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The leader-in-social-network schema: Perceptions of network structure affect gendered attributions of charisma

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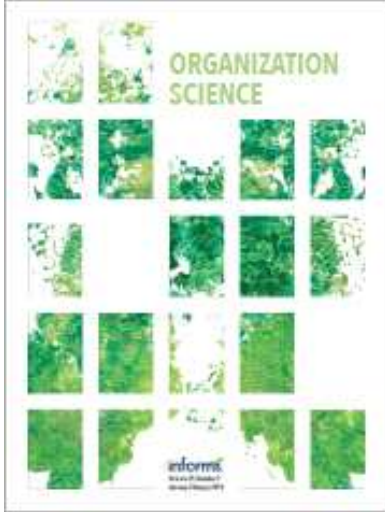


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The Leader-in-Social-Network Schema: Perceptions of Network Structure Affect Gendered Attributions of Charisma

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Charisma is crucially important for a range of leadership outcomes. Charisma is also in the eye of the beholder—an attribute perceived by followers. Traditional leadership theory has tended to assume charismatic attributions flow to men rather than women. We challenge this assumption of an inevitable charismatic bias toward men leaders. We propose that gender-biased attributions about the charismatic leadership of men and women are facilitated by the operation of a leader-in-social-network schema. Attributions of charismatic leadership depend on the match between the gender of the leader and the perceived structure of the network. In three studies encompassing both experimental and survey data, we show that when team advice networks are perceived to be centralized around one or a few individuals, women leaders are seen as less charismatic than men leaders. However, when networks are perceived to be cohesive (many connections among individuals), it is men who suffer a charismatic leadership disadvantage relative to women. Perceptions of leadership depend not only on whether the leader is a man or a woman but also on the social network context in which the leader is embedded.

Keywords: charismatic leadership; social networks; gender; schemas

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Introduction

To be an effective leader, it is crucial to be granted leadership qualities by others. Subordinates confer leadership qualities (such as charisma; see Weber 1947) on some but not all formally appointed leaders. In this perceptual process, current research suggests women, relative to men, are disadvantaged both in how they are perceived in formal leadership roles (Eagly et al. 1992) and in how they are perceived in informal leadership roles in social networks (Burt 1992). But this research consensus may be overly focused on organizational contexts that display a traditional centralized structure. We explore the possibility that men and women may be differentially conferred with charismatic leadership qualities depending on the structure of relationships (centralized or cohesive) in which these leaders are embedded.

We suggest a *leader-in-social-network schema* that contains abstract information concerning leaders in social network contexts (see Lord and Foti 1986). This schema enables individuals to anticipate a match between the gender of the leader and the structure of the social network, thereby influencing attributions of charismatic leadership. Schemas are organized representations of past behaviors and experiences that function as theories about reality to guide the individual in constructing new experiences (Baldwin 1992). Individuals tend

to simplify complex phenomena by filtering information through these preexisting knowledge systems (Neisser 1976). Person-in-situation schemas, such as the leader-in-social-network schema that we propose, tend to be richer, more accessible, and more widely used by people than simple schemas relating just to persons or script schemas that describe event sequences. We draw from cognitive psychology and schema research to offer a new approach to the question of why certain people are attributed with charismatic leadership.

Specifically, we suggest that people have expectations of the types of leaders—men or women—appropriate for different social network structures. When the individual perceives that people in a team go to one or a few others for advice (a network pattern indicative of status or power centralization), then the individual is likely to expect the leader to be a man. Centralization concerns the extent to which there is a well-defined power or status structure within a group, a context associated with masculine gender stereotypes (Acker 1990) and with actual male behavior in groups (Aries 1976). When the individual perceives that people in a team go to many others for advice (a network pattern indicative of cohesion), then the individual is likely to expect the leader to be a woman. Cohesion concerns the extent to which group members are bonded together (Beal et al. 2003),

a context associated with female gender stereotypes (Eagly and Karau 2002) and with actual women's behavior in groups (Maccoby 1990). Our core proposition is that people expect to see a male leader when the network is perceived as hierarchical and a female leader when the network is perceived as cohesive. Subjective evaluations of leadership quality (as assessed by attributions of charisma) will tend to be enhanced when expectations are met relative to when expectations are violated.

We focus specifically on charismatic leadership in this paper for two reasons. First, charisma is central to leadership theory and research (Conger and Kanungo 1987). Indeed, "charisma is the most important component in the larger concept of transformational leadership" (Bass 1985, p. 34). Scholars have called for the examination of the specific components of transformational leadership, highlighting attributions of charisma as an important field of study (van Knippenberg and Sitkin 2013). Second, more than other aspects of leadership, charismatic leadership is in the eye of the beholder (Avolio and Yammarino 1990). From its inception, charismatic leadership has been defined as an attribute perceived by followers: leaders cannot be charismatic unless followers perceive them as such (Weber 1947). We follow prior work in recognizing that individual judgments concerning a leader's charisma are more open to situational influence than are attributions concerning more objective aspects of leadership such as transactional leadership (Pastor et al. 2007).

Charismatic Leadership

Charismatic leadership theory has traditionally described the special qualities and behaviors of leaders (Weber 1947), including behaviors such as challenging the status quo and nurturing followers' development (Conger and Kanungo 1987). Charismatic leaders set grand, long-term visions and inspire others to enact these visions (Conger and Kanungo 1987). But recent theory has shifted the focus toward a recognition of charisma as a relationship between the leaders who exhibit certain characteristics and the followers whose own characteristics lead them to perceive leaders as charismatic (Howell and Shamir 2005). Leadership resides within the social system that develops between leaders and followers (Balkundi and Kilduff 2005). To the extent that followers endorse a leader as charismatic, they place more trust in the leader, feel more satisfied and more motivated, and experience higher levels of empowerment and self-efficacy (Conger et al. 2000, Jung and Avolio 2000). Attributions of charismatic leadership predict team performance (Balkundi et al. 2011).

The process by which a follower attributes charisma to a leader involves a cognitive matching between the follower's implicit leadership theory (comprising prototypical expectations of leader characteristics and behaviors) and the actual leader's characteristics and behaviors

(as perceived by the follower) (Lord et al. 1984). If the leader matches the prototype, the follower endows the leader with a charismatic personality (Nye and Forsyth 1991), seeing the leader as a role model, someone with a vision who sets high performance expectations that the team collectively accepts. Given the availability of implicit leadership theories, social perceivers may make judgments based on little or no evidence (Lord and Emrich 2000, Lord and Maher 1994). It is the charismatic leadership prototype that supplies missing information and enables the charismatic attribution (Lord and Foti 1986). Notably, the charismatic prototype is not fixed: as follower or situational factors change, definitions of charismatic leadership also change (Lord et al. 2001). For example, attributions of charismatic leadership are susceptible to changing factors such as team performance (Shamir 1992) and followers' arousal (Pastor et al. 2007).

Leadership prototypes are implicitly held and function largely outside of people's awareness. People have generally little insight into how these prototypes affect—and sometimes bias—their assessment of those in leadership positions. Thus, it is not unusual to find women leaders evaluated less favorably than men (Eagly et al. 1992) despite both genders displaying similar behavior (Eagly et al. 1995). Leadership prototypes are part of a wider net of social-cognitive associations people hold in their minds. Leadership prototypes influence, and are influenced by, the nodes and connections within this broader mental net, including associations with gender stereotypes (Sczesny 2005). Gender bias occurs because the prototype of an effective leader from which attributions are drawn is typically considered to be male (Schein 1973). Women, by virtue of their gender, are seen as less able to fulfill the requirements of leadership (role congruity theory; Eagly and Karau 2002).

In our research we challenge the inevitability of biased attributions concerning women's leadership. By moving to the consideration of a leader-in-social-network schema, we open up the possibility that schematic attributions concerning leadership affect both genders, depending on the social network context. We draw from schema theory (Baldwin 1992, Lord and Maher 1994), cognitive social network research (e.g., Janicik and Larrick 2005), and gender schema research (e.g., Eagly and Carli 2003) to forge a new approach to the enduring question of how the expectations that people bring to the workplace affect leadership evaluations.

The Leader-in-Social-Network Schema

Person-in-situation schemas contain information about people and behavior typically found in specific social situations. These schemas combine elements of person schemas (that facilitate the categorization of people into types; see Cantor and Mischel 1979) and script schemas

(that describe the appropriate sequence of events in given situations; see Schank and Abelson 1977). These schemas allow people to go beyond the information available in any particular situation and fill in the gaps in knowledge with details that would be expected on the basis of past experience (Baldwin 1992).

We suggest that the process by which an observer endorses an individual as a charismatic leader involves a cognitive matching between the observer's expectations concerning the types of people suitable for leadership and the extent to which the individual is perceived to fulfill those expectations *in particular social network contexts*. The leader-in-social-network schema develops from repeated interactions individuals have and observe within the social networks to which they belong (Janicik and Larrick 2005). Individuals build up knowledge concerning the extent to which patterns of advice giving and receiving tend to be associated with men or women leaders. We examine advice networks because advice giving and taking relate to leader charisma (e.g., Balkundi et al. 2011) and leader performance (Balkundi et al. 2011). We focus on social network perceptions because implicit leadership theories draw on people's internal subjective representations rather than on external objective realities (Lord 2005).

Perceptions of advice networks are likely to differ along two structural dimensions—*centralization*, as indicated by the perceived centralization of the network, and *cohesion*, as indicated by the perceived density of the network. Centralization concerns the extent to which there is a well-defined power or status structure within the team. Cohesion refers to the extent to which people within a team have many rather than few connections with each other. The perception of a social network structure as centralized cues expectations for a leader who can control the levers of power and influence. By contrast, the perception of a social network structured as cohesive cues expectations for a leader who can relate to others and manage complex interpersonal situations. These leadership expectations, cued by the perceived social network context, align with gender stereotypes, leading to a bias toward male leaders in hierarchical contexts and toward female leaders in cohesive contexts. Thus we suggest that the leader-in-social-network schema offers two prototypical matches between leader gender and social network structure. One prototypical pattern involves a male leader in a centralized network in which one or a few individuals dominate. The other prototypical pattern involves a female leader in a cohesive network in which many individuals interact.

Centralization: The Male Leader in a Centralized Network

Centralization is the extent to which a network is dominated by a single individual (Freeman 1978–1979). For networks that depict advice interactions, centralization

can signal either status or power depending on whether network relations involve either deference or resource flows (see Magee and Galinsky 2008, p. 359). Advice networks that are highly centralized feature clear pecking orders and stratification of status and power.

When individuals perceive advice networks to be highly centralized, they anticipate the familiar network pattern of a star with ties radiating out to others from the central actor. This image of a dominant actor at the center of the network matches prototypes of men leaders as controlling and dominant (Eagly and Karau 2002, Schein 1973), with high status and power (Eagly and Steffen 1984). Because power and status differences between individuals are particularly salient in centralized networks, such contexts are likely to cue an expectation of a male leader. Indeed, networks in which informal power is perceived to be centralized in one or a few individuals resemble the traditional, formal structures of command-and-control that are associated with male stereotypes about leadership (Schein 1973). These hierarchical structures are readily perceived (Zitek and Tiedens 2012) and tend to reinforce male gender stereotypes, thereby placing men at an advantage over women (Acker 1990).

Networks in which informal status and power differences are perceived to be accentuated provide a perceptual frame that tends to diminish leadership attributions to women and enhance leadership attributions to men by cueing expectations about the type of individuals best suited to be leaders. In centralized advice networks, individuals expect to encounter leaders who exhibit power, dominance, courage, and boldness—characteristics that are prescribed for men leaders but proscribed for women leaders (Eagly and Karau 2002). As such, we expect women leaders embedded in networks that are perceived to be centralized to be attributed with less charisma than are men. This bias arises not because of actual behavioral differences between men and women as leaders but because men, rather than women, fulfill the leader-in-social-network expectations in centralized networks. Attributions of charisma to female leaders (relative to male leaders) in centralized contexts suffer, we suggest, because women leaders represent a mismatch with the charismatic leadership prototype, whereas men leaders represent a match with the charismatic leadership prototype, that is triggered by the centralized context.

HYPOTHESIS 1. *To the extent that team advice networks are perceived to be centralized, women will be seen as less charismatic leaders than men.*

Cohesion: The Female Leader in a Densely Connected Network

Density is a network-level property that refers to the number of ties that exist within a network relative to the number of ties that are possible (Wasserman and Faust 1994). Advice networks characterized by many

connections between group members (relative to the number of connections possible) tend to be experienced as cohesive (Sparrowe et al. 2001). Dense networks promote cohesion by reducing the likelihood of conflict between team members (Lbianca et al. 1998) and by facilitating the development of shared understandings and trust (Coleman 1988). Therefore, to the extent that the individual perceives the advice network to be characterized by many exchanges, the individual is likely to anticipate a collaborative, communal setting characterized by mutuality and generalized reciprocity.

The anticipation of communality in cohesive networks relates closely to expectations concerning women relative to men. Women are presumed to be “social specialists” (Bales and Slater 1955, Meeker and Weitzel-O’Neill 1977). They are expected to strive for intimacy and solidarity in their interactions with others (Moskowitz et al. 1994) and are associated with enabling interaction styles that support and maintain social exchanges (Maccoby 1990). Stereotypical women leaders are expected to be supportive and nurturing (Rosette and Tost 2010). Thus, networks in which informal interactions are perceived to be cohesive provide a perceptual frame that matches women leaders. By contrast, there is a mismatch between the prototypical leader expected in a cohesive network and the male leadership stereotype. Men are expected to strive for status and dominance rather than communality (Diekman et al. 2004). This expectation for men prescribes aggressive, forceful, and competitive behavior to gain status and also proscribes yielding behavior (Prentice and Carranza 2002).

The feminized-leadership context engendered by the perception of cohesion, therefore, places a man leader in a position where he is likely to be perceived in violation of core gender stereotypes and a woman leader in a position where she is likely to be perceived as adhering to core gender stereotypes. And, ironically, those men who try to adapt to the prevailing communal norms by, for example, sharing credit for their work, are likely to find their modesty not only unappreciated but actually punished because modesty in a man violates gender expectations (Moss-Racusin et al. 2010). Attributions of charisma to male leaders (relative to female leaders) in cohesive network contexts suffer, we suggest, because male leaders represent a mismatch with the female leadership prototype appropriate to the cohesive context.

HYPOTHESIS 2. *To the extent that team advice networks are perceived to be cohesive, men will be seen as less charismatic leaders than women.*

Our theoretical approach focuses on networks that exhibit centralization or cohesion. To test the hypotheses, we require perceptual data concerning networks that are seen to be either centralized or cohesive.

Study 1

The purpose of Study 1 was to show, experimentally, that the differing patterns anticipated by the leader-in-social-network schema would affect the attributions of charismatic leadership to men and women. Centralization and cohesion are structural properties of networks, but people’s perceptions of these network properties may differ from the actual properties. Indeed, individuals are unlikely to perceive network properties accurately (see Kilduff et al. 2008). Rather, individuals tend to cognitively impose systematic structure on the networks in which they habitually participate (Freeman et al. 1987). Prior experimental work on cognitive social structures shows that individuals bring schematic expectations to bear on perceptions of social networks (Janicik and Larrick 2005). We bring these lines of work together by testing whether the same underlying network, presented to appear either centralized or dense, triggers different schematic expectations.

Method

Sample. We recruited 198 individuals (79 men, 81 women, and 38 who did not report their gender) from an online sample. The participants were all located in the United States, were mostly white (78%), and averaged 32 years of age ($SD = 10.02$). They had an average of 14 years’ work experience ($SD = 9.98$) and were all currently employed full or part time.

Procedure. The experiment used a 2 (gender of leader: man or woman) \times 2 (advice network configuration: status centralized or cohesive) between-subjects vignette design. (The manipulations are available as supplemental material at <http://dx.doi.org/10.1287/orsc.2015.0965>.) Participants read about the leader of Team Media in a professional services firm and about the interactions within the team’s advice network. The description of the team advice network was accompanied by a network diagram. Participants were then asked a number of questions about the leader.

Gender Manipulation. Participants in the woman leader condition read about a leader named Michelle. Participants in the man leader condition read about a leader named Michael.

Network Structure Manipulation. On their screens, participants saw a network of nodes (labeled with people’s names) and lines (representing connections). We set the centralization score of the network at 71% and the density score at 33%. The leader was shown as connected to every other team member (and so had a centrality score of 1). The other members of the team were given gender-ambiguous names to avoid the possibility that individuals would make attributions about leaders based on the depiction of their personal ties to men and women in their team.

Although we presented all participants with the same structural network, we arranged for different depictions of this same network to be viewed depending on experimental condition.¹ The first depiction, designed to represent centralization, resembled a star network. The second depiction, designed to represent cohesion, resembled a dense network. A pretest of this manipulation confirmed that people tended to see the star network ($M = 19.46$, $SE = 1.09$) as significantly more status concentrated than the cohesive network ($M = 15.07$, $SE = 1.05$, $F_{(1,27)} = 8.41$, $p = 0.01$). Likewise, individuals tended to see the cohesive network ($M = 19.37$, $SE = 0.88$) as significantly more cohesive than the star network ($M = 16.69$, $SE = 0.94$, $F_{(1,27)} = 4.48$, $p = 0.04$).

Dependent Variables. Participants were asked to rate the leader's charismatic qualities on 15 items that assessed typical aspects of charismatic leadership, including articulating a vision, providing a role model, setting high performance expectations, and fostering acceptance of group goals ($\alpha = 0.93$) (Podsakoff et al. 1990). As we report in detail in the results section, we checked to see whether other (noncharismatic) aspects of leadership were affected by the independent variables. Specifically, we asked participants to rate leaders' intellectual stimulation on three items ($\alpha = 0.88$) and leaders' individualized consideration on four items ($\alpha = 0.73$). We also measured transactional leadership using five items concerning the leader's contingent reward behavior ($\alpha = 0.60$) (Podsakoff et al. 1990). All responses were given on a Likert scale from 1 = strongly disagree to 7 = strongly agree, and were averaged prior to analysis.

Control Variable. We used gender as the control variable in our experiments. Participants reported their gender, which was coded as 0 = man and 1 = woman.

Attention and Manipulation Checks

Prior to analysis, we established that responses would be excluded if (a) they came from the same IP address, (b) response times were greater than two standard deviations above the mean, or (c) the gender of the leader was recalled incorrectly. Ten cases were excluded because respondents violated condition (b).

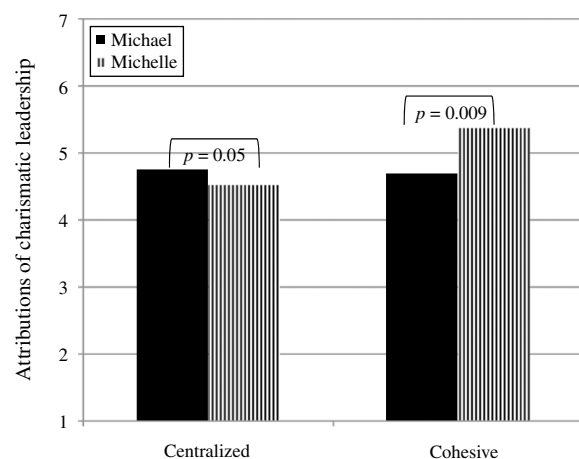
Results

A 2 (gender of leader: man or woman) \times 2 (network configuration: cohesive or centralized) analysis of variance revealed a main effect of network condition on attributions of leadership ($F_{(1,197)} = 11.09$, $p = 0.001$, partial $\eta^2 = 0.05$), suggesting that leaders in cohesive networks ($M = 5.17$, $SE = 0.11$) were perceived to be more charismatic than leaders in centralized networks ($M = 4.63$, $SE = 0.11$). There was no main effect of leader gender ($F_{(1,197)} = 0.33$, $p = 0.56$).

We predicted that charismatic attributions to leaders would depend on the fit between leader gender and network structure. And, indeed, there was a significant interaction between the gender of the leader and the configuration of the network ($F_{(1,197)} = 3.96$, $p = 0.048$, partial $\eta^2 = 0.02$; see Figure 1). More specifically, Hypothesis 1 (in centralized networks, women leaders would be seen as less charismatic than men leaders) was supported. Even though participants saw the same centralized network in both leader conditions, participants who read about a leader named Michelle ($M = 4.52$, $SE = 0.12$) saw her as less charismatic than participants who read about a leader named Michael ($M = 4.75$, $SE = 0.19$, $t = -1.98$, $p = 0.05$). Hypothesis 2 (in cohesive networks, men leaders would be seen as less charismatic than woman leaders) was also supported. Even though participants saw the same cohesive network in both leader conditions, participants who read about a leader named Michael ($M = 4.69$, $SE = 0.18$) saw him as less charismatic than participants who read about a leader named Michelle ($M = 5.37$, $SE = 0.13$, $t = 2.65$, $p = 0.009$). The pattern of results was the same when we used analysis of covariance with the gender of the participant as a covariate on the reduced sample of the 160 people who reported their gender.

Additional Analyses. We tested whether our hypotheses would be supported for other components of transformational leadership (intellectual stimulation and individualized consideration) and for transactional leadership. However, as expected from our theoretical reasoning, the results were specific to charisma. We found no effect of the interaction between network configuration and leader gender on intellectual stimulation ($F_{(1,159)} = 2.34$, $p = 0.13$), individualized consideration ($F_{(1,159)} = 0.27$, $p = 0.60$), or transactional leadership ($F_{(1,159)} = 2.12$, $p = 0.15$).

Figure 1 Study 1: Attributions of Charismatic Leadership as a Function of the Leader-in-Social-Network Schema



Discussion

Study 1 provides evidence in support of the purported effects of the leader-in-social-network schema on attributions of charisma. Women leaders were attributed with less charisma than men leaders in the context of centralized networks, whereas women leaders were attributed more charisma than men leaders in the context of cohesive networks. But does the leader-in-social-network schema affect attributions about leaders in the real world? Experiments allow us to establish causality by providing a high degree of control, but they can exaggerate gender bias in leadership evaluations (Eagly et al. 1992). Thus testing our hypotheses in a field setting is important for determining the validity of our theory.

Study 2

In our second study we tested the hypotheses in a survey of individuals working in teams in real organizations. We also examined whether the perceptual-mismatch effects on attributions of leadership tended to be exclusively concerned with charisma or whether they extended to other leadership outcomes including noncharismatic aspects of transformational leadership, leadership effectiveness (Giessner and van Knippenberg 2008), and leader–follower relationship quality (i.e., leader–member exchange; see Graen and Uhl-Bien 1995).

Method

Sample. We recruited and paid 149 (91 men and 58 women) U.S. resident full- or part-time employed individuals for a study on social networks. Respondents were recruited from an online panel and represented a wide variety of industries and occupations, were predominantly white (79.5%), and were on average 31 years old ($SD = 8.87$).

Procedure. To measure respondents' perceived social networks, we used the ego network method (Burt 1992). Respondents were asked to list and describe all members of their team in terms of age, gender, ethnicity, and formal leadership responsibilities. Subsequently, respondents were asked "who would you go to for advice on work-related matters?" followed by a list of their coworkers' names. Respondents checked the names of those coworkers from whom they sought advice. For each team member in turn, respondents were then asked to check the names of coworkers whom the team member went to for advice. Thus each respondent provided a complete network map concerning his or her perceptions of who shared advice relations with whom in the team, commonly referred to as a "slice" in cognitive social structure research (Krackhardt 1987).

Because we were only interested in studying leaders, we only included respondents' observations of individuals in their team who had formal managerial status and

excluded respondents' observations of those team members who had no formal managerial responsibility. On average, there were 2.6 people in each respondent's team with formal leadership roles. Thus the 149 respondents to our survey provided 384 observations of the leaders in their teams.

Measures

Leader Gender. Leader gender was coded as 0 = man leader and 1 = woman leader.

Advice Network Centralization. Advice network centralization was measured as the average difference in indegree centrality between the most central actor and all others (Wasserman and Faust 1994).

Advice Network Cohesion. Advice network cohesion was measured as network density, calculated by dividing the total number of reported ties by the total number of possible ties (Wasserman and Faust 1994).

Charismatic Leadership. As in Study 1, respondents were asked to rate their leaders on 15 items that assessed charismatic leadership (Podsakoff et al. 1990); $\alpha = 0.94$.

Other Outcome Variables. To examine whether the effects generalized to other aspects of leadership, we included further outcome measures in this study. Leaders' individualized consideration ($\alpha = 0.66$) and intellectual stimulation ($\alpha = 0.88$) were assessed with the same measure as in Study 1. In addition, we included a six-item measure of leadership effectiveness ($\alpha = 0.85$) (Giessner and van Knippenberg 2008). We also examined our hypotheses in the context of perceived relationship quality between leaders and followers using a seven-item measure of leader–member exchange ($\alpha = 0.87$) (Graen and Uhl-Bien 1995). Respondents provided ratings on 1–7 Likert scales.

Controls. Leaders' demographic characteristics have the potential to bias attributions of leadership qualities (Rosette et al. 2008), so we controlled for leader age and ethnicity. Individuals who occupy central roles within networks tend to be seen as more charismatic (Balkundi et al. 2011), so we controlled for the perceived centrality of the leader. We controlled for team size given that network density is negatively correlated with the number of people in the network and we controlled for demographic characteristics of the team in terms of the ratio of men to women and how demographically diverse the team was in respect to age and ethnicity. Finally, we controlled for the gender of the respondent in the analysis. We considered the inclusion of further control variables, including full- or part-time employment, industry affiliation, and occupation, but because these variables were not associated with any of the focal variables in this study, they were dropped for the sake of model parsimony.

Attention Checks

Prior to analysis, we established that responses would be excluded if (a) they came from the same IP address or (b) response times were greater than two standard deviations above the mean. Five cases were excluded because respondents violated condition (a).

Analysis

The data were nested in that each respondent potentially provided observations concerning the multiple managers present in the team. Observations from the same individual were not independent, and therefore, a regression analysis was inappropriate. To account for the dependency in our data, we used random coefficient modeling where target (level 1) and respondent (level 2) effects were modeled. Our hypotheses predicted a cross-level interaction between a respondent’s mean-centered perceptions of network structure (level 2) and leader gender (level 1) on attributions of charisma, modeled using slopes-as-outcomes models.

Results

Table 1 shows means, standard deviations, and correlations. People attributed charisma to leaders perceived as embedded in centralized networks ($r = 0.36, p = 0.01$), and people in general saw women as less charismatic than men ($r = -0.16, p = 0.01$). Table 2 presents the results of regression analyses that controlled for numerous other variables. In line with the bivariate correlation, Model 2 in Table 2 shows that people attributed more charisma to leaders to the extent they perceived those leaders to be embedded in centralized advice networks ($\beta = 0.02, p = 0.001$). But charismatic attributions were not influenced by leader gender ($\beta = -0.15, p = 0.15$). Further, Model 4 in Table 2 reveals no evidence that people attributed charisma to their leaders on the basis of how cohesive networks were perceived to be ($\beta = -0.28, p = 0.55$). Given these main effect results (that differed from Study 1), the question remained as to whether the hypotheses, which posited interaction effects, received support.

Hypothesis Tests. Recall the prediction in Hypothesis 1 that in networks perceived as centralized, women, relative to men, would be seen as less charismatic. As Model 3 in Table 2 shows, this hypothesis was supported: there was a significant cross-level interaction between team member gender and perceived advice network centralization on attributions of charisma ($\beta = -0.01, p = 0.04$). The simple slopes analysis (conducted at 1.5 standard deviations from the mean²) confirmed the expected pattern (see Figure 2). Individuals tended to attribute less charisma to women than to men when they perceived their team networks to be highly status concentrated ($z = -2.52, p = 0.02$). However, when centralization was perceived to be low, there was no significant

Table 1 Study 2: Means, Standard Deviations, and Correlations

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Charisma	4.42	1.43													
2 Perceived centralization	17.92	27.99	0.36**												
3 Perceived cohesion	0.41	0.23	0.03	-0.18*											
4 Leader gender ^a	0.49	0.50	-0.16**	-0.33**	-0.05										
5 Perceived centralization x Leader gender	2.01	10.77	0.08	0.61**	-0.09	0.31***									
6 Perceived cohesion x Leader gender	0.11	0.21	-0.07	-0.29**	0.48**	0.86***	0.22**								
7 Leader age	41.29	12.07	-0.14**	-0.29**	0.01	0.24*	-0.12*	0.22***							
8 Leader ethnicity ^b	0.35	0.48	0.16**	0.45**	-0.05	-0.07	0.17**	-0.04	-0.26**						
9 Leader centrality	2.05	2.48	-0.04	-0.26**	0.5**	-0.09	-0.11	0.06	0.06	-0.07					
10 Team size	7.15	2.35	0.07	0.25**	-0.34***	-0.07	0.06	-0.17	-0.02	0.12	0.14				
11 Team gender ratio	0.35	0.26	0.06	0.02	-0.08	0.23***	0.33**	0.33***	-0.14	0.12	0.01	0.07			
12 Team ethnicity variability	0.54	0.67	-0.17	-0.17*	-0.03	0.09	-0.15	0.16	-0.02	0.20*	0.11	-0.04	0.13		
13 Team age variability	7.61	4.82	-0.19*	-0.25**	-0.03	0.33**	-0.15	0.30**	0.66***	-0.28**	0.14	-0.05	0.11	0.06	
14 Respondent gender	0.39	0.48	-0.22*	-0.12	-0.05	0.47***	0.13	0.39**	0.24**	-0.08	0.10	-0.08	0.23**	0.09	0.21*

^a0 = man, 1 = woman.

^b0 = white, 1 = not white.

* $p < 0.05$; ** $p < 0.01$ (two-tailed tests).

Table 2 Study 2: Effects of Leader Gender and Perceived Social Network Structure on Attributions of Charismatic Leadership

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	4.70 (0.13)	4.75 (0.12)	4.80 (0.12)	4.70 (0.13)	4.70 (0.13)
Individual variables					
<i>Leader ethnicity</i>	0.15 (0.12)	0.07 (0.12)	0.07 (0.11)	0.15 (0.12)	0.17 (0.12)
<i>Leader age</i>	−0.01 (0.01)	−0.01 (0.01)	−0.01 (0.01)	−0.01 (0.01)	−0.01 (0.01)
<i>Leader's perceived centrality</i>	0.13*** (0.03)	0.14*** (0.04)	0.14** (0.04)	0.14*** (0.03)	0.15*** (0.03)
<i>Respondent gender</i>	−0.36 (0.24)	−0.29 (0.24)	−0.24 (0.25)	−0.36 (0.24)	−0.36 (0.24)
<i>Leader gender</i>	−0.15 (0.11)	−0.15 (0.12)	−0.29* (0.12)	−0.15 (0.11)	−0.15 (0.11)
Team variables					
<i>Team size</i>	−0.01 (0.05)	−0.04 (0.04)	−0.05 (0.04)	−0.02 (0.05)	−0.02 (0.05)
<i>Team gender ratio</i>	0.46 (0.49)	0.25 (0.41)	0.44 (0.43)	0.42 (0.49)	0.41 (0.49)
<i>Team ethnicity variability</i>	−0.29† (0.17)	−0.15 (0.15)	−0.17 (0.15)	−0.28 (0.17)	−0.31† (0.17)
<i>Team age variability</i>	−0.04 (0.02)	−0.02 (0.03)	−0.03 (0.03)	−0.04 (0.02)	−0.04 (0.02)
<i>Perceived centralization</i>		0.02*** (0.01)	0.02*** (0.01)		
<i>Perceived cohesion</i>				−0.29 (0.52)	−0.56 (0.54)
Two-way interactions					
<i>Leader gender × Perceived centralization</i>			−0.01* (0.01)		
<i>Leader gender × Perceived cohesion</i>					0.85* (0.41)
Level 1 R^{2a}	0.12	0.17	0.18	0.12	0.13
Level 2 R^{2a}	0.07	0.10	0.11	0.08	0.09
χ^{2b}		8.11***	9.82**	0.28	4.63†

Notes. $N = 386$ observations at level 1 and $N = 149$ observations at level 2. Standard errors are in parentheses.

^aCalculated as per Snijders and Bosker (1999).

^bLikelihood ratio test of model fit.

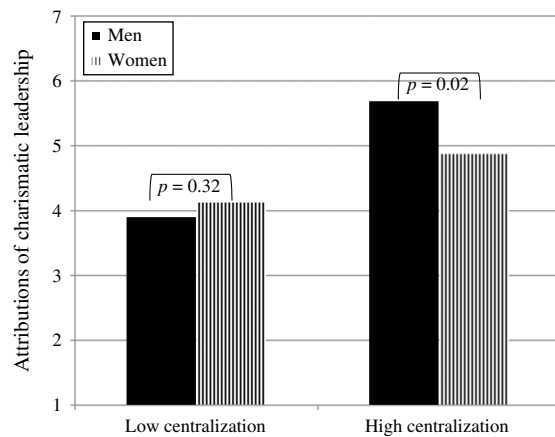
† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (two-tailed tests).

difference between the charisma attributed to men and women ($z = 0.99$, $p = 0.32$).

Thus there is evidence of biased perceptions of women's leadership qualities. Does similar bias affect perceptions of men's leadership qualities? Recall that Hypothesis 2 predicted that in networks perceived as cohesive, men, relative to women, would be seen as less charismatic. As Model 5 in Table 2 shows, this hypothesis was supported: there was a significant interaction between team member gender and perceived advice network cohesion ($\beta = 0.85$, $p = 0.04$). The simple slopes analysis (conducted at 1.5 standard deviations from the mean; see Preacher 2014) confirmed the expected pattern (see Figure 3). People tended to attribute less charisma to men than to women when they perceived their team networks to be highly cohesive, an effect that was marginally significant ($z = 1.68$, $p = 0.09$). However, when cohesion was perceived to be low, there was no

significant difference between the charisma attributed to men and women ($z = 0.44$, $p = 0.65$).

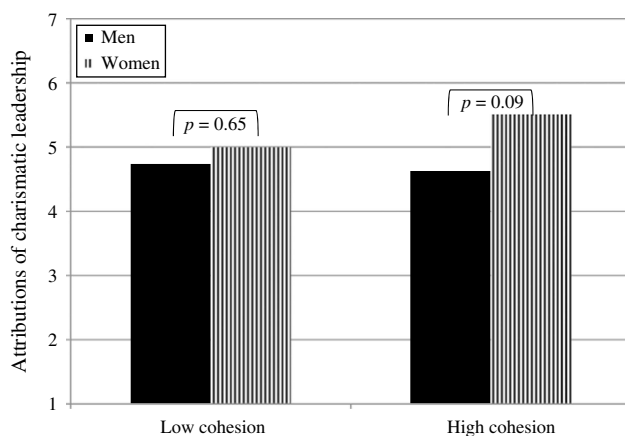
Additional Analyses. We examined whether the gender biasing effects of centralization depended on cohesion (and vice versa), but the three-way interaction between gender, centralization, and cohesion was not significant ($\beta = 0.01$, $p = 0.97$). We also tested whether other components of transformational leadership—namely, intellectual stimulation and individualized consideration—would be affected by the leader-in-network schema. With intellectual stimulation as the dependent variable, there was no significant interaction between perceived centralization and gender ($\beta = 0.34$, $p = 0.74$) or perceived advice network cohesion and gender ($\beta = 1.95$, $p = 0.23$). The results were similar for individualized consideration: there was no significant interaction between perceived centralization and

Figure 2 Study 2: Attributions of Charisma to Men and Women Leaders in the Context of Perceived Centralization

gender ($\beta = 0.07$, $p = 0.11$) or perceived advice network cohesion and gender ($\beta = 0.77$, $p = 0.64$). Furthermore, with a measure of leadership effectiveness as the dependent variable, there was no significant interaction between perceived centralization and gender ($\beta = 0.01$, $p = 0.59$) or perceived advice network cohesion and gender ($\beta = 0.49$, $p = 0.58$). The results were similar with leader–member exchange as the dependent variable: there was no significant interaction between perceived centralization and gender ($\beta = -0.01$, $p = 0.97$) or perceived advice network cohesion and gender ($\beta = 0.15$, $p = 0.66$).

Discussion

The results of Study 2 show that men leaders were seen as more charismatic than women leaders to the extent that people perceived their team advice networks to be highly centralized. This gender bias reversed when team advice networks were perceived to be cohesive, however,

Figure 3 Study 2: Attributions of Charisma to Men and Women Leaders in the Context of Perceived Cohesion

so that women leaders were perceived to be more charismatic than men leaders. Further, these results (in support of the hypotheses) were restricted to charismatic leadership attributions.

Both studies presented so far, however, entail a limitation in that they do not permit us to test the effects of centralization and cohesion independently of one another. Networks that feature dense connections tend to be decentralized; thus the network properties of cohesion and centralization tend to be negatively correlated. However, in the realm of perception, people are likely to distort both the extent of centralization and the extent of connectedness beyond the empirically possible (Kilduff et al. 2008). Study 3 allows us to capture independent measures of perceived centralization and perceived cohesion.

Study 3

In this study, we tested predictions concerning the leader-in-social-network schema with a new approach to assessing perceptions of centralization and cohesion in advice networks (Mehra et al. 2014). We wanted to see how respondents would attribute charisma to men and women leaders when asked directly about the network structures in which they participated. This approach allowed us to evaluate attributions of charisma to men and women leaders in cases when both centralization and cohesion were perceived, thereby fully elaborating our theoretical model.

Method

Sample. Respondents were 157 (79 men and 76 women) U.S. resident full- or part-time employees representing more than 20 different industries and a wide variety of occupations. They were mostly white (77%) and on average 33 years old ($SD = 10.88$) and had worked for an average of 13 years ($SD = 9.99$). We recruited and paid these respondents through an online panel.

Procedure. After connecting to our website, respondents were asked to complete two sets of questions, the order of which was counterbalanced.³ One set of questions concerned the demographic characteristics and charisma of respondents' team leaders; the other set of questions concerned respondents' perceptions of their team networks.

Measures

Leader Gender. As in Study 2, leader gender was coded as 0 = man and 1 = woman.

Centralization and Cohesion. We presented respondents with two visual scales adapted from Mehra et al. (2014).⁴ One scale represented perceived centralization

and ranged from completely centralized to completely decentralized. The other scale represented perceived cohesion and ranged from 0% to 100% density.

Charismatic Leadership. As in Studies 1 and 2, respondents were asked to rate their leaders on 15 items that assessed charismatic leadership (Podsakoff et al. 1990); $\alpha = 0.96$.

Other Outcome Variables. Leaders' individualized consideration and intellectual stimulation were assessed with the same measures as in Studies 1 and 2. For individualized consideration, $\alpha = 0.62$; for intellectual stimulation, $\alpha = 0.90$.

Control Variables. As in Study 2, we controlled for demographic characteristics of the leader, including age and ethnicity, and the demographic composition of the team in terms of age, ethnicity, and gender ratio. We also again controlled for the gender of the respondents. Individuals who occupy central roles within networks tend to be seen as more charismatic (Balkundi et al. 2011), so we controlled for the perceived centrality of the leader. We also controlled for individuals' perceptions of their own centrality in the network because people's reactions to the perceived degree of centralization in their team advice networks may be affected by perceptions of their own importance within those interactions. We measured both leader and respondent centrality by describing centrality accompanied by a visual depiction and then asking respondents to indicate their own and their leaders' centrality on a five-point scale (1 = on the edge of the network to 5 = in the center of the network). Finally, because large networks tend to be less dense than small networks, we controlled for team size.

Attention Checks

Prior to analysis, we established that responses would be excluded if (a) they came from the same IP address or (b) response times were greater than two standard deviations above the mean. No cases met these rules for exclusion; thus all respondents were included in the analysis.

Analysis

We conducted a multiple linear regression to examine how respondents' perceptions of their team advice networks in terms of centralization and cohesion affected the charisma they attributed to their leaders. Centralization and cohesion were standardized prior to analysis. In social networks, density and centralization are negatively correlated. However, our survey design meant that respondents were able to choose technically impossible configurations (e.g., dense and highly centralized networks). To account for this, we controlled for perceptions of density in our analysis of centralization, and vice versa.

Results

Table 3 displays the descriptive statistics and correlations among the variables. Interestingly, respondents in this sample, who were allowed to assess the network properties of centralization and cohesion independently, saw leaders in cohesive networks as charismatic ($r = 0.36$, $p = 0.01$) and leaders in centralized networks as noncharismatic ($r = -0.17$, $p = 0.05$).

Table 4 displays the regression results. Model 4 shows the main effects of the three variables of interest, controlling for the other variables. Paralleling the result of the bivariate correlation, to the extent that respondents saw their team advice networks as cohesive, they tended to attribute more charisma to their leaders, regardless of whether the leaders were men or women ($\beta = 5.71$, $p = 0.0001$). There were no significant effects for network centralization or leader gender. Given these results, the question remained: Were the hypotheses (that involved interaction effects) supported?

Hypothesis Tests. Hypothesis 1 predicted that to the extent that team advice networks were perceived to be centralized, women would be seen as less charismatic leaders than men. As can be seen in Table 4, Model 5, there was support for this hypothesis in the form of a significant interaction between leader gender and advice network centralization ($\beta = -5.93$, $p = 0.04$; see Figure 4). Analyses of the interaction at plus and minus 1.5 standard deviations from the mean (see Preacher 2014) confirmed that when individuals perceived their team advice networks to be highly centralized, women leaders were attributed with less charisma than men leaders ($t = -1.97$, $p = 0.03$). When centralization was perceived to be low, however, there was no gender bias in attributions of charismatic leadership ($t = 1.26$, $p = 0.21$).

Hypothesis 2 predicted that to the extent that team advice networks were perceived to be cohesive, men would be seen as less charismatic leaders than women. As Model 6 in Table 4 shows, this hypothesis was not supported in this study: the interaction between cohesion and leader gender was not significant, suggesting that attributions of charisma to men and women leaders did not differ as a function of perceptions of team advice network cohesion ($\beta = 0.49$, $p = 0.85$). Rather, there continued to be a strongly significant main effect of cohesion on attributions of leadership ($\beta = 5.79$, $p = 0.001$) and a nonsignificant effect of leader gender ($\beta = -2.04$, n.s.). This pattern of results indicated that in networks perceived to be cohesive, both men and women were perceived as charismatic leaders.

Additional Analyses. These data allowed us to test how respondents evaluated men and women leaders when both centralization and cohesion were assessed separately by respondents. We examined, therefore,

whether there was a three-way interaction between perceived centralization, perceived cohesion, and leader gender. The interaction term was not significant ($\beta = -3.2, p = 0.19$). Thus attributions of charisma to men versus women leaders were not affected by whether or not advice networks perceived as cohesive were also seen as centralized.

Our second test of how respondents evaluated men and women leaders when both centralization and cohesion were perceived involved testing our hypotheses on a subsample of respondents who indicated that they perceived their team social networks to be both centralized and cohesive. We selected all respondents who scored at or above the scale midpoint on perceptions of both centralization and cohesion ($N = 93$). Hypothesis 1 (men would be attributed more charisma than women in networks perceived as centralized) was supported by a significant two-way interaction between gender and centralization ($\beta = -0.94, p = 0.03$). Supplementary analyses confirmed that to the extent respondents perceived their networks to be highly centralized, men were evaluated more favorably as leaders ($t = -2.6, p = 0.01$), but when centralization was perceived to be lower, there was no gender bias in attributions of leadership ($t = 1.29, p = 0.20$). Recall that this result was found in a sample in which all respondents perceived their networks to be relatively cohesive. Thus, even when respondents perceived their networks to be cohesive, a condition expected to facilitate favorable evaluations of women’s leadership, centralization still negatively affected perceptions of women’s charisma. Hypothesis 2 (men would be attributed less charisma than women in networks perceived as cohesive) was not supported in this restricted sample. The two-way interaction between leader gender and density was not significant ($\beta = 0.51, p = 0.14$) in the sample in which everyone perceived their networks to be relatively centralized.

We also tested whether the leader-in-social-network schema would affect the intellectual stimulation and individualized consideration components of transformational leadership. It did not. We did not find a two-way interaction between leader gender and perceptions of centralization on either intellectual stimulation ($\beta = -0.28, p = 0.66$) or individualized consideration ($\beta = 0.55, p = 0.47$). Likewise, we did not find a two-way interaction between leader gender and perceptions of cohesion on intellectual stimulation ($\beta = 0.22, p = 0.71$) or individualized consideration ($\beta = -0.64, p = 0.38$).

Discussion

Our leader-in-social-network theory suggests that when individuals perceive mismatches between expectations relating to the social network context and expectations relating to the gender of the leader, individuals will make gender-biased attributions of charismatic leadership. For attributions concerning women leaders, we

Table 3 Study 3: Means, Standard Deviations, and Correlations

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Charisma	4.99	1.17														
2 Perceived centralization	2.93	1.12	-0.17*													
3 Perceived cohesion	3.80	1.14	0.36**	-0.21**												
4 Leader gender ^a	0.41	0.49	-0.08	0.02	-0.05											
5 Perceived centralization x Leader gender	0.02	0.62	-0.15†	0.61***	-0.09	0.02										
6 Perceived cohesion x Leader gender	-0.02	0.70	0.24**	-0.08	0.69***	-0.04	-0.13									
7 Leader age	40.84	12.58	-0.10	0.12	-0.19*	0.06	-0.11	0.22**								
8 Leader ethnicity ^b	0.17	0.38	0.06	0.10	-0.05	0.10	0.04	0.05	-0.30**							
9 Leader centrality	2.29	1.58	0.07	-0.05	0.04	-0.01	-0.03	-0.05	0.13	-0.09						
10 Team size	5.59	5.22	0.02	-0.03	-0.04	-0.11	0.02	-0.05	0.01	-0.05	0.09					
11 Team gender ratio	0.68	1.48	-0.01	0.03	0.03	-0.62***	-0.08	0.07	-0.05	0.02	0.16*	0.02				
12 Team ethnicity variability	0.64	0.31	-0.10	-0.01	0.05	-0.07	0.01	0.02	0.10*	-0.51	-0.25**	-0.11	-0.06			
13 Team age variability	7.71	4.74	-0.02	-0.08	-0.23**	0.11	0.03	-0.23**	0.53	-0.07	0.14†	-0.02	0.04	0.02		
14 Respondent gender ^a	0.49	0.50	0.10	0.03	-0.10	0.21*	0.18*	-0.10	0.15†	-0.07	0.01	-0.04	-0.61**	0.01	-0.03	
15 Respondent centrality	3.31	1.23	0.35***	-0.21**	0.13	-0.07	-0.07	0.03	-0.09	0.05	-0.42***	0.05	-0.06	0.07	-0.13	0.17*

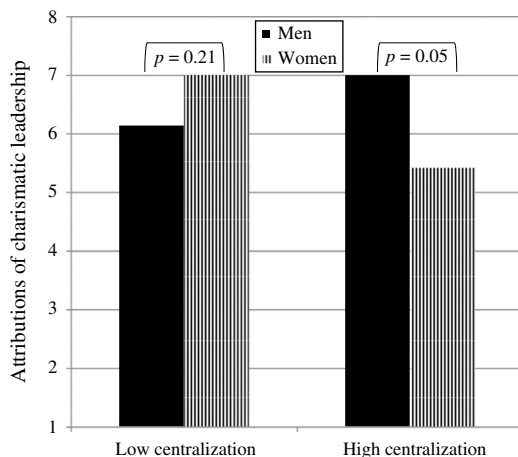
^a0 = man, 1 = woman.
^b0 = white, 1 = other.
 † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (two-tailed tests).

Table 4 Study 3: Effects of Leader Gender and Perceived Social Network Structure on Attributions of Charismatic Leadership

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	3.21*** (0.76)	3.31*** (0.77)	3.01*** (0.72)	3.27*** (0.85)	3.09*** (0.84)	3.25*** (0.85)
Control variables						
Leader ethnicity	-0.11 (4.48)	0.23 (4.49)	1.38 (4.23)	1.58 (4.27)	0.55 (4.25)	1.69 (4.33)
Leader age	-0.17 (0.14)	-0.18 (0.14)	-0.12 (0.13)	-0.13 (0.13)	-0.18 (0.13)	-0.12 (0.13)
Leader centrality	2.92*** (1.03)	2.78** (1.03)	2.32* (0.97)	2.29* (0.99)	2.25* (0.97)	2.29* (0.99)
Team size	-0.03 (0.26)	-0.01 (0.26)	0.05 (0.25)	0.02 (0.26)	0.04 (0.25)	0.02 (0.26)
Team gender ratio	3.81 (5.23)	3.58 (5.23)	5.21 (4.93)	2.79 (6.54)	3.92 (6.78)	2.75 (6.57)
Team ethnicity variability	-2.45 (5.43)	-2.13 (5.43)	-3.70 (5.11)	-3.79 (6.54)	-4.29 (5.1)	-3.72 (5.20)
Team age variability	0.19 (0.36)	0.18 (0.36)	0.41 (0.34)	0.42 (0.34)	0.60 [†] (0.35)	0.42 (0.34)
Respondent gender	2.47 (3.60)	2.76 (3.61)	4.71 (3.43)	4.27 (3.55)	6.08 [†] (3.60)	4.28 (3.56)
Respondent's perceived centrality	6.56*** (1.24)	6.19*** (1.29)	5.54*** (1.19)	5.36*** (1.26)	5.53*** (1.25)	5.37*** (1.27)
Predictor variables						
Leader gender				-2.02 (3.62)	-1.82 (3.58)	-2.04 (3.63)
Perceived centralization		-1.46 (1.43)		-0.25 (1.39)	1.94 (1.72)	-0.27 (1.40)
Perceived cohesion			5.79*** (1.34)	5.71*** (1.38)	5.93** (1.37)	5.79*** (1.83)
Two-way interactions						
Leader gender × Perceived centralization					-5.93* (2.81)	
Leader gender × Perceived cohesion						0.49 (2.61)
R ²	0.20***	0.15***	0.24***	0.24***	0.26***	0.23***

Notes. N = 157. Standard errors are in parentheses.
[†]p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001 (two-tailed tests).

Figure 4 Study 3: Attributions of Charisma to Men and Women Leaders in the Context of Perceived Centralization



found support for this prediction: even when individuals perceived their networks to be highly cohesive, women were still negatively affected by centralization. For men leaders, our findings from Study 3 are less clear given the absence of support for the hypothesized negative effect of cohesion on charismatic attributions for men. More research is needed, but taken alone, the results from Study 3 suggest that the prototypical pattern of men leaders in centralized networks may be more potent in its effects on attributed charisma than the prototypical pattern of women leaders in cohesive networks.

General Discussion

In support of the leader-in-social-network schema perspective, results across three studies suggest that when people's expectations concerning team leaders are misaligned, people attribute less charisma to leaders. Expectations are cued both by the social network context of

work (centralized or cohesive team advice networks) and by the gender of the leader. In support of Hypothesis 1, people saw women as less charismatic than men when centralized team advice networks cued people's expectations of male status and power. In support of Hypothesis 2, people in two of the three studies saw men as less charismatic than women when cohesive team advice networks cued people's expectations of female caring and communality.

Our hypotheses concerned interaction effects between network structure and leader gender. The inconsistent pattern of main effects across the studies suggests the importance of taking an interaction approach to understanding why some leaders are considered more charismatic than others. In our research we found that the effects of perceived network properties on attributions of charismatic leadership were not straightforward but required consideration of leader gender in the context of network structure. It is interesting to note that cohesion was positively related to charisma attributions in Studies 1 and 3 in which participants reacted to schematic representations of team network structure, whereas centralization was positively to charisma in Study 2, in which participants reported on the actual ties linking team members to one another. One possible interpretation of these findings is that when individuals are allowed to react to "ideal types" of networks, they tend to provide an espoused theory (see Argyris 1993) of good leadership as a collective, shared exercise. But when people are anchored to the actual ties they observe in their teams, they reveal a more traditional theory-in-use (cf. Argyris 1993), in which good leadership is typified by command-and-control.

Contributions to Theory and Research

The research contributions derive from a focus on the effects of people's mismatched expectations. Network cognition research has expanded our knowledge of how people think about social networks (Brands 2013). In particular, network cognition research has spent decades examining bias in patterns of social network perceptions (e.g., Kilduff et al. 2008). But this research has neither theorized nor researched how perceptions of network structure affect perceivers' attributions of qualities (positive or otherwise) to others in the social network. In putting forward theory and empirical research concerning mismatched expectations, we move beyond the almost exclusive focus on patterns of biased perceptions in the minds of perceivers. We identify leaders within work teams as potential victims or beneficiaries of perceivers' expectations that are cued by social network context and targets' attributes.

Thus we move forward, within the research program of cognitive networks, the idea that social network structures, although facilitating outcomes for some categories of people, may adversely affect outcomes for others.

We build on prior research showing that network structures affect people differently depending on people's characteristics. Thus, women (compared with men) are less likely to benefit from networks featuring structural holes (Burt 1992) and may be disadvantaged by network homophily (Ibarra 1992). The dynamic interplay of cognitive expectations and individual characteristics is on the frontier of network research (Burt et al. 2013).

A further contribution of our research is to the area of leadership. First, we advance the cognitive social network approach to leadership (Balkundi and Kilduff 2005) by articulating the ways in which perceptions of network context and leader gender relate to attributions of charisma to the leader. Prior work has examined how the configuration of ties around leaders affects others' estimations of leader charisma (Balkundi et al. 2011). But this prior work assumed that network roles benefited leaders regardless of leaders' individual characteristics. We draw on social psychological research concerning the ubiquity and potency of gender schemas in evaluating leaders' behaviors (Eagly and Karau 2002, Eagly et al. 1992) to show that the social network context of the perceiver differentially affects attributions of charisma to men and women leaders.

In doing so, we raise a question for theory concerning gender and leadership. There is a well-documented association between gender stereotypes and agentic-communal orientation (Eagly and Steffen 1984). When applied to leadership, this means that when women enact the agentic behaviors necessary for leadership, they are penalized for being insufficiently communal, resulting in negative evaluations of their leadership abilities (Eagly and Karau 2002). This existing research on gender and leadership has tended to focus on leaders' behaviors in accounting for gender bias in leadership. However, our research examines how social interactions that are perceived to occur around leaders, regardless of leaders' participation in these exchanges, shape perceptions of leadership qualities. To the extent that these interactions are perceived by followers as arising unprompted by the leader, one implication of our findings is that perceptions of agency and communality arise not only from men's and women's behavior but also from the social context in which those behaviors occur. However, it may be that leaders are perceived by the followers to be responsible for cultivating the social structure in their teams along centralized and cohesive dimensions. If this is the case, then our research highlights an important boundary condition to the agency penalty normally applied to women leaders in that it suggests that women can be agentic in networks as long as they cultivate cohesive and therefore gender appropriate networks. Future research can clarify these differing interpretations of our findings.

Another contribution of this research is to redress the prevailing consensus that women relative to men are disadvantaged as leaders. Although much research has

sought to identify the behaviors of charismatic leaders, little attention has been paid to demographic characteristics such as gender, as noted in a recent review (Walter and Bruch 2009). This oversight is particularly notable given that bias against female leaders is a key theme in leadership research (Eagly et al. 1992). In our work we move away from the prevailing consensus to suggest that gender biases are context dependent and are cued, in part, by the social network structural characteristics of centralization and cohesion.

Further, in terms of a contribution to leadership research, this study underpins the need to disaggregate multidimensional leadership concepts and study specific leadership dimensions. Our research shows effects specifically for charisma, which is one dimension of the broader concept of transformational leadership (Bass 1999). Because the leader-in-social network schema engages the charismatic leadership prototype, its effects are bound to attributions of charisma and leave unaffected other (noncharismatic) dimensions of transformational leadership (i.e., individualized consideration, intellectual stimulation) as well as transactional leadership, general evaluations of leadership, and ratings of the relationship quality between the leader and the follower. Even though the customary pattern is to downplay differences between charismatic leadership and transformational leadership (van Knippenberg and Sitkin 2013), our research shows that charismatic leadership, because of its unique roots in attributions of charisma, should not be equated with transformational leadership but be studied as a specific construct in its own right.

Limitations and Future Research

Across three studies we mandated that respondents (recruited exclusively from online panels) had work experience with full- or part-time jobs in the United States. Data collected through online panels are of similar or better quality than data collected from respondents in specific contexts such as students at a university or employees of a single company (Buhrmester et al. 2011). Data from multiple sources improve external validity. But because our respondents worked in a wide range of jobs, industries, and organizations, we were unable to estimate the effects of organizational culture on their attributions of leadership. It is likely that some organizations (relative to others) feature cultures conducive to women leaders. Future research could examine how organizational culture itself represents a rich repository of cognitive expectations affecting how men and women leaders are perceived.

Cognitive social network research typically examines the relationship between perceived networks and actual networks (e.g., Kilduff et al. 2008). In our Studies 2 and 3, we were unable to confirm the veracity of reports of network structure. However, perceptions of social networks represent phenomena of interest in their own

right (Krackhardt 1987), given that if people perceive situations as real, then these situations have real consequences (Thomas and Thomas 1928). Our research focused on outcomes of the mismatch between expectations cued by perceived network structure and expectations cued by leader gender. Future research could examine whether the effects we describe are rooted in the actual press of network structure or whether these effects are mainly the result of biased social network perceptions.

Supplemental Material

Supplemental material to this paper is available at <http://dx.doi.org/10.1287/orsc.2015.0965>.

Endnotes

¹The manipulations are available as supplemental material to this paper.

²Our hypotheses concern networks that show distinct patterns of perceived centralization and cohesion. Accordingly, we plotted interactions at 1.5 standard deviations from the mean to reflect networks that are distinctly centralized or cohesive (in line with pertinent recommendations; see Preacher 2014).

³Robustness checks indicated results were unaffected by the order in which the materials were presented.

⁴The measures are available as supplemental material to this paper.

References

- Acker J (1990) Hierarchies, jobs, bodies: A theory of gendered organizations. *Gender Soc.* 4(2):139–158.
- Argyris C (1993) *Knowledge for Action: A Guide to Overcoming Barriers to Organizational Change* (Jossey-Bass, San Francisco).
- Aries E (1976) Interaction patterns and themes of male, female, and mixed groups. *Small Group Res.* 7(1):7–18.
- Avolio BJ, Yammarino FJ (1990) Operationalizing charismatic leadership using a levels-of-analysis framework. *Leadership Quart.* 1(3):193–208.
- Baldwin MW (1992) Relational schemas and the processing of social information. *Psych. Bull.* 112(3):461–484.
- Bales RF, Slater PE (1955) Role differentiation in small decision-making groups. Parsons T, Bales RF, eds. *Family, Socialization, and Interaction Process* (Free Press, Glencoe, IL), 259–306.
- Balkundi P, Kilduff M (2005) The ties that lead: A social network approach to leadership. *Leadership Quart.* 16(6):941–961.
- Balkundi P, Kilduff M, Hanison DA (2011) Centrality and charisma: Comparing how leader networks and attributions affect team performance. *J. Appl. Psych.* 96(6):1209–1222.
- Bass BM (1985) Leadership: Good, better, best. *Organ. Dynam.* 13(3):26–40.
- Bass BM (1999) Two decades of research and development in transformational leadership. *Eur. J. Work Organ. Psych.* 8(1):9–32.
- Beal DJ, Cohen RR, Burke MJ, McLendon CL (2003) Cohesion and performance in groups: A meta-analytic clarification of construct relations. *J. Appl. Psych.* 88(6):989–1004.
- Brands RA (2013) Cognitive social structures in social network research: A review. *J. Organ. Behav.* 34(S1):S82–S103.
- Buhrmester M, Kwang T, Gosling SD (2011) Amazon's Mechanical Turk. *Perspect. Psych. Sci.* 6(1):3–5.

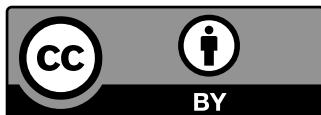
- Burt RS (1992) *Structural Holes: The Social Structure of Competition* (Harvard University Press, Cambridge, MA).
- Burt RS, Kilduff M, Tasselli S (2013) Social network analysis: Foundations and frontiers on advantage. *Annual Rev. Psych.* 64(1):527–547.
- Cantor N, Mischel W (1979) Prototypes in person perception. Berkowitz L, ed. *Advances in Experimental Social Psychology*, Vol. 12 (Academic Press, New York), 3–52.
- Coleman JS (1988) Social capital in the creation of human capital. *Amer. J. Sociol.* 94(Supplement):S95–S120.
- Conger JA, Kanungo RN (1987) Toward a behavioral theory of charismatic leadership in organizational settings. *Acad. Management Rev.* 12(4):637–647.
- Conger JA, Kanungo RN, Menon ST (2000) Charismatic leadership and follower effects. *J. Organ. Behav.* 21(7):747–767.
- Diekmann AB, Goodfriend W, Goodwin S (2004) Dynamic stereotypes of power: Perceived change and stability in gender hierarchies. *Sex Roles* 50(3–4):201–215.
- Eagly AH, Carli LL (2003) The female leadership advantage: An evaluation of the evidence. *Leadership Quart.* 14(6):807–834.
- Eagly AH, Karau SJ (2002) Role congruity theory of prejudice toward female leaders. *Psych. Rev.* 109(3):573–598.
- Eagly AH, Steffen VJ (1984) Gender stereotypes stem from the distribution of women and men into social roles. *J. Personality Soc. Psych.* 46(4):735–754.
- Eagly AH, Karau SJ, Makhijani MG (1995) Gender and the effectiveness of leaders. *Psych. Bull.* 117(1):125–145.
- Eagly AH, Makhijani MG, Klonsky BG (1992) Gender and the evaluation of leaders: A meta-analysis. *Psych. Bull.* 111(1):3–22.
- Freeman LC (1978–1979) Centrality in social networks conceptual clarification. *Soc. Networks* 1(3):215–239.
- Freeman LC, Romney AK, Freeman SC (1987) Cognitive structure and informant accuracy. *Amer. Anthropologist* 89(2):310–325.
- Giessner SR, van Knippenberg D (2008) License to fail: Goal definition, leader group prototypicality, and perceptions of leadership effectiveness after leader failure. *Organ. Behav. Human Decision Processes* 105(1):14–35.
- Graen GB, Uhl-Bien M (1995) Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *Leadership Quart.* 6(2):219–247.
- Howell JM, Shamir B (2005) The role of followers in the charismatic leadership process: Relationships and their consequences. *Acad. Management Rev.* 30(1):96–112.
- Ibarra H (1992) Homophily and differential returns: Sex differences in network structure and access in an advertising firm. *Admin. Sci. Quart.* 37(3):422–447.
- Janicik GA, Larrick RP (2005) Social network schemas and the learning of incomplete networks. *J. Personality Soc. Psych.* 88(2):348–364.
- Jung DI, Avolio BJ (2000) Opening the black box: An experimental investigation of the mediating effects of trust and value congruence on transformational and transactional leadership. *J. Organ. Behav.* 21(8):949–964.
- Kilduff M, Crossland C, Tsai W, Krackhardt D (2008) Organizational network perceptions versus reality: A small world after all? *Organ. Behav. Human Decision Processes* 107(1):15–28.
- Krackhardt D (1987) Cognitive social structures. *Soc. Networks* 9(2):109–134.
- Labianca G, Brass DJ, Gray B (1998) Social networks and perceptions of intergroup conflict: The role of negative relationships and third parties. *Acad. Management J.* 41(1):55–67.
- Lord RG (2005) Implicit leadership theory. Schyns B, Meindl JR, eds. *Implicit Leadership Theories* (Information Age Publishing, Charlotte, NC), ix–xiv.
- Lord RG, Emrich CG (2000) Thinking outside the box by looking inside the box: Extending the cognitive revolution in leadership research. *Leadership Quart.* 11(4):551–579.
- Lord RG, Foti RJ (1986) Schema theories, information processing, and organizational behavior. Sims HP Jr, Gioia DA, eds. *The Thinking Organization* (Jossey-Bass, San Francisco), 20–48.
- Lord RG, Maher KJ (1994) *Leadership and Information Processing: Linking Perceptions and Organizational Performance* (Routledge, New York).
- Lord RG, Foti RJ, De Vader CL (1984) A test of leadership categorization theory: Internal structure, information processing, and leadership perceptions. *Organ. Behav. Human Performance* 34(3):343–378.
- Lord RG, Brown DJ, Harvey JL, Hall RJ (2001) Contextual constraints on prototype generation and their multilevel consequences for leadership perceptions. *Leadership Quart.* 12(3):311–338.
- Maccoby EE (1990) Gender and relationships: A developmental account. *Amer. Psychologist* 45(4):513–520.
- Magee JC, Galinsky AD (2008) Social hierarchy: The self-reinforcing nature of power and status. *Acad. Management Ann.* 2:351–398.
- Meeker BF, Weitzel-O'Neill PA (1977) Sex roles and interpersonal behavior in task-oriented groups. *Amer. Sociol. Rev.* 42(1):91–105.
- Mehra A, Borgatti SP, Soltis S, Floyd T, Ofem B, Halgin DS, Lopez-Kidwell V (2014) Imaginary worlds: Using visual network scales to capture perceptions of social networks. Brass DJ, Labianca G, Mehra A, Halgin DS, Borgatti SP, eds. *Contemporary Perspectives on Organizational Social Networks* (Emerald Group Publishing, Bingley, UK), 315–336.
- Moskowitz DS, Suh EJ, Desaulniers J (1994) Situational influences on gender differences in agency and communion. *J. Personality Soc. Psych.* 66(4):753–761.
- Moss-Racusin CA, Phelan JE, Rudman LA (2010) When men break the gender rules: Status incongruity and backlash against modest men. *Psych. Men Masculinity* 11(2):140–151.
- Neisser U (1976) *Cognition and Reality: Principles and Implications of Cognitive Psychology* (W. H. Freeman and Company, New York).
- Nye JL, Forsyth DR (1991) The effects of prototype-based biases on leadership appraisals: A test of leadership categorization theory. *Small Group Res.* 22(3):360–379.
- Pastor JC, Mayo M, Shamir B (2007) Adding fuel to fire: The impact of followers' arousal on ratings of charisma. *J. Appl. Psych.* 92(6):1584–1596.
- Podsakoff PM, MacKenzie SB, Moorman RH, Fetter R (1990) Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *Leadership Quart.* 1(2):107–142.
- Preacher K (2014) Interaction effects in MLR, LCA, and MLM. Accessed October 20, 2014, <http://www.quantpsy.org/interact/interactions.htm>.
- Prentice DA, Carranza E (2002) What women and men should be, shouldn't be, are allowed to be, and don't have to be: The contents of prescriptive gender stereotypes. *Psych. Women Quart.* 26(4):269–281.

- Rosette AS, Tost LP (2010) Agentic women and communal leadership: How role prescriptions confer advantage to top women leaders. *J. Appl. Psych.* 95(2):221–235.
- Rosette AS, Leonardelli GJ, Phillips KW (2008) The white standard: Racial bias in leader categorization. *J. Appl. Psych.* 93(4): 758–777.
- Schank RC, Abelson RP (1977) *Scripts, Plans, Goals, and Understanding: An Inquiry into Human Knowledge Structures* (Lawrence Erlbaum Associates, Hillsdale, NJ).
- Schein VE (1973) The relationship between sex role stereotypes and requisite management characteristics. *J. Appl. Psych.* 57(2): 95–100.
- Sczesny S (2005) Gender stereotypes and implicit leadership theories. Schyns B, Meindl JR, eds. *Implicit Leadership Theories* (Information Age Publishing, Charlotte, NC), 159–172.
- Shamir B (1992) Attribution of influence and charisma to the leader: The romance of leadership revisited. *J. Appl. Soc. Psych.* 22(5):386–407.
- Snijders TAB, Bosker RJ (1999) *Multilevel Analyses: An Introduction to Basic and Advanced Multilevel Modeling* (Sage, London).
- Sparrowe RT, Liden RC, Wayne SJ, Kraimer ML (2001) Social networks and the performance of individuals and groups. *Acad. Management J.* 44(2):316–325.
- Thomas WI, Thomas DS (1928) *The Child in America: Behavior Problems and Programs* (Alfred A. Knopf, New York).
- van Knippenberg D, Sitkin SB (2013) A critical assessment of charismatic-transformational leadership research: Back to the drawing board? *Acad. Management Ann.* 7(1):1–60.
- Walter F, Bruch H (2009) An affective events model of charismatic leadership behavior: A review, theoretical integration, and research agenda. *J. Management* 35(6):1428–1452.
- Wasserman S, Faust K (1994) *Social Network Analysis: Methods and Applications* (Cambridge University Press, New York).
- Weber M (1947) *The Theory of Social and Economic Organization* (Oxford University Press, New York).
- Zitek EM, Tiedens LZ (2012) The fluency of social hierarchy: The ease with which hierarchical relationships are seen, remembered, learned, and liked. *J. Personality Soc. Psych.* 102(1):98–115.

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