degree (communal = 1.41 and agentic = 1.18), and did not significantly differ from one another in how stereotypically masculine or feminine they were rated ($t_{(17)} = 1.58$, $p = $ ns). Appendix A contains the traits, corresponding behavioral sentences, and information regarding whether the trait was communal or agentic.

The final step involved having participants assess the extent to which each of the behaviors we created were consistent with leadership. Despite the fact that all of the selected traits have been established to be part of the leader prototype (e.g., Offermann et al., 1994), it was important to assess whether our trait-implying *behaviors* were deemed to be characteristic of a leader. To this end, 24 participants (12 males and 12 females) were recruited from the student center in exchange for a candy bar. Each participant was presented with the 24 behavioral sentences and asked to rate the extent to which he/she agreed that each behavior was characteristic of a leader on a seven-point Likert scale ("1" strongly disagree—"4" neutral—"7" strongly agree). All of the behaviors were rated above the scale midpoint in terms of the extent to which participants agreed that the behavior was leader-like (Range 4.26–6.74). In addition, on average, the behaviors were deemed to be significantly higher than the scale midpoint (Average $t_{(23)} = 7.64$, $p < .01$). Finally, no difference emerged between the communal and agentic behaviors in how leader-like they were perceived to be by participants ($t_{(23)} = .21$, $p > .05$).

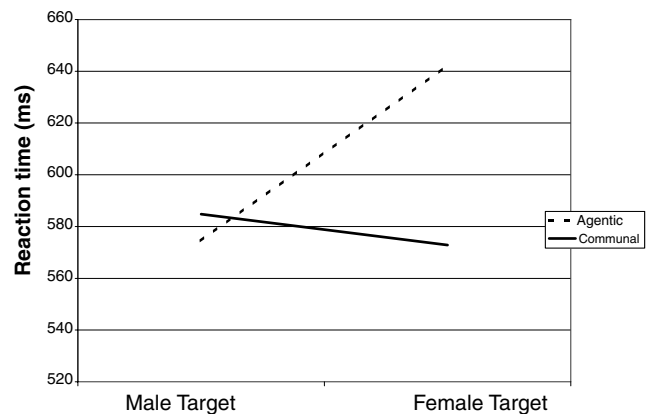Fig. 2. Two-way interaction between leadership behavior (agentic vs. communal) and leader gender (male vs. female).

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[4] It should be noted that the nonword letter strings were included simply to ensure that participants could not develop a response bias (i.e., press the '1' key immediately following each behavioral sentence). As such, responses to the nonword letter strings were not included in our analyses.

Results[5]

Prior to statistical analysis, the data were aggregated to give each participant a mean reaction time in each of the cells of the within subjects conditions (male target-agentic behavior, male target-communal behavior, female target-agentic behavior, female target-communal behavior). All incorrect responses were excluded from these means (e.g., indicating a nonword was presented when a word was actually presented), as were response times less than 150 ms and those greater than 2000 ms. This resulted in the elimination of 1.9% of the data.[6]

Data were analyzed using a 2 (leadership behavior: agentic vs. communal) $\times$ 2 (target gender: male vs. female) within-subjects ANOVA. Significant main effects were found for target gender ($F(1,137) = 8.25$, $p < .01$, $\eta^2 = .06$) and for behavior ($F(1,137) = 8.34$, $p < .01$, $\eta^2 = .06$). These results indicated that response times were significantly faster when the leader target was male (vs. female) and when the behavior was communal (vs. agentic). However these results were qualified by the hypothesized two-way interaction between target gender and behavior ($F(1,137) = 13.53$, $p < .01$, $\eta^2 = .09$) (see Fig. 2). An examination of the means ($M_{\text{agentictrait/maletarget}} = 575.66$, $SD_{\text{agentictrait/maletarget}} = 131.95$; $M_{\text{agentictrait/femaletarget}} = 644.28$, $SD_{\text{agentictrait/femaletarget}} = 250.17$; $M_{\text{communaltrait/maletarget}} = 586.92$, $SD_{\text{communaltrait/maletarget}} = 138.34$; $M_{\text{communaltrait/femaletarget}} = 574.41$, $SD_{\text{communaltrait/femaletarget}} = 126.53$) shows that, following the presentation of an agentic behavior, participants were slower to recognize the corresponding trait when the target

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[5] Prior to Study 1 we conducted two smaller studies that (a) established that leadership trait words are spontaneously encoded following the presentation of a trait-implying sentence, and (b) demonstrated that participants are slower to encode agentic leadership behaviors (compared to communal) when the leader target is female. In the first study we used a lexical decision task similar to the one described in Study 1 to determine whether participants would spontaneously encode the traits implied by the behaviors. Participants were presented with each behavioral sentence (and control sentences) followed by the trait word, a control word or a nonword (all equivalent in length). Following presentation of the behavioral sentences, participants responded significantly faster to the trait words than control words, suggesting that the leadership traits were spontaneously encoded from the corresponding leadership behavior ($F(1,27) = 12.91$, $p < .01$, $\eta^2 = .32$). In the second study, using a lexical decision task, participants were assigned randomly to one of two conditions, female target-agentic behavior, or female target-communal behavior. Participants read each behavioral sentence and made a lexical decision following each behavior. Results demonstrated that participants presented with a female target were significantly slower to encode the agentic leadership behaviors than the communal leadership behaviors ($F(1,27) = 4.71$, $p < .05$, $\eta^2 = .15$). These results fully replicated those reported in the female target conditions in Study 1.

[6] Setting cut-offs when calculating mean responses using reaction time data is accepted practice as the distribution of response times is usually positively skewed. Most responses cluster around the mean but some response times have increasingly long latencies, which are typically reflective of fatigue or lack of attention on the part of participants. Thus, it has been suggested that these reaction times be removed from the data set (Bassili, 2003).

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was a female compared to a male ($t(137) = -3.60$, $p < .01$), providing partial support for Hypothesis 1.[7]

Study 2a and Study 2b

The results of Study 1 suggest that perceivers may not encode agentic leadership behaviors into their underlying traits as strongly or as easily when they are presented with a female target. Specifically, our results demonstrated that although the encoding of communal traits may not vary as a function of leader gender, the encoding of agentic leadership behavior appeared to be dependent upon leader gender such that agentic leadership traits were less accessible when the leader was female (vs. male). The fact that there was no significant difference in the encoding of communal traits was somewhat surprising, although perhaps not entirely unexpected. A recent meta-analysis of gender differences in leadership revealed that males and females were evaluated similarly when they led in a feminine, communal style (Eagly et al., 1992). Moreover, other findings suggest that males and leaders are not perceived to differ in the extent to which they possess person-oriented (i.e., communal) and task-oriented (i.e., agentic) skills (Sczesny, 2003). In line with these findings, our results suggest that any gender bias during automatic behavioral encoding may be isolated to agentic leadership behaviors.

In Studies 2a and b we attempted to replicate the biased encoding of agentic leadership behaviors using an alternative dependent variable, self-perceptions. Prior research has demonstrated that trait activation increases the likelihood that a trait will be used in subsequent judgments (e.g., Srull & Wyer, 1979, 1980). Extending this principle, Wheeler and Petty (2001) have suggested that trait activation can bias self-perceptions, leading individuals to assimilate their self-descriptions towards the activated trait. Based on this research, in Studies 2a and b, we had participants read the agentic leadership behaviors from Study 1, manipulating target gender, and examined the extent to which our participants' self-descriptions shifted as a function of the agent's gender. Given that Study 1 indicated that agentic leadership traits were more readily encoded, and thus more strongly

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[7] The impact of participant gender was examined in Study 1 and Study 2b by including it both as a covariate and as a moderator variable. Overall, these supplementary analyses indicated that participant gender did not have any significant effect and its inclusion did not change the nature of our findings. These results are consistent with previous findings that have shown that little difference exists between men and women in terms of the nature of their leader prototypes (Offermann et al., 1994) or the content of their gender stereotypes (Williams & Best, 1990). Moreover, these findings are consistent with previous research which has shown that the automatic activation of gender stereotypes is not dependent upon a participant's gender (e.g., Rudman & Glick, 2001).

activated, when enacted by a male vs. female, and the fact that prior work has suggested that activated traits influence self-judgments (e.g., Wheeler & Petty, 2001) we hypothesized:

Hypothesis 2. Participants asked to form an impression of a female leader who has displayed agentic leadership behaviors, relative to a male leader, will display evidence of weaker encoding of relevant agentic traits in their self-judgments.

Study 2a and 2b: Method

Participants and procedure

Forty-seven students from a large Canadian university were recruited to participate in Study 2a and 82 students were recruited to participate in Study 2b. All participants in Study 2a were recruited from the student center and received a candy bar in exchange for their participation, while all participants in Study 2b volunteered to complete the study as part of an in class exercise.

In both Study 2a and 2b, participants were randomly assigned to read about and form an impression of either a male or a female who had engaged in agentic managerial behaviors. Participants were asked to read the managerial description and spend a few minutes writing down their general impressions of the individual. Following the impression formation task, each participant completed a self-report trait questionnaire that was designed to assess the extent to which he/she felt that a series of 38 personality traits were self-descriptive. Finally, participants were fully debriefed regarding the purpose of the study.

Measures and stimulus materials

Managerial description
Two parallel managerial descriptions were created. One described a male manager while the second described a female manager. Each description included the same set of agentic leadership behaviors identified in Study 1.

Dependent variable
Thirty-eight traits were selected from Goldberg's trait markers for the Big-Five personality dimensions (e.g., Goldberg, 1992), three of which were agentic leadership traits. To assess the robustness of the effect, slightly different agentic traits were utilized in Study 2a (Ambitious, Decisive, and Industrious) and Study 2b (Decisive, Dedicated, Goal Oriented). Participants were asked to indicate the 10 traits they believed to be most self-descriptive. The number of agentic leadership traits

selected by participants served as the focal dependent variable in Study 2a and b. To further assess discriminant validity, three communal leadership traits were also included in each study (Study 2a: Helpful, Compassionate, and Amiable; and in Study 2b: Sincere, Understanding, and Cooperative). Based on Study 1, we did not anticipate any differences to emerge in the endorsement of the communal traits.

Study 2a: Results

The data were analyzed using a one-way ANOVA, with the total number of agentic traits selected serving as the dependent variable. A significant difference was found between conditions, $F(1,45) = 5.09$, $p < .05$, $\eta^2 = .10$. An examination of the means ($M_{\text{maletarget}} = .64$, $SD_{\text{maletarget}} = .12$; $M_{\text{femaletarget}} = .22$, $SD_{\text{femaletarget}} = .13$) revealed that participants who had read and formed an impression of the male manager, on average, selected significantly more of the agentic traits as self-descriptive compared to participants who had read about the female manager (see Fig. 3). When the analysis was repeated using the number of communal traits endorsed, no significant differences emerged, $F(1,45) = .81$, *ns*. Finally, we examined whether the effect on the number of agentic traits endorsed remained significant once the number of communal traits selected was controlled. This analysis indicated that the difference in agentic traits remained, $F(1,44) = 4.93$, $p < .05$, $\eta^2 = .10$.

Study 2b: Results

As in Study 2a, the data were analyzed using a one-way ANOVA, with the total number of agentic leadership traits selected serving as the dependent variable. A significant difference was found between conditions,
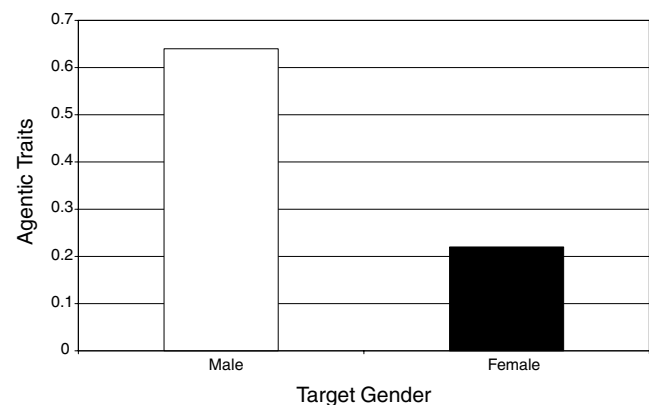
Fig. 3. Self-described agentic traits for participants exposed to agentic male leaders compared to those exposed to agentic female leaders in Study 2a.
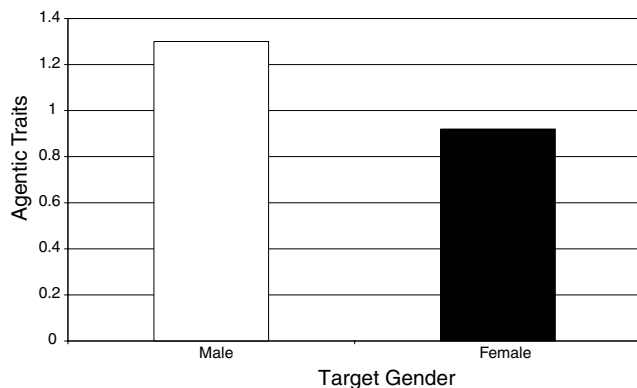
Fig. 4. Self-described agentic traits for participants exposed to agentic male leaders compared to those exposed to agentic female leaders in Study 2b.

$F(1, 80) = 4.50$, $p < .05$, $\eta^2 = .053$. An examination of the means ($M_{maletarget} = 1.30$, $SD_{maletarget} = .12$; $M_{femaletarget} = .92$, $SD_{femaletarget} = .12$) revealed that participants who had read and formed an impression of the male manager, on average, selected significantly more of the agentic leadership traits as self-descriptive compared to participants who had read about the female manager (see Fig. 4). When the analysis was repeated using the number of communal traits endorsed, no significant differences emerged, $F(1, 80) = .37$, *ns*. Finally, we examined whether the effect on the number of agentic traits endorsed remained significant once the number of communal traits selected was controlled. This analysis indicated that the difference in agentic traits remained, $F(1, 79) = 4.40$, $p < .05$, $\eta^2 = .053$.

Discussion

Bias against female leaders has received extensive attention both in the academic literature and the popular press. Although researchers have approached the study of gender bias in myriad ways, suggesting the bias may result from differing performance standards (e.g., Biernat & Kobrynowicz, 1997) or heuristic decision making (e.g., Martell, 1996), no prior research has examined whether gender bias emerges during encoding. In Study 1, we demonstrated that the extent to which agentic leadership traits are spontaneously encoded from trait-implying leader behaviors was dependent upon the gender of the target under consideration. Our findings suggested that participants more readily encoded agentic behaviors into prototypical leadership traits when the target was male, versus female. Study 2a and b replicated this effect, demonstrating that, on average, participants who had read about a male manager were more likely to endorse agentic traits as self-descriptive relative to those participants who had read about a female manager. Taken together, our studies are the first to suggest that

gender bias in leadership may emerge quite early on during information processing.

At a general level, our findings extend the limited amount of prior leadership research that has examined behavioral encoding. Unlike previous work into the encoding process, which has largely focused on determining whether leadership behaviors are noticed and processed by observers (e.g., Cronshaw & Lord, 1987), our work focused on understanding the nature of the cognitive structures that perceivers use when encoding leadership behavior, traits. Theoretically, our findings represent an important test of the automatic recognition based processes outlined by Lord and Maher (1991). In their model of leadership perceptions, Lord and Maher propose that leadership behavior is automatically encoded, without intent or effort, into an observer's pre-existing leader prototype. Consistent with their model, our findings suggested that relevant traits may be automatically encoded when corresponding behaviors are processed by an observer and that this occurs unbeknownst to the observer. Beyond supporting Lord and Maher's model, our work suggests that it may be necessary to expand it to include aspects of the context and the target that can influence automatic recognition based leadership perceptions.

The need to better understand automatic trait encoding processes is further highlighted when our findings are contrasted against research that has examined gender bias when trait inferences are assessed in a controlled manner. In this regard, a considerable amount of research suggests that the provision of judgment relevant behavioral information (i.e., individuating information) is an effective way to eliminate the impact of stereotypes. More specifically, research has demonstrated that when members of two groups, who are stereotyped as opposite on a given trait are known to have engaged in a behavior that is diagnostic of the trait, they are rated identically on the trait (e.g., Heilman, 1984; Locksley, Borgida, Brekke, & Hepburn, 1980). Such findings have led some scholars to conclude that individuating information is an effective means of eliminating the impact of stereotypes. However, all of this research was conducted in situations that required explicit trait judgments. As our research, and that of others (Wigboldus et al., 2003) suggests, individuating information may not be enough to undermine the impact of stereotypes at encoding. Moreover, our research demonstrates that the automatic encoding effect may not simply be isolated to perceptions of the target, but may also reflect back upon the perceiver, potentially changing his/her sense of self (Study 2a and b). Practically, our findings suggest that organizational scholars need to consider ways in which encoding biases can be circumvented. One possibility is to encourage organizational cultures that promote equality and values of fairness, as prior research has shown that individuals who have internalized these

values are less prone to display prejudice and bias, even when it is assessed nonconsciously (Monteith, 1993).

Beyond replicating the basic findings from Study 1, as noted above, Study 2a and b are the first studies, to our knowledge, which document that the mere process of encoding leadership behaviors may be consequential for perceivers. These findings are particularly interesting when considered in conjunction with recent theorizing in the leadership literature (Lord & Brown, 2004). Lord and Brown (2004) have recently proposed that a leader's impact on subordinates is dependent both upon the manner in which a subordinate encodes a leader's actions and the extent to which encoded behaviors shift the accessibility of different dimensions of a subordinate's self-concept (i.e., self-perceptions). Although our studies were not intended to assess Lord and Brown's model, our findings are consistent with their propositions. In this regard, our findings suggest that how leadership behaviors are encoded may play a significant role in terms of shifting the salience of various aspects of an observer's self-concept (Study 2a and b). As such, Lord and Brown's model may be useful for investigating how a leader's gender can influence followers' actions, thoughts, attitudes, and self-perceptions independent of actual behavior.

Considered in light of Lord and Brown's model, the findings of Study 2a and b may have rather grim implications for female leadership in organizations. As Lord and Brown (2004) suggest, leadership is a process of influence in which one individual, typically labeled a leader, attempts to change the attitudes, behaviors, or reactions of a second individual or group of individuals, typically labeled a follower or subordinate. Critically, these authors suggest that a leader's influence flows through a subordinate's conceptualization of the self, which in turn serves to regulate a subordinate's current action, thought, and behavior. As such, Study 2a and b may suggest that because of perceiver biases, female leaders will experience substantially more difficulty in getting subordinates to conceptualize themselves as possessing agentic characteristics (e.g., ambitious) through, for example, role modeling behaviors. Given the important relationship between agentic characteristics and relevant work behaviors such a perceptual bias may undermine the effectiveness of female leaders.

Limitations and future research directions

As with any study there are a number of limitations that should be noted when interpreting our findings. In the series of studies reported in this paper our participants were undergraduate students. Although it is possible that our participants may have responded differently than individuals who possess more extensive work experiences, we think that this is unlikely. Prior research indicates that the leader prototype is formed at quite a young age, perhaps as early as 12 years of age (Matthews, Lord, & Walker, 1990), and that the content and structure of the leader prototype is commonly shared (Epitropaki & Martin, 2004; Offermann et al., 1994). In fact, direct comparisons of undergraduate students and working adults indicates that the leader prototype does not differ between these two groups (Offermann et al., 1994). Thus, while we would encourage future replications with other populations, previous research suggests that our sample may not have colored our findings.

Additionally, the leader prototype, as set out by Lord et al., 1984 and Offermann et al. (1994), does not specify those aspects of the prototype considered agentic and those considered communal. While our pilot study did assess the extent to which each of the chosen behaviors were stereotypically 'masculine' or 'feminine', agency and communion tend to be more concerned with the ascription of specified behaviors to men and women (e.g., Eagly & Karau, 2002). Thus, future work should also more concretely elucidate the agentic and communal aspects of the leader prototype.

It is also important to note that participants were not given any additional information about the hypothetical leaders in any of our studies. All of our studies were conducted in the laboratory and therefore the complexity of the organizational environment was not represented. However, there are many advantages to conducting leadership research in a laboratory setting. For example, because laboratory settings offer a high degree of control, it was possible for us to maximize internal validity and study automatic cognitive processing at the encoding stage (Brown & Lord, 1999). That said, we do believe that future work should attempt to replicate our findings in field settings.

In the current paper our focus was on assessing the extent to which gender bias may arise automatically during recognition-based processing. A substantial amount of social cognitive work has demonstrated that humans act as "cognitive misers" (Fiske & Taylor, 1991). In processing information people generally prefer to respond in a cognitively effortless manner, only devoting attentional resources and processing information deliberatively when it is necessary to do so (Bargh & Chartrand, 2000). As such, it seems likely that the automatic cognitive processes investigated in this paper are representative of how leadership perceptions form on a daily basis. However, it is important to recognize that leadership perceptions may form in other ways. For instance, in addition to automatic processing, Lord and Maher (1991) also propose that recognition based leadership perceptions may occur in a controlled manner, requiring the awareness, intent, and effort of the observer. Clearly, our findings speak only to automatic gender encoding biases and future work is needed to understand whether similar forms of bias emerge when observers use controlled processing. One possibility is that individual

differences in sexism may play a larger role when controlled information processing occurs. Although prior research has unequivocally demonstrated that stereotypic beliefs are automatically and unconsciously activated by all observers (Greenwald & Banaji, 1995), research has also demonstrated that initial, automatic, trait inferences can be corrected when controlled information processing is permitted (Gilbert, 1989). Such work suggests that sexism may be a larger determinant of judgments and perceptions when controlled information processing is investigated.

In the current paper, we investigated whether perceivers would encode leadership behaviors differentially when the behavior was enacted by a male vs. a female. Based on prior work (Wigboldus et al., 2003), we had proposed that passive encoding processes would lead perceivers to encode agentic leadership behaviors more weakly when a female, versus a male, was the agent of the behavior. As one reviewer noted, an intriguing alternative account may be that participants attempted to differentiate or contrast themselves away from the agentic female leader. In line with this idea, Mussweiler (2003) proposed that whether perceivers' assimilate towards a standard of comparison or contrast away from a standard of comparison depends upon the manner in which comparison information is processed. In this regard, individuals can either engage in similarity testing, in which self-relevant information that is consistent with the comparison target is accessed in memory or dissimilarity testing, in which self-relevant information that is inconsistent with the comparison target is accessed in memory. As Mussweiler suggests, similarity testing leads to the increased accessibility of comparison consistent knowledge in working memory, while dissimilarity testing leads to the increased accessibility of standard inconsistent knowledge in working memory. Given that agentic leadership behaviors contradict prescriptive gender norms for women (Eagly & Karau, 2002) it seems plausible that our participants may have engaged in dissimilarity testing when confronted with an agentic female leader. Given this possibility, an interesting extension of the current findings may be to directly contrast the passive encoding mechanism against Mussweiler's social-comparison model.

Future research should also investigate whether there are any circumstances or situations that advantage females or place them on equal footing with their male counterparts. As our results suggest, participants were able to encode communal leadership traits from the corresponding behavior with ease, regardless of leader gender (see Study 1). Interestingly, recent findings suggest that females engage in more transformational behavior and that females who adopt a more transformational style may be perceived as being more effective than their transformational male counterparts (Eagly, Johannesen-Schmidt, & van Engen, 2003). Our findings might help to elucidate these results. As others have noted, several

dimensions of transformational leadership, such as individual consideration, are communal in nature (Eagly et al., 2003). On the basis of our findings (Study 1), it is possible that the absence of gender bias when transformational leadership behavior is considered is partially due to how this form of behavior is encoded, however, future research is needed to directly test this question.

Although females are beginning to make inroads into traditionally male-dominated leadership roles, it is clear that there is still much progress to be made. Taken together, the studies reported here represent an important extension of both the literature examining information processing approaches to leadership and gender bias in leadership. First, to our knowledge, our studies represent the first evidence that gender bias in leadership emerges early on during information processing. Despite previous speculation to this effect, no research has explicitly investigated gender bias during encoding in the leadership literature. Second, our studies are the first evidence, to our knowledge, that bias during encoding may reflect back upon the perceiver. Such effects suggest that the impact of biased perceptions are not isolated to target ratings, but may, in a very subtle fashion, influence a target's effectiveness. Finally, in terms of our basic understanding of how stereotypes operate in combination with behavioral information, our work is among the first to suggest that stereotypes color how behavioral information is encoded. As such, the provision of relevant individuating information may not be enough to overshadow stereotypes and, as a result, women may be viewed as a female first and a leader second. Based on our results, we would encourage researchers to continue examining automatic recognition based biases and to begin to consider what implications such biases have for female workers. In summary, we hope that the current paper serves as an impetus for other organizational scholars to consider encoding biases in leadership.

Appendix A

Dedicated (**Agentic**)
Worked late all week in order to finish the project.
Works on projects outside of working hours.
Caring (**Communal**)
Always shows concern for the well being of the team.
Goes beyond self-interest for the good of the employees.
Charismatic (**Agentic**)
When speaking, motivates employees.
Talks enthusiastically to the employees about what
  needs to be accomplished.
Sensitive (**Communal**)
Even when the employees do not communicate that
  they're upset, it is still perceived.
Is responsive to the feelings of employees at work.

Intelligent (Agentic)

Displays extraordinary talent and competence in every project.

Consistently contributes good ideas during group discussions.

Determined (Agentic)

Does not give up on a project when complications arise.

Works relentlessly to solve difficult problems.

Aggressive (Agentic)

Argues until co-workers see the ideas.

Fights to get the work group necessary resources.

Honest (Communal)

Always makes sure that credit is not taken for employee's good ideas.

Is always upfront with subordinates.

Understanding (Communal)

Encourages employees to approach if a problem arises.

Listens when subordinates are having a personal conflict.

Compassionate (Communal)

Extends employees deadlines when they have important family commitments.

In a personal crisis gives time off to employees.

Competitive (Agentic)

Emphasizes that the team needs to be number one.

Wants own ideas to be heard before other employees' ideas are heard.

Sympathetic (Communal)

Is accommodating when family emergencies arise.

Expresses concern with subordinates that are going through difficult times.

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