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# Unlocking the Influence of Leadership Network Structures on Team Conflict and Viability

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This article seeks to test whether a leader's position in the team's informal network strengthens or weakens the leader's team. Based on data collected from 231 employees working in 19 teams in a manufacturing organization, the study tested whether two different leader network centralities in teams' advice networks predicted team conflict and viability. Teams with more prestigious formal leaders (i.e., leaders whom a high proportion of subordinates sought out for advice) experienced lower levels of team conflict and had higher levels of team viability. In contrast, teams with leaders who brokered across subordinates within a team's advice network (i.e., leaders who had advice ties with subordinates who did not have advice ties with each other) reported elevated levels of team conflict and lower levels of team viability, even when controlling for the team leader's prestige. Team conflict mediated the effects of the two leader network positions on team viability.

**Keywords:** *social networks; leader centrality; team viability*

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Conflict within organizations has the potential to be disruptive at different levels. One of the most interesting areas of conflict inquiry, given the increasing reliance of organizations on teams, is research into the effects of conflict on teams (Jehn & Bendersky, 2003). In teams, conflict can have multiple effects including distracting team members from their task, and undermining positive relationships among team members such that they become disenchanted with each other and the team's efforts. As a consequence, team members' individual motivations and the team's ability to perform collectively may be reduced. Indeed, the tension and discord often associated with intrateam conflict can create such strong dissonance among team members that they may seek to leave the team (Jehn, 1995). Not only may a team's task performance immediately suffer as a consequence of its members' disenchantment, but the team's long-term viability may be compromised as well if team members want to leave the team due to high levels of intrateam conflict (Hackman, 1987).

Leaders of teams ultimately bear the burden of their team's effectiveness since there is an implicit understanding that team leaders are responsible for managing conflict within their teams (Bass, 1990). This expectation arises from two related assumptions that conflict hampers overall effectiveness and leaders are in a unique position to reduce conflict, sustain employee morale, and thereby enhance collective performance. Thus, two major challenges confront team leaders. They must not only accomplish team-related tasks but also manage team process and member relations to ensure the team's viability over time (Keller, 1992).

To understand the association between leaders and these critical team processes and outcomes we draw on social network theory. Social networks, or the pattern of informal interactions between actors, have important implications for overall team effectiveness, as well as for an individual team member's ability to influence other employees (Oh, Chung, & Labianca, 2004). Taking a network approach to leadership addresses a longstanding criticism of mainstream leadership research that it frequently ignores subordinates to focus exclusively on leaders (Meindl, 1995). Most approaches to leadership tend to focus on the leader exclusively and in the process downplay subordinates' role in the function of the work team (cf. Meindl, 1995). Efforts at incorporating subordinates and their relationships with leaders (e.g., Graen & Uhl-Bein, 1995) have given us a better understanding of leadership and not just leaders (Carson, Tesluk, & Marrone, 2007). The social network perspective builds on this comprehensive approach to leadership. By examining the leader's direct and indirect ties with subordinates, it offers us the opportunity to develop a better understanding of a

leader's position in the team's overall social structure and its implications for important team processes and outcomes. Specifically, in this study we focus on the leader's position in the team's informal advice network, and explore the influence of that position on intrateam conflict and team viability. Being central in the team's informal networks, especially the advice network, can enhance or weaken a leader's influence over subordinates thereby impacting the leader's ability to reduce discord that arises during the normal course of the team's work.

In this study, we seek to examine the association between two different types of leader centralities in the team advice network, the conflict experienced in the team, and overall team viability, which we define as team members' willingness to remain in the team (Balkundi & Harrison, 2006; Lovelace, Shapiro, & Weingart, 2001). First, we examine whether teams with prestigious leaders, those leaders who are frequently sought out for advice by subordinates and are seen as experts by subordinates, have lower levels of conflict and are more viable teams. Second, we explore whether teams with leaders who broker between subordinates in the advice network report higher levels of conflict and experience reduced team viability. In contrast to teams with more prestigious leaders, we expect members of teams with strong brokering leaders to experience higher levels of conflict and to show higher levels of disenchantment among team members. Third, we test whether team conflict mediates the relationship between these two leader network structures and team viability.

## **Social Network Theory of Leadership**

The social network approach to social phenomena explores the importance of social structure for critical outcomes, such as health, job search, performance, and promotions (see Baker, 1994, for a review). Social networks have been defined as "patterns of connectivity and cleavage within social systems" (Wellman, 1988, p. 26). The social network approach emphasizes interpersonal relationships between actors, rather than attributes of actors (Wellman, 1988). Social relations are different from individual attributes because, unlike an individual attribute such as a person's age, a relationship involves more than a single individual. Indeed, the individual's social ties are embedded in larger social networks and may have implications beyond the individual level.

From this perspective, an individual's behavior is, in part, a function of the particular pattern of relationships the individual develops and maintains.

Relationships help individuals gain information, exercise influence, and seek social support (Kilduff & Tsai, 2003). For instance, the connections an individual has that bridge otherwise disconnected individuals or teams within the organization not only maximize the individual's access to information and resources but also increase his or her opportunity to broker access to that information and resources more effectively for greater influence and gain within the organization (Burt, 1992). Similarly, a person who is connected to many others in the organization has access to multiple sources of information. Occupying such a network position is highly prestigious as one is visible and popular in the network (Wasserman & Faust, 1994). These two network positions, brokerage and prestige, are especially relevant to leadership given their implications for influence and power (Freeman, Roeder, & Mulholland, 1979/1980).

Although occupying either of these two network positions may provide critical resources, they can also drain resources at both the individual and collective levels (Barsness, Diekmann, & Seidel, 2005). Having too many contacts can nullify the benefits that accrue from social relationships to the individual and by extension the team. Relationship maintenance, for example, requires expending attention, time, and other resources (Riley & Eckenrode, 1986; Rook, 1984). A high prestige person (one with many ties) is likely to expend time and resources maintaining these relationships at the cost of other activities. Along similar lines, the presence of brokers may also be detrimental to the team because their presence may lead to information distortion and bottlenecks across the network (Balkundi, Kilduff, Barsness, & Michael, 2007). Thus, the position that an individual occupies in the informal network may have mixed implications for the individual and social networks they are a part of.

In addition to emphasizing the importance of network position, the social network approach also highlights the significance of interpersonal relationships in these informal webs of social relationships (Kilduff & Tsai, 2003). Previous research has categorized informal relationships into either expressive or instrumental ties (Umphress, Labianca, Brass, Kass, & Scholten, 2003). Expressive ties, such as friendship, capture the affective bases of interpersonal relationships where network members provide social support to one another. Instrumental ties, such as advice seeking, are more task-oriented. Advice ties, for example, involve the seeking out of task information from one party and the dissemination of the desired task information to the advice seeker of another party. Thus, advice ties tend to have strong implications for power and influence (Brass, 1984; Lincoln & Miller, 1979). Individuals who are sought out for advice can not only influence

their protégés, but, also gain in other ways by providing such guidance. First, although advice relationships appear to be asymmetric (i.e., information flows primarily from the advice giver to the advice seeker during the advising process), the advice giver might also acquire relevant information through the exchange. For instance, the specific type of task information as well as the time at and frequency with which it is sought can be informative to the advice giver. Second, being sought out and recognized as a task expert enhances the advice giver's overall reputation in the network so that she is perceived by other network members to be someone influential and powerful (cf. Krackhardt, 1990). It is therefore in the interest of the advice giver to provide advice.

In the following sections, we use social network theory to explain how different network positions can influence the team processes and team viability. First, the mechanism by which formal team leaders use their network positions in the advice network to minimize team conflict and team member disenchantment with the team is elucidated. Second, the associations between that leadership network structures and team member disenchantment with the team, as mediated by team conflict are developed.

### **Leader Prestige, Team Conflict, and Team Viability**

Team leaders are those individuals whom the organization designates as formal leaders and authorizes to set the team's agenda, ensure performance, and reward or punish team members. Having formal position power, however, does not automatically mean subordinates will respect the team leader or seek that leader out for personal, professional, or even task-related advice. Respect engendered by being prestigious in the informal advice network, however, is likely to complement the team leader's formal power as prestigious leaders are approached by many subordinates for work-related advice and guidance (i.e., they have high indegree centrality in the team advice network). Thus, prestige in the team's advice network likely provides the team leader with abundant information about individual team member's tasks and activities (Friedkin & Slater, 1994; Greer, Galanter, & Nordlie, 1954; Knoke & Burt, 1983). Accumulating such knowledge may, in turn, increase the leader's information and expert power. This enhanced potential influence may also increase the leader's ability to clarify and communicate the team's goals, objectives, and operational strategies to subordinates (Yukl, 2002). This increased influence complements the leader's existing influence, which arises from his or her formal organizational position, rather than substitutes for it.

Armed with information and expertise as well as legitimate power (French & Raven, 1959), prestigious team leaders may achieve consensus more easily and influence and coordinate team members' efforts toward collective goals more effectively. For instance, leaders with informal ties to subordinates are able to communicate work-related information directly to these subordinates. They are not forced to rely on intermediaries in the team who can distort information and increase confusion by either filtering or brokering information within the team (cf. Baker & Iyer, 1992).

In teams with shared understanding and mutual trust, the overall level of conflict in the team may be reduced (e.g., Jehn & Mannix, 2001; Jehn, Northcraft, & Neale, 1999; Jehn & Shah, 1997). Indeed, research has consistently demonstrated that colleagues with positive relationships are better at managing conflict than strangers (Gruenfeld, Mannix, Williams, & Neale, 1996; Valley, Neale, & Mannix, 1995), and thus able to manage conflict more successfully (Jehn & Shah, 1997). In sum, because of the team leader's enhanced situational understanding, improved task-related communication with subordinates, and increased influence among team members, we expect to find lower levels of overall conflict within teams where the formal leader occupies a prestigious position in the team's informal advice network. In contrast, we do not expect team leaders (a) whose subordinates seek work-related advice elsewhere and (b) who have lower advice network prestige as a consequence to enjoy the same communication and influence advantages. We therefore predict the following:

*Hypothesis 1a:* The higher the formal team leader's prestige in the intrateam advice network, the lower the levels of team conflict in the team.

Team leaders may also influence individual team members' satisfaction with the team and turnover intentions by reducing team conflict (Foo, Sin, & Yiong, 2006). A leader's lack of informal power within the team restricts his or her ability to influence subordinates, thus limiting his or her ability to develop consensus among team members and promote team cohesion (Keller, 1992). Leaders whose subordinates do not seek them out for advice, because of their weak network position, have a diminished ability to communicate with and influence their subordinates (cf. Kapferer, 1972). When information distortion and miscommunication arise during the normal ebb and flow of daily work, less prestigious leaders are not in a network position to minimize them because they (the leaders) are unaware of these deviations. Even if they are cognizant of these distortions, they are limited in their ability to minimize the confusion and anxiety that ensue as

a consequence of their exclusion from the team's information and advice flows. The presence of confusion among team members and conflict that is likely to arise as a consequence of information distortion in the team has a significant impact on team members' overall satisfaction with their team and their willingness to remain and contribute to the team over time (De Dreu & Weingart, 2003).

Similarly, teams with low conflict have members who are satisfied with their teams and seek to remain in their teams (Schweiger, Sandberg, & Ragan, 1986). Previous research indicating that team conflict is positively associated with members' intentions to quit their team supports this proposition (Jehn, 1995, Jehn et al., 1999). Overall, the lack of agreement and poor communication within the team that stems from team conflict may trigger strain and dissonance among team members thereby reducing individual team members' satisfaction with the team (Ross, 1989).

*Hypothesis 1b:* The higher the formal team leader's prestige, the greater the team's viability.

*Hypothesis 1c:* Team conflict mediates the association between formal team leader prestige and team viability.

## **Leader Brokerage, Team Conflict, and Team Viability**

Prestige in advice networks is likely to help team leaders accomplish their tasks and facilitate team harmony and performance, but a brokerage position in the advice network might also have important implications for the leader and the team. According to Burt (1992), individuals who occupy brokerage positions have extraordinary influence due to the control and information benefits that these positions accrue. The occupant of a brokerage position is a go-between who connects individuals who are otherwise not connected to each other (Balkundi & Kilduff, 2005). Because information tends to be concentrated in pockets across the team, the go-between can tap diverse information pools that might have critical task implications. Further, by acting as a bridge between two otherwise unconnected team members or subgroups, the broker is in a position to leverage differences between the unconnected parties to their own benefit (Burt, 1992). By occupying this structurally advantageous position, the broker is able to change and influence members of the network.

A leader serving as the link between unconnected subordinates in the team may be a double-edged sword. To the extent that the leader can join disconnected parts of the team, the leader is more likely to facilitate

the accomplishment of team goals. By spanning across structural holes within teams, leaders may help integrate specialists, avoid redundant use of resources, and put people in touch with each other (Burt, 1992; Freeman et al., 1979/1980; Krackhardt, 1990). Moreover, leaders who span their team's structural divides may be able to advise one member that another team member has faced a similar work problem, thus promoting coordinated activity.

On the other hand, even though brokerage might be beneficial to the broker personally, this benefit may not necessarily extend to the broker's team (cf. Ansell, 2007). One case study (Cross & Parker, 2004) illustrated how a broker who spanned disconnected subgroups within a team was overwhelmed by the coordination task, producing bottlenecks in the flow of communication that adversely affected the team. Besides being bottlenecks, brokers are prone to distort the information they pass on even if it is not their intention to do so (cf. Brass, Butterfield, & Skaggs, 1998). Paradoxically, instead of increasing shared understanding of the team's work problems, leader-brokers may actually amplify the differences between the parties they bridge. The information distortion that the brokerage position triggers is eventually associated with friction and confusion in the team (Ross, 1989). Thus, although brokering may be advantageous to the leader because of the information and control benefits associated with brokerage network positions (Burt, 1992), the team may suffer as a consequence of information distortion. We therefore propose the following:

*Hypothesis 2a:* The more frequently the formal team leader acts as a broker between otherwise unconnected team members in the intrateam advice network, the higher the level of conflict in the team.

As mentioned earlier, greater team conflict is also associated with more disenchantment within the team (i.e., low team viability; De Dreu & Weingart, 2003). In addition to this affective basis for lower team viability, there is a structural reason for why teams with leader-brokers are more vulnerable to disruptions over time. Because team members with leader-brokers are connected together in the advice network through their leader, in situations where the go-between leader is inaccessible to the team, the team may fragment. The lack of alternative(s) to the leader for provision of work-related advice may make the team excessively dependent on the leader for coordination and could harm the team in the long term by promoting task conflict and reducing team performance, thus increasing members' frustration and disenchantment with team (cf. Cummings & Cross, 2003; Weick, 1993),

*Hypothesis 2b:* The more frequently the formal team leader acts as a broker between otherwise unconnected team members in the intrateam advice network, the lower the team viability.

*Hypothesis 2c:* Team conflict mediates the association between formal team leader brokerage and team viability.

## Method

### Sample and Organizational Context

To test these hypotheses we collected data in two plants of a large, integrated manufacturer of paper and wood-based building products that used high-performance teams in an effort to optimize a variety of processes. Both plants employed the same manufacturing technologies and produced the same products. The teams in each plant were critical to its operations, and all plant employees belonged to at least one standing team, which were staffed with hourly employees who worked together on an ongoing basis. Several of these standing teams were shift teams responsible for staffing the production line. The others were operational support teams, such as the electrical, mechanical, and quality control teams. Support teams were permanently staffed, also worked together on a daily (or nightly) basis, and were tasked with supporting the shift teams and line operations. In sum, all teams included in our analysis had production-related responsibilities, focused on achieving plant-level production objectives, and coordinated frequently with each other to achieve those objectives. Team tasks ranged from production to quality improvement to safety. Although much of their work was on a preplanned or preventative basis, others were more urgent (e.g., there was a disruption in a critical machine that had broken and needed to be fixed immediately). The production supervisors (i.e., team leaders) in this firm had a variety of formalized roles and duties. Team leaders had legitimate power and could discipline or reward subordinates. Foremost among their duties was to ensure that their team met its objectives (daily, weekly) related to productivity, quality, and safety. They were also charged with reinforcing standard practices related to key issues, such as safety and quality; and they discussed these topics in weekly or even daily team meetings. The team leaders would keep a very close watch on key metrics, such as product output, with the goal of acting quickly to mitigate any crisis that might cause them to miss a goal. There was a general expectation that the team leaders would be good troubleshooters as they had the

appropriate skills and knowledge to solve small problems before they would escalate.

Data were collected from hourly employees over a one-week period by administering surveys during regularly scheduled team meetings. Individuals who could not complete the questionnaire during the allotted 1-hour time period were allowed to complete it at home and return it by mail directly to the researchers via a postage paid envelope. Supervisors and managers were given surveys individually and asked to seal their completed survey in an envelope and return it directly to the researchers.

Average employee tenure at the organization was 4.6 years. In all, 12% of the hourly workers had continued their education past high school. There was considerable racial diversity with 65% being Caucasian and 32% African American. This racial diversity was similar to the diversity of the local area, although the percentage of Hispanics employed at the plants was somewhat less than in the local population. A total of 26% of employees were female with the average employee age being 36 years ( $SD = 9.0$ ).

We collected data from 336 employees who were members of 23 teams. Four teams out of the original 23 had to be dropped from our analyses. This provided us with usable data from 19 teams (with 295 possible individual respondents) that were involved either in the manufacturing process or in operational support functions. This represented a response rate of almost 88%. Two teams were dropped due to missing data, and two other teams consisting entirely of members of top management were also dropped. The two teams dropped due to missing data did not significantly differ from the other teams on variables such as organizational tenure, team tenure, ethnic diversity, and average member age. We did not use data from the two top management teams because they had significantly different tasks and demographics than did the production and support teams. Of the 19 teams used in analyses, 18 had a response rate equal to or greater than 75%. Dropping the team with the lowest response rate did not change the results and therefore we retained it.

## Measures

*Social network ties.* We asked employees to look through a list of team members and identify how frequently they went to specific team members for advice on a scale of 1 (*less than once a month*) to 5 (*several times a day*). An advice tie was considered to exist if the individual selected 4 or 5 as their response. We constructed 19 advice matrices, one for each team, to capture these advice data. Cell  $x_{ij}$  in the advice matrices represented whether  $i$  went to  $j$  for advice (cell value = 1) or not (cell value = 0).

*Leader prestige.* We calculated the formal leader's indegree centrality in the team advice network to operationalize the leader's prestige. One of the most common measures of centrality, indegree centrality is the number of times an individual is nominated by others (Wasserman & Faust, 1994). For example, a person who is sought for advice by many others has a high indegree centrality in the advice network. In the current study, it represents the extent to which the leader was sought out for advice by other team members. Team sizes varied in this sample and we therefore standardized (i.e., normalized) values for leader centrality so that they could be compared across teams.

*Leader brokerage.* We operationalized the extent to which a formal leader bridged unconnected subordinates by calculating the *normalized betweenness centrality* of the leader in the advice team networks. Betweenness centrality is the extent to which an "actor serves as a potential 'go-between' for other pairs of actors in the network by occupying an intermediary position on the shortest paths connecting other actors" (Kilduff & Tsai, 2003, p. 132). We argued in the theory section that the negative effects of brokering are most likely to arise as a consequence of distortion and filtering effects. A broker has to get information from one party and then pass it on to another. Because a broker can seek and give advice to others, we considered only those advice ties in which both parties reported that they sought advice from one another. Like leader prestige we used normalized betweenness centrality values so that we could compare across teams of varying sizes.

## Dependent Variables

*Team conflict.* In the present study, respondents were asked to identify how frequently interpersonal conflict occurred in their team. Six items, adapted from Jehn's (1995) relationship- and task-based conflict scales, were used to measure member perceptions of intra-team conflict. Relationship-based conflict items included questions such as "Is there friction among members of this team?" Task-based conflict items included questions such as "How regularly do members of this team disagree about opinions regarding the work being done?" Responses for all conflict items were on a 5-point scale from 1 (*not at all*) to 5 (*very often*). A confirmatory factor-analysis of a two-factor solution was not well supported,  $\chi^2 = 13.402$  (8),  $p < .10$ ; root mean square error of approximation = .06; normed fit index = .982; goodness of fit index = .979; relative fit index = .965; incremental fit index = .992; comparative fit index = .992. In addition, we performed an

exploratory factor analysis with principal axis factoring and determined that all six items loaded on one construct. These six items explained 65% of the variance and the correlation between the two factors was high ( $r = .73$ ). We therefore created a single team conflict scale which was reliable with a Cronbach's alpha of .81. To justify aggregation to the team level, we measured the level of intrateam similarity by calculating the  $r_{wg}$  (degree of intrateam agreement) for all teams in the sample (James, Demaree, & Wolf, 1984). The  $r_{wg}$  scores ranged from .72 to .98 across the 19 teams justifying aggregating to the team level (intraclass correlation coefficient = .12,  $p < .01$ ).

*Team viability.* To measure the team's viability, team members were first asked to indicate their intention to quit the team. To assess respondents' intentions to quit their team, they were asked to indicate the degree to which they agreed with each of the following statements on a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*): "I would like to work in this unit one year from now" (reverse scored) and "I have thought about changing work units since beginning to work in this unit." The two-item scale used in previous research (Colarelli, 1984) was reliable with a Cronbach's alpha of .71. We then identified the proportion of the team members who either agreed or strongly agreed that they wanted to quit the team. To calculate the team viability score, we then subtracted this proportion from 1.0. The team viability score can vary from 0 (all team members desire to leave the team) to 1 (no team members desire to leave the team). The greater the proportion of team members who indicate a desire to quit the team, the lower the team's viability score.

## Control Variables

*Ethnic diversity.* Previous research suggests that teams with ethnically diverse members tend to experience greater levels of employee turnover (Milliken & Martins, 1996). To test for this alternative explanation we used data from the company records to code each individual's ethnicity (1 = *African American*, 2 = *White*, 3 = *others*). These data were then used to calculate a measure of ethnic diversity in terms of Blau's (1977) heterogeneity index:  $(1 - \sum i^2)$ , where  $i$  is the proportion of the group in the  $i$ th category. Blau's index can vary from 0 (indicating all team members share the same ethnicity) to 1 (indicating all team members have different ethnicities). Thus, a high score on this index indicates variability in team member ethnicity. A low score indicates greater ethnic homogeneity among team members (see Jackson et al., 1991, for details).

**Table 1**  
**Means, Standard Deviations, and Correlations<sup>a</sup>**

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Age diversity	7.42	2.21						
2. Racial diversity	0.40	0.12	-0.16					
3. Leader's race	0.21	0.42	-0.13	0.19				
4. Leader prestige	55.33	22.56	-0.21	-0.12	0.15			
5. Leader brokerage	12.67	13.31	-0.03	0.26	0.01	-0.12		
6. Team conflict	2.70	0.36	-0.11	0.45*	0.32	-0.47**	0.61***	
7. Team viability	84.22	13.88	0.10	-0.23	-0.23	0.38	-0.54**	-0.72***

a.  $n = 19$  teams with total 231 team members.

\* $p < .1$ . \*\* $p < .05$ . \*\*\* $p < .01$ .

*Age diversity.* The age diversity in a team can influence the levels of conflict experienced in the team (cf. Williams & O'Reilly, 1998). To account for this competing explanation, archival data were acquired to measure the standard deviation of age among team members. We chose not to use coefficient of variation as it would not be an appropriate operationalization when the sample includes varying team sizes (Bedeian & Mossholder, 2000).

*Leader's race.* Because leader's race can influence the team dynamics and subordinates' perceptions of their leaders and their effectiveness (Ellis, Ilgen, & Hollenbeck, 2006; Kirkman, Tesluk, & Rosen, 2004), we controlled for the leader's race (0 = *White*, 1 = *African American*) based on data acquired from company records.

## Results

Table 1 shows the means, standard deviations, and zero-order correlations between the variables. Formal leaders were sought for advice by just more than half (55.33%) of their subordinates. Racially diverse teams experienced higher levels of conflict ( $r = .45$ ,  $p < .05$ ). Also, teams whose formal

**Table 2**  
**Network Structures Predicting Team Conflict and Team Viability<sup>a</sup>**

Variable	Team Conflict		Team Viability	
	1	2	3	4
1. Age diversity	-0.14	-0.16	0.19	0.20
2. Racial diversity	0.38	0.17	-0.15	0.03
3. Leader's race	0.23	0.33*	-0.17	-0.26
<i>Social network</i>				
4. Leader degree centrality		-0.48**		0.41*
5. Leader betweenness centrality		0.47**		-0.45*
<i>F</i>	1.98	7.42	0.70	2.61
Adjusted <i>R</i> <sup>2</sup>	0.14	0.64**	0.05	0.31*

a.  $n = 19$  teams with total 231 team members. Standardized regressions are reported.

\* $p < .05$ . \*\* $p < .01$ .

leaders enjoyed higher prestige in the team advice network tended to experience lower levels of team conflict ( $r = -.47, p < .05$ ). In contrast, teams whose formal leader had high levels of brokerage in the team advice network experienced higher levels of conflict ( $r = .61, p < .01$ ) and were less viable ( $r = -.54, p < .05$ ).

Hypotheses 1a and 1b predicted that teams with formal leaders who had high prestige would have lower levels of conflict and greater team viability. Findings from our regression analyses provide support for both these hypotheses (see Models 2 and 4 in Table 2). Teams with more prestigious formal leaders reported lower levels of team conflict ( $\beta = -.48, p < .01$ ) and greater team viability ( $\beta = .41, p < .05$ ). Teams with more popular formal leaders appeared to be more harmonious and had fewer members with intentions of leaving the team.

To test Hypotheses 1c, we did not use the conventional Baron and Kenny (1986) approach to mediation nor did we use Sobel's test, both of which need large samples (MacKinnon, Lockwood, & Williams, 2004). Instead we used the bootstrap method that involves random sampling of the data several times and testing for mediation each time (Preacher & Hays, 2008). This method is applicable when working with a small sample size (Shrout & Bolger, 2002), and has previously been used within teams research (Wong, 2008). Estimates from this method are more robust and form the basis of the different confidence intervals that are reported. The results reported in Table 3 suggest that the indirect effects of leader prestige on team viability through team conflict are statistically significant given that

**Table 3**  
**Boot Strapping-Based Mediation of Leader Network Structures**  
**on Team Viability Through Team Conflict**

Variables	Boot Strap Results					
	Percentile 95% CI		Bias Corrected 95% CI		Bias Corrected and Accelerated 95% CI	
	Lower	Upper	Lower	Upper	Lower	Upper
Leader's degree centrality	0.0115	0.4528	0.0334	0.4973	0.0160	0.4632
Leader's betweenness centrality	-0.6668	-0.0912	-0.7303	-0.1453	-0.7669	-0.1558

none of the three 95% confidence intervals (95% CIs) contain zero (e.g.,  $CI_{\text{indegree}}$ : 0.0115, 0.4528).

Table 2, Models 2 and 4 show support for Hypotheses 2a and 2b. Teams with strong brokerage leadership experienced higher levels of conflict ( $\beta = .47, p < .01$ ) and were less viable. After accounting for the effects of racial diversity and other control variables, the more frequently the team's formal leader acted as a broker among team members, the lower the team viability as demonstrated by a greater number of team members desiring to leave the team ( $\beta = -0.45, p < .05$ ).

To test Hypothesis 2c, we used the same bootstrap algorithm used to test Hypothesis 1c. Table 3 suggests that the percentile confidence interval for betweenness centrality (our measure of leadership brokerage) was significant (-.6668, -.0912). These results support Hypothesis 3 and suggest that team conflict mediates the relationship between leadership brokerage and team viability (Wong, 2008).

To summarize the results shown in Tables 2 and 3, we found that teams with leaders who enjoyed higher prestige (measured as indegree centrality) in the team advice network tended to have lower levels of team conflict and greater team viability. Interestingly, the presence of leaders in the team who acted as go-betweens among subordinates had the opposite effect. Our results indicate that teams having high levels of brokerage by the team leader were associated with higher levels of team conflict and reduced team viability. Team conflict mediated the relationship between formal leader prestige and team viability and also between formal leader brokerage and team viability.

## Discussion

Our findings suggest that team conflict fully mediated the association between leadership network structures and team viability. Leaders who occupy prestigious positions in a team's informal social network have teams with lower levels of conflict, which in turn predicts greater team viability. In contrast, leaders who act as go-betweens among subordinates have teams that manifest higher levels of conflict and low viability. The relationship between both leadership network structures and team viability is fully mediated by team conflict. These findings have the potential to revive and reconceptualize key leadership concepts.

The findings presented here are reminiscent of one of the most intuitive but empirically lacking perspectives on leadership—leadership neutralizers and enhancers. According to this perspective, a leader's effectiveness can be enhanced or undermined by the situation they are in (Dionne, Yammarino, Howell, & Villa, 2005; Kerr & Jermier, 1978). The findings here suggest, however, that leadership neutralizers and enhancers exist in the informal social structures surrounding the leader. An informal social structure characterized by a leader who brokers among subordinates acts as a leadership neutralizer that weakens the formal leader's position by increasing overall levels of team conflict and endangering sustainability of the team in the long run. The formal leader's prestige in that same social structure, however, can act as a leadership enhancer. Our results suggest that indegree centrality in the advice network strengthens the formal leader's influence, perhaps by amplifying his or her exercise of legitimate power or complementing it by enhancing the leader's credibility among subordinates. In short, the team's social structure appears to be a double-edged sword that can act to strengthen or undermine the team leader's ability to execute his or her role effectively. Future research should identify the specific contingencies that trigger these differential effects and also examine the specific mechanisms through which these contradictory effects operate.

There are two important implications for social network research. First, the two different types of network measures we use here (indegree centrality and betweenness centrality) have been two of the most commonly used centrality measures in previous research (e.g., Balkundi & Harrison, 2006; Mullen, Johnson, & Salas, 1991). Because these measures have been found to be highly correlated (Knocke & Burt, 1993) they are also assumed to have similar effects. The results presented here suggest the contrary. We found that team leaders' indegree (our measure of prestige) and betweenness centrality (our measure of brokerage) were not correlated and in fact were

strongly associated with very different team process outcomes. Second, previous research has glorified network centrality in general, and brokerage in particular, as being beneficial for the individual actors involved (Burt, 2005). Whether these individual-focused benefits translate to the collective welfare is much less clear (e.g., Ansell, 2007). The findings reported here suggest a nuanced approach to leader centrality is perhaps more appropriate considering our findings indicate that although prestige may facilitate team processes, brokerage at the individual level may actually hamper the collective. This counterintuitive finding is supported by a recent study which reported that leaders who acted as broker between team members tended to have lower performance (Cummings & Cross, 2003).

Second, the social network perspective provides a means to study a leader's relations with subordinates in a more inclusive way. Recognition that a leader's network position (and eventually effectiveness) is dependent on the pattern of connections among subordinates brings subordinates back into our understanding of leadership. The current article focuses on leaders' ties to subordinates and the brokerage role played by leaders due to lack of ties among subordinates. However, future research needs to look at how network configurations among subordinates may be critical for leaders and their effectiveness. For example, is leader effectiveness hampered when subordinates are in dense and cliquish networks? Dense networks facilitate efficient communication but they also tend to be constraining (Krackhardt, 1999). Future research also needs to explore the implications of subordinates who are central in the informal networks. Also called emergent leaders, these subordinates may not have formal power (as defined by the organization) but they do have informal influence over other subordinates because of their position in the social networks.

Finally, future research needs to explore how different types of ties, such as friendship, trust, or negative ties may enhance or weaken the formal leader's influence. Ties outside the team, and even the organization, may also have significant implications for leaders and the sway they hold over individual team members or the team as a whole (cf. Ancona, 1990; Ancona & Caldwell, 1992; Westphal & Milton, 2000).

Given the cross sectional nature of this study, it is open to the criticism about the direction of causality. It is possible that team conflict and team viability may cause changes in the leader's network position instead of the leader's network position influencing outcomes. However, we assume that ties precede and facilitate team process as social ties (and the network structure) tend to stabilize quickly once the members are given opportunities to interact (Kossinets & Watts, 2006; Newcomb, 1961). Team processes,

in contrast, tend to change and develop as team members work together over time (Gersick, 1988). Conversely, it can be argued that a team with high levels of conflict and fragmentation provides fertile ground for a leader to bridge and broker across factions within the team. Although this is a valid criticism of our current study, there is no reason to expect that members of teams with lower conflict would end up seeking out their leader for more advice. Also, the alternative explanations seem less probable when considering team viability; that teams with low viability would provide an opportunity for the leader to act as a broker seems theoretically difficult to justify. In contrast, it may be possible that because team members want to remain in the team they begin to seek advice from their leader as a form of ingratiation. Thus, future research using a longitudinal design would allow for stronger statements about the direction of causality. Despite this limitation, we sought to increase the confidence in the findings by gathering data from multiple sources (leaders and subordinates) through different methods (survey and archival).

Given that our sample of 19 teams (even though it included 231 individuals) is relatively smaller than most team based studies (Cohen & Bailey, 1997) we did take necessary precautions to avoid Type II errors and at the same time conform to prevailing research standards. To avoid rejecting hypotheses that are potentially true, we used adjusted  $R^2$  and  $p$  values less than .1. Further, we employed the bootstrap method (Wong, 2008) to test mediation as traditional approaches to mediation would not be sensitive to such a sample size (Preacher, & Hayes, 2008). We also put the data to rigorous statistical tests as we included three control variables and had up to five predictors in the regression. Despite the odds against our predictions, we found support for the associations between leader network structures and the process outcomes of interest at the  $p < .05$  level.

## Conclusion

This study provides insights about leaders, their social ties, and individual- and team level-consequences in a team setting. It also provides a theoretical explanation and empirical test of leadership from a social network perspective. Given the prevalence of teams in organizations, and the emphasis given to leaders in organizations, the study is timely and relevant. Unlike most other studies, this article takes a comprehensive view of leaders and their social ties by incorporating formal and informal leadership in the explanation of potential team member turnover. As teams remain a key

component in today's organizations, leaders need to capitalize on social networks to improve team performance and keep subordinates satisfied. The research described here takes a first step at understanding these processes.

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