Organizational Behavior and Human Decision Processes 132 (2016) 37–48

Contents lists available at ScienceDirect

Organizational Behavior and Human Decision Processes

journal homepage: www.elsevier.com/locate/obhdp

Social networks and employee voice: The influence of team members' and team leaders' social network positions on employee voice

Vijaya Venkataramani [a,*], Le Zhou [b], Mo Wang [c], Hui Liao [d], Junqi Shi [e]

[a] Robert H. Smith School of Business, University of Maryland, 4544, Van Munching Hall, College Park, MD 20742-2056, United States
[b] Department of Work and Organizations, University of Minnesota, United States
[c] Department of Management, Warrington College of Business Administration, University of Florida, Gainesville, FL 32608, United States
[d] Robert H. Smith School of Business, University of Maryland, 4506, Van Munching Hall, College Park, MD 20742-2056, United States
[e] Department of Management, Lingnan (University) College, Sun Yat-sen University, Guangzhou 510275, China

ARTICLE INFO

Article history:
Received 21 May 2014
Revised 19 November 2015
Accepted 2 December 2015
Available online 22 December 2015

Keywords:
Voice
Social networks
Leadership

ABSTRACT

We examine the role of employees' and team leaders' social network positions, an important, yet understudied class of variables, in affecting employees' voice behaviors. Using multi-level, multi-source data from 185 employees nested within 43 teams and their team leaders, we find that employees who hold central positions in the formal, workflow network in the team are more likely to speak up with ideas and suggestions. This relationship is weakened when they are central to the team's avoidance network. In addition to employees' own network positions, team leaders' positions in such informal networks also play a role in qualifying the employee workflow centrality–voice relationship. Specifically, the positive relationship between employees' workflow centrality and their voice is strengthened when their team leaders occupy central positions in the friendship network, but is weakened when they are central to the avoidance network in the team. Implications for theory and practice are discussed.

© 2015 Elsevier Inc. All rights reserved.

1. Introduction

Employee voice – the expression of challenging but constructive opinions, concerns, or ideas about work-related issues (Detert & Burris, 2007; Tangirala & Ramanujam, 2008; Van Dyne & LePine, 1998; Whiting, Maynes, Podsakoff, & Podsakoff, 2012) – has been increasingly recognized as a critical input affecting organizational functioning and well-being (Edmondson, 2003; Morrison & Milliken, 2000). In understanding this phenomenon, prior research has shown employee voice to be affected by a variety of factors such as employees' personal attributes (e.g., Crant, Kim, & Wang, 2010; LePine & Van Dyne, 2001), perceptions about and attitudes toward the organization (Fuller et al., 2006; Liang, Farh, & Farh, 2012; Tangirala & Ramanujam, 2008) and the behaviors of leaders (Detert & Burris, 2007; Liu, Zhu, & Yang, 2010; Tangirala & Ramanujam, 2012).

Although this prior research has made considerable progress, one important area that has, surprisingly, gone largely unexplored relates to the "effects of one's colleagues and *relationships* with one's colleagues on the decision of whether to engage in voice" (Morrison, 2014, p. 191). Employee voice inherently challenges the status quo and points to needs for changing or improving processes and procedures that may have been instituted by other team members or the team leader and might potentially affect others' work. As a result, speaking up with one's concerns and ideas may entail substantial risk for employees (Milliken, Morrison, & Hewlin, 2003; Van Dyne & LePine, 1998) unless they also have supportive relationships with their coworkers and leaders and know that speaking up is viewed as appropriate by them. Thus, the study of employee voice would be quite incomplete without understanding how social and relational factors at work may influence such behaviors.

In addressing this gap, the current paper uses a *relational*, social network framework in examining how employees' and their leaders' formal and informal relationships at work may impact employee voice. Compared to most other research in the social sciences (including that of employee voice) that takes an atomistic or "individual as an independent entity" perspective (i.e., focusing on individual attributes such as personality traits), network theory argues that an individual's behaviors (such as voice) can be best understood by taking a *relational* perspective (i.e., studying the nature of individuals' dyadic relationships and structural positions in the network of such relationships; Borgatti, Brass, & Halgin, 2014).

* Corresponding author.
E-mail addresses: vvenkata@rhsmith.umd.edu (V. Venkataramani), zhoul@umn.edu (L. Zhou), mo.wang@warrington.ufl.edu (M. Wang), hliao@rhsmith.umd.edu (H. Liao), shijq3@mail.sysu.edu.cn (J. Shi).

http://dx.doi.org/10.1016/j.obhdp.2015.12.001
0749-5978/© 2015 Elsevier Inc. All rights reserved.

This is because interconnected social relationships strongly shape an individual's immediate environment by constraining or providing access to social and other resources that are unequally distributed in the social system, and that are *beyond* the effects of their individual attributes, such as dispositions, alone (e.g., Borgatti et al., 2014; Lin, 1982, 2001; Wellman, 1988). For example, employees' workgroup identification, an individual attribute, has been shown to be important for employee voice (Tangirala & Ramanujam, 2008). However, regardless of identification levels, an employee who does not have many friends in the team may still feel constrained in openly challenging the status quo or voicing concerns or ideas, potentially because the employee may feel that other team members may not attach credibility to his/her ideas and therefore, would not support him/her. Thus, studying the effects of employees' positions in formal and informal relationship networks with coworkers adds a layer of richness and complexity to our understanding of employee voice in terms of highlighting situational opportunities and constraints beyond the effects of individual attributes and leader behaviors that have been the focus of prior voice research.

In examining the effects of such workplace relationships, we first examine how an employee's central position (e.g., connecting and mediating unconnected parts of the team; Freeman, 1979) in the formal workflow network, which exposes them to diverse aspects of the team's work practices, is related to their voice (e.g., Venkataramani & Tangirala, 2010). However, being central in workflow network may not be sufficient unless such ideas are welcomed and supported by the broader team. Following Morrison's (2014) call, we go beyond merely work related interactions and also examine how employees' positions in the workflow interact with their positions in the informal positive and negative social networks in the team (i.e., friendship and avoidance networks). In doing so, we use social resources theory (Lin, 2001) as our underlying theoretical framework. Social resources theory argues that in addition to informational resources, network relationships provide access to social resources such as support, signal credibility to others and provide cues about the appropriateness of certain behaviors. Along these lines, we focus on friendship and avoidance networks because they form the understructure of most organizations and capture employees' access (or lack thereof) to important social resources outside of the formal work structure (Brass, Galaskiewicz, Greve, & Tsai, 2004; Chua, Ingram, & Morris, 2008; Labianca & Brass, 2006; Venkataramani & Dalal, 2007), which can be critical factors influencing employees' voice.

Further, given the important role of leaders in facilitating (or inhibiting) employee voice (Burris, 2012; Detert & Treviño, 2010) and recent research that highlights the benefits of leaders' embeddedness in their team's informal social networks (e.g., Mehra, Dixon, Brass, & Robertson, 2006; Venkataramani, Richter, & Clarke, 2014), we also examine how leaders' positions in friendship and avoidance networks impact the relationship between employees' workflow centrality and their voice, beyond the effects of employees' own network positions. Fig. 1 illustrates our theoretical model.

The relational, network perspective we take in this study offers some important and unique insights into the employee voice literature beyond that of past research. First, as discussed above, taking a relational perspective highlights the fact that voice is not an isolated behavior driven solely by individual attributes, but is embedded in, and influenced by, an interconnected social structure of other relationships. Relatedly, this perspective illustrates how variations in access to scarce resources through social networks can provide opportunities and constraints *beyond* the effects of individual characteristics in affecting behavior (Wellman, 1988).

Second, and more important, using a relational lens highlights the importance of specific social mechanisms underlying employee voice that have not received much attention in the voice literature. For example, as social resources theory (Lin, 2001) argues, social relationships can provide cues regarding the appropriateness of voice in specific situations. Similarly, central network positions affect one's recognition as a member of the team, and thereby public acknowledgement of one's ideas as well as one's claim to certain resources that support these ideas. Furthermore, social ties provide signals of an employee's social credentials (or lack thereof) to leaders and other organizational authorities (Lin, 2001), which can help in accessing additional resources in supporting their suggestions, thus increasing their voice behaviors. In addition to employees' own network positions, team leaders' embeddedness in the team's informal networks also serve to signal the salience of power differentials between leaders and members and whether the leader may be supportive of their speaking up and would be able to garner collective support in moving ideas forward. Applying this relational (as compared to an individualistic) lens to studying employee voice thus provides some unique insights beyond that of past research. Finally, this research contributes to the network and leadership literatures by examining the interactive effects of employee and leader network positions and illustrating how the effects of employee network relationships may be incomplete without also studying the role of other interpersonal relationships around them (cf. Venkataramani, Green, & Schleicher, 2010; Venkataramani et al., 2014).

2. Theory and hypotheses

2.1. Social networks and employee voice

A social network is the set of actors and the set of ties/relationships connecting them (Scott, 2000). Although multiple types of dyadic ties coexist within organizations, two broad subsets of such ties (based on the content of the relationship) have proven to be especially important in predicting many organizational outcomes (e.g., Brass, 1992; Ibarra & Andrews, 1993): instrumental ties (e.g., workflow, advice) and expressive ties (e.g., positive and negative). In this paper, we examine how employees' central positions in the network of formal, instrumental work ties—i.e., who interacts with whom in terms of providing inputs or outputs in completing the team's tasks—affect their voice, and how this effect of workflow centrality is qualified by their informal expressive positive and negative relationships. In addition to employees' own positions in the team's informal, expressive networks (i.e., friendship and avoidance networks), we examine team leaders' positions in such networks.

2.1.1. Employees' centrality in the team's workflow network

Recent reviews of voice suggest that existing research has not empirically examined employees' exposure to different parts of the team's work processes and different types of work issues (Morrison, 2014; cf. Venkataramani & Tangirala, 2010). In this regard, employees' structural positions (i.e., centrality) in the network of formal workflow interactions in the team can indicate such exposure. Centrality, as the term suggests, indicates the extent to which an individual is central or critical/important to the interactions in the network, and thereby have access to resources that flow in the network (Borgatti, 2005). For example, as part of their required work responsibilities, when individuals receive work inputs from different team members and provide them as (processed or unprocessed) outputs for other members, they serve as liaisons connecting these different individuals who may be from different parts of the team, or from different expertise areas. Without these central individuals, employees from different parts of the team would be disconnected. In other words, these central

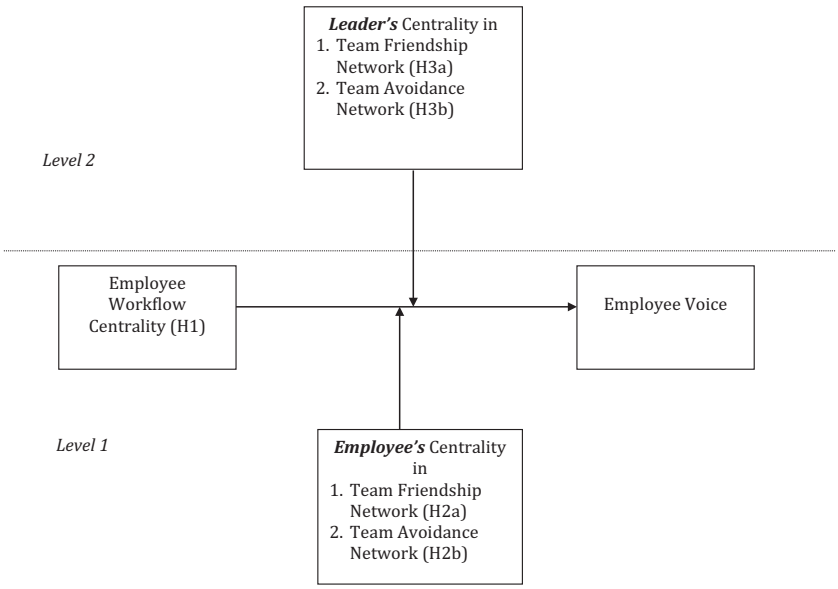

Fig. 1. Conceptual model.

employees serve as "critical hubs" for the transfer of work-related resources from one part of the team to another and in facilitating the team's operations (Wasserman & Faust, 1994). In the course of such interactions, connecting people who do not directly interact with each other due to the way that the team task work is structured, these focal individuals are exposed to information, problems and issues from different parts of the team (Borgatti, 2005). Further, such employees develop a more integrative understanding of work-related issues as they get to see those issues from the perspectives of different members of the team (Brass, 1984). Therefore, these individuals in central workflow positions are well-positioned to not only observe problems, but also to identify solutions and opportunities for improving existing processes as well as constraints in implementing them (e.g., Baldwin, Bedell, & Johnson, 1997), and thus, should be more likely to speak up with them. We propose

Hypothesis 1. Employees' centrality in the workflow network in the team will be positively related to the frequency of their voice behaviors.

2.2. The role of employees' informal network relationships

Although work-related relationships facilitate exposure to work issues, they also reflect existing formal hierarchy and pre-specified task distributions. Therefore, one's positions in these workflow networks alone may not be sufficient for voice behaviors that may introduce controversy (Gibbons, 2004; Sias & Cahill, 1998). For example, openly challenging or discussing problems with specific team processes that may affect other team members' responsibilities and roles in the team may be risky unless one also feels that raising these issues would be supported by others. In this regard, employees' positions in the informal friendship and avoidance networks in the team may facilitate or inhibit the effects of their workflow network positions on voice.

2.2.1. Employees' centrality in the team's friendship network

Friendship is a broad construct that parsimoniously captures elements of liking, trust and closeness (e.g., Gibbons & Olk, 2003; Kilduff & Brass, 2010), which are important characteristics of employees' informal relationships at work (e.g., Brass, 1984; Gibbons, 1996; Krackhardt, 1992). Centrality in the friendship network in the team indicates the extent to which a focal employee is considered to be a friend by other team members (Bell, 2005; Freeman, 1979), and can strengthen the relationship between employees' workflow centrality and voice due to several reasons. First, centrality in the friendship network signals to employees that they are valued as members of the team and that their ideas would be heard and acted upon by others who are likely to be affected by these changes. Second, open interactions with friends on such matters likely help employees obtain social cues and signals regarding the appropriateness of voicing their concerns and potentially help employees contextualize and reframe problems (e.g., Erickson, 1988). Third, as social resources theory (Lin, 2001) argues, being in central network positions provides public acknowledgement of one's claim to certain team resources in implementing these ideas. In addition, such positions also signal the credibility of such employees to supervisors and other organizational authorities in securing support and additional resources. Thus, when employees who are central in the workflow network also hold central positions in the friendship network in the team, they are more likely to speak up.

Hypothesis 2a. Employees' centrality in the team's friendship network will moderate the positive relationship between employees' workflow centrality and their voice such that the relationship will be stronger when friendship network centrality is higher.

2.2.2. Employees' centrality in the team's avoidance network

Negative ties, such as avoidance relationships, are characterized by dislike and avoidance of one individual in the dyad by another (Labianca & Brass, 2006; Venkataramani & Dalal, 2007). Such ties, although fewer than positive ties, can still become significant liabilities for employees and can adversely affect discretionary behaviors such as voice (e.g., Venkataramani & Dalal, 2007). We propose that employees' centrality in the negative ties network in the team (i.e., the extent to which a focal individual is the target of negative ties from several other team members) can weaken the effects of their workflow centrality on voice. First, prior research has shown that one's centrality in negative networks is associated with lower acceptance and acknowledgement from team members and in turn, lower organizational attachment and greater

withdrawal (e.g., Venkataramani et al., 2014), which are important determinants of voice. Therefore, even when employees are central in workflow network, those who are also disliked by other team members are unlikely to voice their suggestions in trying to improve team functioning. Second, negative ties often lead other team members to personalize any conflict with the focal person and engage in efforts to harm them both overtly and covertly (e.g., Pondy, 1967; Pruitt & Rubin, 1986). Thus, individuals central to the workflow, but who are disliked by many team members, are likely to receive strong social cues that discourage them from voicing their opinions. Third, negative ties with team members can adversely affect one's recognition and acceptance as a legitimate member of the team, and in turn, refusal by other members to publicly acknowledge one's ideas (Lin, 2001), thereby discouraging voice. Finally, as research on the social liabilities of negative ties indicates, centrality in the negative network provides signals of an employee's lack of social credibility in the team to leaders and other authorities (Lin, 2001), which are necessary in accessing resources in moving ideas forward (e.g., Pauksztat, Steglich, & Wittek, 2011). Therefore, even when such work central employees may have important things to contribute, they are unlikely to speak up.

Hypothesis 2b. Employees' centrality in the team's avoidance network will moderate the positive relationship between employees' workflow centrality and their voice such that the relationship will be weaker when avoidance network centrality is higher.

2.3. The role of leaders' informal network relationships in the team

Although a relational perspective examining employees' interpersonal relationships on voice is important, it is incomplete without also examining the interpersonal relationships of team leaders who are an integral part of the team's social fabric, and have an important role in shaping the climate and outcomes of their teams. In line with recent research that has documented the various benefits associated with leaders' embeddedness in the informal social networks of their teams (e.g., Balkundi, Barsness, & Michael, 2009; Balkundi & Harrison, 2006; Mehra et al., 2006), we suggest that leaders' positions in the team network serve as boundary conditions that either facilitate or constrain the effect of employee workflow network centrality on employee voice. Although employees' own positions may provide them access to social resources, leaders, by virtue of their role as the formal head of the team, have legitimate power and authority in determining whether employee voice will be penalized or whether resources will be allocated to act upon their suggestions. In this regard, when the formal leader also holds important informal positions, this can help leaders more effectively garner social resources in the team and mobilize collective support in implementing new ideas.

2.3.1. Leader's centrality in the team's friendship network

Leaders' central position in the team's friendship network can facilitate the positive relationship between employees' workflow centrality and their voice for several reasons. First, although formal leaders play a critical role in securing organizational resources to the issues raised and in encouraging employee voice (Detert & Burris, 2007), employees are often reluctant to speak up to them with ideas challenging the status quo because of the formal status differences between them and the leader (Kish-Gephart, Detert, Treviño, & Edmondson, 2009). In this context, when leaders are strongly embedded in the informal friendship network in the team by virtue of being friends with team members, this is likely to signal to employees that the power difference between employees and their leader is less important, thus encouraging those who are central in workflow network to speak up. Second, the success of any ideas related to changing existing work processes is likely to be higher when these changes are voluntarily accepted rather than forced on employees who would be affected by them (Herold, Fedor, Caldwell, & Liu, 2008). In such situations, a formal leader who is also central to the friendship network of the team may be more successful in convincing other team members to accept changes or to engage in collective action (e.g., Krackhardt, 1992), thereby increasing perceptions of employees who are central in workflow network that their voice will have an impact. Third, leaders play critical "linking pin" positions connecting subordinates with higher-level managers and mediating the flow of organizational resources down the hierarchy (Graen, Dansereau, & Minami, 1972; Likert, 1961). When such leaders also occupy central positions in friendship network, they are likely to better understand employees' concerns, aspirations and motivations and are therefore more likely to be noticed as effective sponsors of employees' ideas to other organizational authorities in securing additional resources and support (e.g., Lamertz, 2006). When employees who are central in workflow network have leaders who are central in friendship network, they will speak up more (than those who work with leaders who are peripheral in the team's friendship network). Thus,

Hypothesis 3a. Leaders' centrality in the team's friendship network will moderate the relationship between employees' workflow centrality and voice such that the positive relationship will be stronger when leaders' centrality in the friendship network is higher.

2.3.2. Leader's centrality in the team's avoidance network

We propose that leaders' centrality in the team's negative network will weaken the effects of employees' workflow centrality on voice. Often times, leaders are the ones that have instituted or enacted procedures and practices in the team and therefore have a sense of responsibility and ownership over them (Detert & Burris, 2007). Prior research suggests that leaders may feel threatened by information that challenges their authority, because it might imply that things are not working optimally or require change in behavior or practice (Detert & Burris, 2007; Kish-Gephart et al., 2009) and hence become defensive when employees speak up with concerns and potential solutions. When leaders have many negative relationships in the team, this signals to employees that team leaders would react defensively and be less receptive to new ideas and suggestions challenging these work practices. These cues from leaders about their lack of openness or willingness to act are likely to reduce central employees' actual voice behavior even if they have valuable suggestions to offer (Detert & Edmondson, 2011; Milliken et al., 2003). Further, leaders, by virtue as their role as the formal head of the team, also have the power to determine employees' punishments as well as rewards (French, Raven, & Cartwright, 1959). When leaders have many negative ties in the team, their behaviors are more likely to be seen as signals of potentially using this power to retaliate with sanctions and punishments toward subordinates. Thus, when those employees who are central in workflow network work with leaders who have more negative relationships in the team, they are less likely (than those who work with leaders who have few negative relationships) to speak up.

Hypothesis 3b. Leaders' centrality in the team's avoidance network will moderate the relationship between employees' workflow centrality and voice such that the positive relationship will be weaker when leaders' avoidance network centrality is higher.

3. Method

We tested our hypotheses with data from employees working in project teams in a construction management company in China. Their job tasks included project scheduling, communicating with different stakeholders (e.g., contractors, designers, and property owners), dealing with problems encountered during construction, and preparing contracts and agreements with various business parties. Each team consisted of several employees who reported to one team leader. Given the interdependent nature of their work, employees interacted frequently with each other on work matters. Team members (including team leaders) also engaged in informal social interactions, such as going to lunch and attending social events together.

Employee voice was extremely relevant and important in this setting. Given the rapidly expanding and increasingly competitive nature of this industry, it was important for the organization to constantly challenge existing practices and come up with new ideas for products, services and processes. For example, team members might find the planned construction sequence or specific tasks to be less optimal during project execution. Voicing such problems can help the team adjust the construction plan in a timely manner and avoid unnecessary cost. Team members' voice was also important for improving safety practices at the construction site.

In collecting our data, we followed a temporally lagged survey design, wherein the control variables and independent network variables were measured at Time 1 and the dependent variable, voice, was measured three months later, at Time 2, to coincide with the organization's performance appraisal time. At Time 1, surveys were distributed to all 348 employees and 68 team leaders in the organization, of which 332 employees and leaders working in 56 teams provided complete responses. Of these, 4 teams had considerable missing or incomplete network data with less than 60% response rates. Based on the high (e.g., 80%) response rate requirement deemed necessary in network studies (Wasserman & Faust, 1994), we removed these 4 teams from our analysis. At Time 2, 43 team leaders provided responses on voice, regarding 204 employees. Of these, we were only able to match the Time 1 and Time 2 responses for 185 employees, from 43 teams for our study variables. The average size of each team was 6.86 (SD = 2.39; ranging from 4 to 15, with many teams having between 5 and 8 members). 22% of respondents were female, their average age was 33.04 years (SD = 9.29), and their average tenure in their current team was 4.0 years (SD = 5.18). Average age of the leaders was 37.9 years (SD = 8.56). The majority of the leaders were male (89%). Average tenure of the leaders in the current position was 6.65 years (SD = 6.31).

Before data collection, all employees received a formal letter from the human resource department introducing the researchers and encouraging the employees to participate in the study. All surveys were translated into Chinese, following Brislin's (1980) translation-back translation procedures. A member of our research team personally distributed the surveys to respondents. Upon completion, surveys were returned to the researchers via sealed envelopes.

3.1. Measures

At Time 1, the employee and team leader surveys included a network survey as well as a brief set of attitudinal and demographic measures. At Time 2, leaders rated the voice behaviors of their employees. As is common in network research (e.g., Marsden, 1990), a roster of all team members and the leader in each team was provided, and employees as well as their team leaders were asked to answer specific questions about each person. We measured all network variables using one question each. All network measures were calculated using the UCINET software (version 6.289; Borgatti, Everett, & Freeman, 2002) typically used in network analysis.

3.1.1. Employee workflow centrality

In line with our theoretical arguments, this was measured as the employee's betweenness centrality in the workflow network (e.g., Burt, Kilduff, & Tasselli, 2013). Betweenness centrality is calculated as a ratio of the number of times a focal person (k) lies on the shortest paths connecting any pair of individuals (i and j) in the team to the total number of such shortest paths that connect them (e.g., Borgatti, 2005). Specifically, if g_{ij} is the number of geodesic (i.e., shortest length) paths from i to j, and g_{ikj} is the number of these geodesics that pass through node k, then the betweenness centrality of node k is given by

$$\sum_i \sum_j \frac{g_{ikj}}{g_{ij}}, \quad i \neq j \neq k$$

Therefore, it is an index of liaising between individuals who are not directly connected. Compared to other conceptualizations such as a simple count of the number of employees one directly interacts with for work (i.e., degree centrality; Venkataramani & Tangirala, 2010), betweenness is a more accurate indicator of being exposed to information from different parts of the team (e.g., Burt, 2004; Perry-Smith, 2006).

In order to calculate the betweenness centrality, each employee was asked, "Which of the following persons do you interact with as part of your routine work role (i.e., in terms of those who provide you with work inputs, or to whom you provide your work outputs)?" about all other team members (Morrison, 2002). Responses of all team members (in terms of "yes" or "no") resulted in a network matrix wherein each cell indicated the row person's (respondent's) response about a column person (i.e., ratee; another team member or team leader). The matrix was provided as input for the betweenness centrality routine in the UCINET software program.

3.1.2. Employee centrality in the team's friendship network

In line with our arguments related to the number of friendship ties that an individual has in the team, this was measured as the employee's *indegree* centrality in the team's friendship network (i.e., the number of team members who consider a focal employee as their friend; Freeman, 1979; Kilduff & Krackhardt, 1994). Friendship networks were measured by asking respondents to assess their relationship with each member of their team including the leader (using the team roster provided) using a 4-point rating scale ranging from 1 to 4 (1 = don't know, 2 = know of, but not personally acquainted, 3 = acquaintance, 4 = good/close personal friend). The matrices containing these values for each team were used in the UCINET program to arrive at the valued in-degree centrality of each individual. This program sums the weighted values of the *incoming ties* to an individual. In other words, a focal person's indegree centrality is calculated as the sum of all other team members' ratings about him/her. Thus, high in-degree centrality is an indicator of the informal status an individual has in the friendship network (Ibarra, 1992; Knoke & Burt, 1983; Wasserman & Faust, 1994).

3.1.3. Employee centrality in the team's avoidance network

In line with our arguments about the number of team members who preferred to avoid/not interact with this person (Venkataramani et al., 2014), this was measured as the employee's *in-degree* centrality in the avoidance network in the team.

Following prior research (e.g., Labianca, Brass, & Gray, 1998), the avoidance network was measured by asking respondents to answer the question, "Which of the following individuals do you normally prefer to avoid/don't like to interact with at work?" The in-degree centrality was calculated by summing the number of incoming ties to an individual.

3.1.4. Leader centrality in the team's friendship network

The same procedure used for the calculation of employees' centrality in the friendship network (discussed above) was used to calculate leaders' in-degree centrality in the friendship network.

3.1.5. Leader centrality in the team's avoidance network

The same procedure used for the calculation of employees' centrality in the avoidance network (discussed above) was used to calculate leaders' in-degree centrality in the avoidance network.

3.1.6. Employee voice

Four items adapted from the voice scale of Van Dyne and LePine (1998) were used to obtain team leaders' ratings of employees' voice.[1] Specifically, leaders reported on the frequency with which their subordinates engaged in voice on work-related issues. A sample items is: "This employee made recommendations about ways to improve work in your team." All ratings were on a five-point Likert-type scale ranging from 1 (*never*) to 5 (*very frequently*). Cronbach's alpha for this scale was .88.

3.1.7. Control variables

In demonstrating the incremental predictive power of relationships at work, we controlled for several categories of variables that have been shown to affect voice. First, in terms of demographics, we controlled for employees' age, gender, years of education, and tenure in the current role in the team (e.g., LePine & Van Dyne, 1998; Stamper & Dyne, 2001; Tangirala & Ramanujam, 2012). For instance, it is possible that employees who have spent more time in their current role have greater familiarity with team processes that might enhance their confidence to speak up at work. Second, in terms of individual attitudes and behaviors important for voice, we controlled for employees' identification with their team (i.e., their feeling of oneness with their team and their desire to help their team perform effectively; e.g., Tangirala & Ramanujam, 2008) and their extent of work withdrawal or psychological detachment (e.g., Burris, Detert, & Chiaburu, 2008). Identification was measured using five items adapted from Mael and Ashforth's (1992) scale. A sample item is: "When I talk about my team, I usually say 'we' rather than 'they'" (1 = *Strongly disagree* to 5 = *Strongly agree*). Withdrawal was measured using Hanisch and Hulin's (1990) 4-item scale. A sample item is: "How often do you make excuses to go somewhere to get out of work?" (1 = *Never* to 5 = *More than once per week*).

Third, the focus in this paper is on employees' exposure to issues, ideas and problems from different parts of the team by virtue of their liaison positions (i.e., betweenness centrality) in the workflow network. In demonstrating the incremental predictive power of this operationalization, we controlled for employees' indegree centrality in this network, which has been shown to be related to voice in prior research (Venkataramani & Tangirala, 2010). Fourth, given that team size has been linked to employees' voice within that team (LePine & Van Dyne, 1998), and in order to also control for the size of the network in comparing employees' centrality scores across teams, we controlled for team size.

Finally, given our focus on leader network positions as well, we also controlled for leader-related variables such as tenure with the leader, LMX (Detert & Burris, 2007; Liu et al., 2010) and leader fairness (e.g., Tangirala & Ramanujam, 2008), that are important predictors of voice (Van Dyne, Kamdar, & Joireman, 2008). LMX was measured from the subordinate in the LMX dyad (e.g., Erdogan & Enders, 2007), using the LMX7 measure (Scandura & Graen, 1984). A sample item is, "I can count on my team leader to 'bail me out', even at his/her own expense, when I really need it". Leader fairness was measured using a four item overall fairness measure developed by Ambrose and Schminke (2009). A sample item is: "Overall, I am treated fairly by my team leader" (1 = *Strongly Disagree* to 5 = *Strongly Agree*).

3.2. Analytical approach

Employees in our sample were clustered within teams, each headed by a leader. To account for the non-independence of observations in this data, we employed random coefficient modeling for hypotheses testing (Raudenbush & Bryk, 2002), using HLM software (version 6.06) with Restricted Maximum Likelihood Estimation.

4. Results

Table 1 provides the means, standard deviations, reliabilities and bivariate correlations among the study variables at Level 1 and Level 2. As this table indicates, employee voice was significantly correlated with employees' education, their LMX. Interestingly, employees' indegree centrality in the friendship and avoidance networks were positively correlated with each other, suggesting that individuals who had many positive ties also tended to attract more negative ties, possibly because, when one's popularity increases, it can also engender greater negative feelings from others who do not consider the focal person as a friend.

A Chi-square test showed that the between-group variance in employee voice ($\chi^2[43] = 88.79$, $p < .01$; ICC[1] = .21) was significant, thus justifying the use of cross-level predictors. To test our hypotheses, we specified intercepts-as-outcome, and intercepts-and-slopes-as-outcome models (Raudenbush & Bryk, 2002; Table 2). In order to avoid confounding cross-level and between group interactions, we group-mean centered the Level 1 predictors (Enders & Tofighi, 2007; Hofmann & Gavin, 1998). Control variables and Level 2 predictors were grand-mean centered (Raudenbush & Bryk, 2002). Table 2 presents the results of our HLM analyses.[2] An examination of Table 2 (Model 1) suggests that, in line with prior research, there were significant main effects of employee education, LMX and leader fairness on employee voice.

4.1. Hypothesis testing

Hypothesis 1, which predicted that employees' workflow centrality would be positively related to their voice behavior, was supported (Table 2, Model 1; $\gamma_{100} = .02$, $p < .05$). It is interesting to note that employees' betweenness centrality was significant even after controlling for the indegree centrality operationalization (Venkataramani & Tangirala, 2010), indicating the incremental predicting power of employees' liaison positions.

[1] Following other recent research (e.g., Detert & Burris, 2007; Liu, Tangirala, & Ramanujam, 2013; Tangirala & Ramanujam, 2012), we used four items from Van Dyne and LePine's (1998) six-item employee voice scale. As Liu et al. (2013) argue, the two items that were not included did not directly capture verbal communication but instead focused on more general proactivity of the employees: "This particular employee often keeps well informed about issues where his or her opinion might be useful to this work group," and "This particular employee often gets involved in issues that affect the quality of work life here in this group."

[2] Because our Level 1 predictors were group-mean centered, we also added their group means back at Level 2 and re-ran all our analyses in assessing the cross level interactions (Hofmann & Gavin, 1998). This yielded consistent results as reported in the manuscript.

Table 1
Means, standard deviations and bivariate correlations among study variables.

Variable	Mean	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
Level 1 variables																
Age	33.04	9.29														
Gender[a]	.77	.42	.04													
Education (years)	14.13	2.73	−.48*	−.05												
Tenure in current pos. in team (years)	3.99	4.18	.47**	−.10†	−.18**											
Tenure with leader	3.37	4.61	.45**	.06	−.16**	.85**										
Team identification	4.06	.55	−.08	−.09	.25**	−.08	−.04	(.75)								
Work withdrawal	2.0	.67	−.06	.04	−.03	.03	.02	.04	(.82)							
LMX	3.68	.54	−.07	.09	.10	−.09	−.03	.57**	−.04	(.82)						
Leader fairness	3.95	.62	−.01	.12*	.01	−.08	.01	.45**	−.10	.61**	(.89)					
Indegree centrality in workflow N/W	3.07	2.68	−.01	.04	.17**	.05	.12*	.07	.05	.01	.06					
Betweenness centrality in workflow N/W	1.34	4.13	−.06	−.01	.06*	−.01	.02	−.02	−.03	−.09	.04	.50*				
Friendship network centrality	20.75	10.23	−.03	.08	.05	.03	.08	.08	−.04	−.04	.15*	.43*	.32*			
Avoidance network centrality	.28	1.03	.13*	−.10	−.08	.07	.11	.02	.06	.05	.01	.06	.12*	.17*		
Employee voice	2.96	.76	.03	.08	.15**	.02	.08	.11	−.01	.06**	−.04	.21*	.05*	.04	.05	(.88)
Level 2 variables																
Team size	6.86	2.39														
Leader friendship network centrality	19.4	8.36	.86*													
Leader avoidance network centrality	.15	.46	.16	.16												

Note: *N* at Level 1 = 185; *N* at Level 2 = 43. N/W = Network.
* $p < .05$.
** $p < .01$.
[a] Dummy coded, 0 = female, 1 = male.
† $p < .10$.

Hypothesis 2a proposed that employees' centrality in the friendship network in the team would moderate the relationship between their workflow centrality and voice such that this relationship would be stronger when positive centrality is higher. As Model 2 indicates, this interaction was not significant ($\gamma_{110} = .004$, $p > .05$). Thus, H2a was not supported.

Hypothesis 2b proposed that employees' centrality in the avoidance network would moderate the relationship between their workflow centrality and voice such that this relationship would be weaker when negative centrality is higher. As Model 2 indicates, this interaction term was significant ($\gamma_{150} = -.02$, $p < .05$). A simple slopes test indicated that the relationship between employees' workflow centrality and their voice was positive for members who were less central (i.e., $-1SD$; $\gamma_{150} = .05$, $p < .01$) whereas it was not significant for those members who were more central in their team's avoidance network ($+1SD$; $\gamma_{150} = .02$, $p > .05$). Thus, H2b was supported. The plot depicting this interaction is presented in Fig. 2.

Hypothesis 3a predicted that leaders' centrality in the friendship network would moderate the relationship between employees' workflow centrality and their voice such that this relationship would be stronger when leaders' centrality is higher. As Model 3 indicates, this cross-level moderation effect was significant ($\gamma_{131} = .01$, $p < .01$). This interaction is depicted in Fig. 3. A simple slopes test indicated that the relationship between employees' workflow centrality and their voice was stronger when leaders were more central in the team's friendship network ($+1SD$; $\gamma_{131} = .23$, $p < .01$) as compared to when leaders were less central ($-1SD$; $\gamma_{131} = .07$, $p < .05$), as proposed. Thus, H3a was supported.

Hypothesis 3b predicted that leaders' centrality in the avoidance network in the team would moderate the relationship between employees' workflow centrality and employees' voice such that this relationship would be stronger when leaders' avoidance network centrality is lower. As Model 3 indicates, the cross-level moderation effect was significant ($\gamma_{132} = -.15$, $p < .01$). This interaction is depicted in Fig. 4. A simple slopes test indicated that the relationship between employees' workflow centrality and their voice was weaker when leaders were more central in their team's avoidance network ($+1SD$; $\gamma_{132} = -.12$, $p < .05$) as compared to when leaders were less central ($-1SD$; $\gamma_{132} = .05$, $p < .01$). Thus, H3b was also supported.[3]

5. Discussion

In the current paper, we examined how employees' and their leaders' centrality in the social networks in their team influenced these employees to speak up with concerns and suggestions about the team's work practices. In line with our arguments, we found that employees who occupied central, liaising positions in the workflow network in the team were more likely to voice. We further found that this positive relationship was strengthened when their leaders held central positions in the team's friendship network, but was weakened when the employees themselves or their leaders were central in the team's avoidance network. Taken together, these findings have several important implications.

5.1. Theoretical and practical implications

At a broad level, the current paper highlights the importance of a relational perspective for the study of employee voice, which has been relatively unexplored in past research. Previous research has tended to predominantly focus on individual (i.e., attributes, predispositions, psychological factors) and contextual factors (e.g., leader behaviors, climate) as antecedents of voice. However, this approach has overlooked the fact that employees are embedded in a network of interconnected relationships with other team members and that when an employee openly speaks up with concerns about or suggesting new work procedures in coworkers' tasks, it might also be affected by the nature of his/her relationships with these coworkers. Along these lines, a relational perspective suggests that individuals' positions in their social network provide the opportunities for, as well as exert constraints on, their behaviors and that these positions shape individuals' behaviors

[3] We re-ran all our analyses with a dichotomized measure of friendship ties (for both leaders and members), where the friendship matrix was dichotomized such that all ratings of 3 and 4 were coded as 1 and other ratings were coded as 0. This did not change our results.

Table 2
Results of HLM analysis predicting employee voice.

	Model 1		Model 2		Model 3	
	Coefft.	s.e.	Coefft.	s.e.	Coefft.	s.e.
Intercept (γ_{00})	2.98**	.09	2.99**	.08	2.98**	.08
Main effects: Level 1						
Age (γ_{10})	.01	.01	.01	.01	.01	.01
Gender (γ_{20})	.21	.13	.22	.14	.20	.14
Education (γ_{30})	.05*	.02	.06*	.03	.05*	.02
Tenure in current position (γ_{40})	−.07	.05	−.07	.05	−.09*	.04
Tenure with leader (γ_{50})	.06	.05	.06	.04	.08	.04
Workgroup identification (γ_{60})	−.12	.15	−.14	.15	−.14	.14
Work withdrawal (γ_{70})	.12	.07	.11	.08	.08	.09
LMX (γ_{80})	.42*	.17	.37*	.15	.36*	.15
Leader fairness (γ_{90})	.36*	.15	.34*	.18	.36*	.14
Employee indegree centrality in workflow N/W (γ_{100})	.04	.02	.03	.02	.03	.02
Employee friendship N/W centrality (γ_{110})	−.01	.01	−.01	.01	.01	.01
Employee avoidance N/W centrality (γ_{120})	.09*	.04	.01	.04	.02	.04
Employee betweenness centrality in workflow N/W (γ_{130})	.04*	.02	.04*	.02	−.04	.03
Main effects: Level 2						
Team size (γ_{01})	.001	.05	−.01	.05	−.05	.05
Leader friendship N/W centrality (γ_{02})	−.01	.02	−.01	.02	.01	.02
Leader avoidance N/W centrality (γ_{03})	.09	.19	.10	.17	.05	.18
Level 1 interaction terms						
Employee workflow centrality × friendship N/W centrality (γ_{140})			.004	.004	.01	.004
Employee workflow centrality × avoidance N/W centrality (γ_{150})			−.02**	.004	−.013**	.004
Cross level interaction terms						
Employee workflow centrality × leader friendship N/W centrality (γ_{131})					.01**	.002
Employee workflow centrality × leader avoidance N/W centrality (γ_{132})					−.15**	.05
Level 1 ΔR^2			.03		.00	
Level 1 R^2	.35		.38		.38	
Level 2 ΔR^2	.06		.00		.08	
Level 2 R^2			.06		.14	

Note: N at Level 1 = 185; N at Level 2 = 43. N/W = Network. Level 1 and Level 2 R^2 values indicate percentage of explainable Level 1 and Level 2 variance respectively in the dependent variables accounted by each of the models (Snijders & Bosker, 1999).

* $p < .05$.

** $p < .01$.

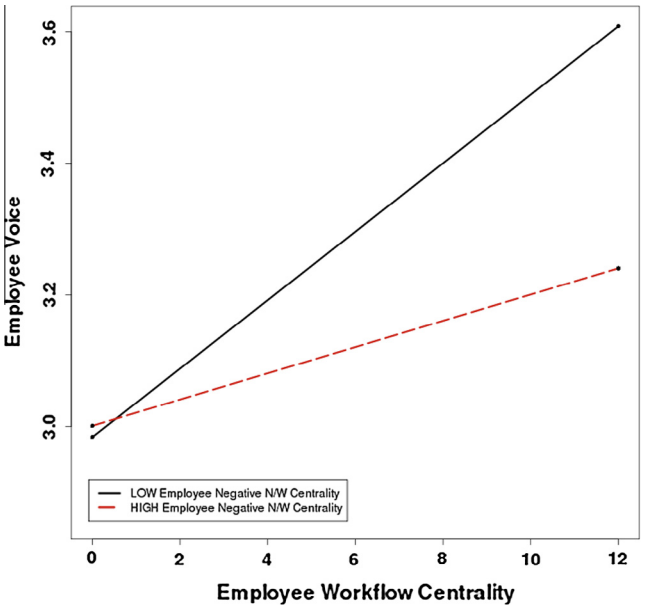

Fig. 2. Interaction plot of employee workflow centrality and employee avoidance network centrality predicting voice.

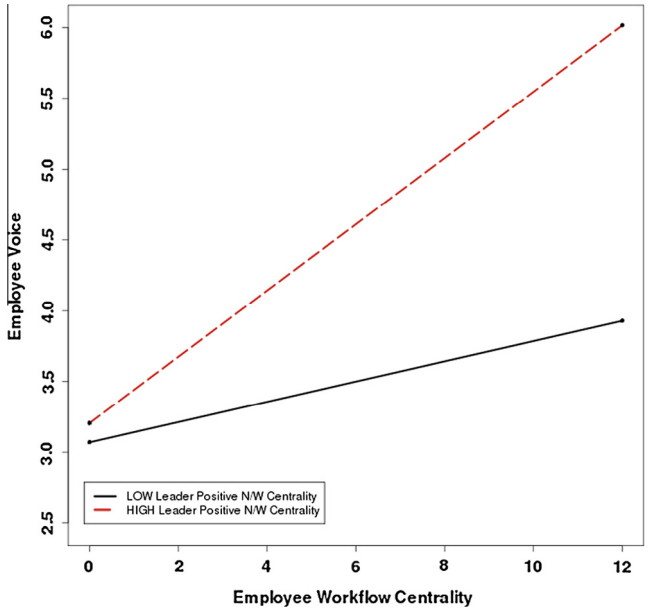

Fig. 3. Interaction plot of employee workflow centrality and leader friendship network centrality predicting voice.

beyond the effects of their individual attributes and other contextual factors (e.g., Borgatti, Mehra, Brass, & Labianca, 2009; Kilduff & Krackhardt, 1994; Lin, 2001). In supporting this, the current paper demonstrates the effects of relational factors on employee voice *above and beyond* the effects of individual (e.g., demographic attributes, identification with the workgroup, withdrawal) and leadership related (e.g., LMX, leader's fairness) factors. It would therefore be productive for future research to continue to examine voice from a relational perspective.

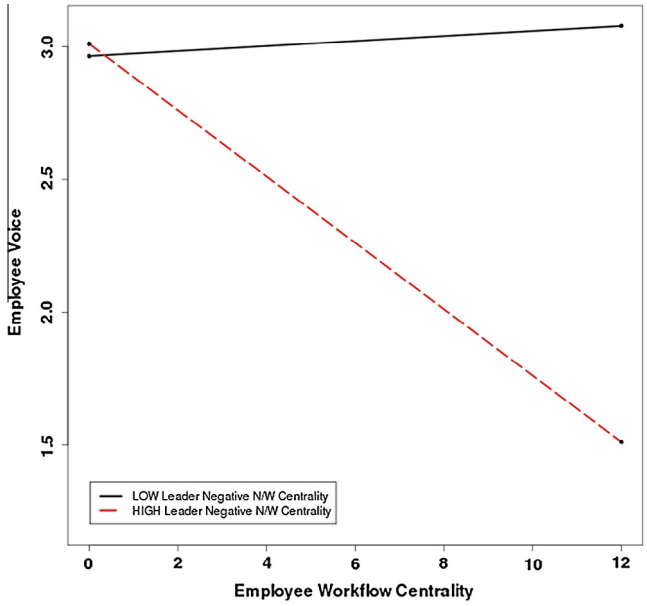

Fig. 4. Interaction plot of employee workflow centrality and leader avoidance network centrality predicting voice.

Next, our specific results also highlight some unique insights into the employee voice phenomenon. First, our effects related to workflow centrality demonstrate that exposure to different actors in workflow process is an important factor affecting employee voice. Although generally recognized as a prerequisite for voice (Morrison, 2011), employees' opportunities for observing and identifying work-related issues has been assumed but not examined in prior research (for a notable exception, see Venkataramani & Tangirala, 2010). For example, employees' positions in workflow networks can facilitate their exposure to problems and solutions in the team (e.g., Burt et al., 2013; Venkataramani et al., 2014). However, while most previous voice research has focused on individuals' personality, attitudes and motivational factors related to speaking up, it has not examined their capability to do so. In this regard, it is important to note that although Venkataramani and Tangirala (2010) examined employees' indegree workflow centrality (i.e., the *number* of other employees that directly interact with the focal person), their paper did not take into account employees' access to information from different parts of the team that can be accessed by distant, more indirect connections. Therefore, we argued that employees' liaison positions that link unconnected parts of the team (i.e., betweenness centrality) would be better suited for providing exposure to issues as well as opportunities to identify potential solutions. To this end, our results go beyond prior research by demonstrating that such liaison positions have incremental predictive power in affecting voice even after controlling for the number of direct ties.

Second, this study also builds on and extends past research (e.g., Venkataramani & Tangirala, 2010), which focused solely on formal work networks, by also examining how formal positions combine *interactively* with positions in the informal networks in the team. While central workflow positions can enhance employees' capability to speak up, they cannot assure employees that other team members would be supportive of such efforts. For example, our findings suggest that even when employees are in a position to observe issues and problems, they are unlikely to voice them in trying to improve team functioning if many team members avoid them in social interactions, possibly due to lack of credibility and support that such employees experience as well as social signals discouraging such behavior. Future research would be well served to study voice from a network perspective, studying both formal and informal networks in tandem.

Third, and related, the current paper indicates (albeit not examine empirically) some unique relational mechanisms affecting voice. Prior research has indicated mechanisms such as perceived instrumentality of voice, psychological safety and perceptions of efficacy (e.g., Detert & Treviño, 2010; Liang et al., 2012) as underlying voice behaviors. At a basic level, although relational factors might merely seem to represent a new class of antecedents of these previously studied psychological processes underlying voice (e.g., when the leader is friends with many team members, employees in workflow central positions speak up more, probably because they might feel psychologically safe in expressing their ideas openly), they also shed light on some *unique* mechanisms, including signaling processes and access to resources, which have not been examined before in the voice literature. For example, as network research argues, individuals' structural positions determine access to scarce social resources that are unevenly distributed and therefore, provide opportunities for, and constraints on, behavior (Wellman, 1988). Along these lines, individuals' strategic positions in the workflow network might expose them to useful *information* about opportunities and choices otherwise not available. Similarly, individuals with many negative relationships with teammates are not recognized as legitimate members of the team, which is necessary to provide public acknowledgement of their ideas as well as for their claim to team resources. In fact, they may just be perceived as troublemakers and their voice not accorded any *credibility*, thereby reducing their voice behaviors even when they have important ideas or concerns. Relatedly, social relationships can provide social cues regarding the *appropriateness* of engaging in challenging behaviors such as voice. Finally, social relationships also provide signals of an employee's social credentials to leaders and other organizational authorities (Lin, 2001), which can help in accessing additional resources in moving their ideas forward. Similarly, leaders' embeddedness in the team's positive tie networks, such as friendship networks, serves to signal lower power and status differentials between employees and the leader (e.g., Kish-Gephart et al., 2009), which encourages speaking up and increases confidence that the leader would be successful in influencing other members to accept new ideas and securing resources for their implementation. Thus, using a relational perspective can shed light on other, unique mechanisms that can potentially impact voice beyond that of past findings. It would be productive for future research to more directly examine them.

Fourth, this study makes a contribution to the broader network literature, where prior research has tended to predominantly focus on the social capital benefits of positive ties without also exploring the negative consequences associated with negative ties that employees invariably have at work (Labianca & Brass, 2006). However, as our findings as well as other recent research shows (e.g., Chua et al., 2008; Venkataramani et al., 2014), negative ties (e.g., avoidance network ties), although not as frequent as positive ties, can be especially important by attenuating the relationship between positive or neutral workplace interactions and work outcomes. Thus, this paper contributes to the growing network literature on negative relationships at work and extends it by demonstrating how centrality in the negative relationship network can extend to employees suppressing their voice even when such speaking up may be beneficial to the team.

Finally, this paper also contributes to the emerging literature that links leadership to voice. Although some prior research has examined LMX (Van Dyne et al., 2008) and specific leader behaviors such as consultation (Tangirala & Ramanujam, 2012) on their employees' voice, the study of the effect of leaders' social network in the team is still uncharted. In this context, as our results

indicate, leaders' network ties can facilitate or constrain the effects of employees' workflow centrality on voice over and above the effects of employees' own ties. By virtue of their unique position as a "linking-pin" connecting their subordinates to higher organizational authorities (Likert, 1961), leaders mediate the flow of resources down the hierarchy. When such leaders are also strongly embedded in the team's informal friendship network, it is possible that they could use their formal positions to garner external resources to help employees move their ideas forward. Further, given their formal positions, they also have the authority to reward or punish employees if they feel that employee voice is being disruptive. In this regard, leaders' informal connections in the team can provide important signals to employees regarding the consequences of speaking up. Thus, building on and extending recent research on leaders' ties in the team (e.g., Mehra et al., 2006; Venkataramani et al., 2014), the current paper demonstrates the incremental importance of leaders' positions in informal social networks within the team beyond the effects of subordinates' own positions in affecting voice. Further, by examining the interactive effects of employees' and leaders' network positions, we also highlight how the study of the impact of employees' interpersonal relationships on their voice would be incomplete without also considering the role of other interpersonal exchange relationships around them (cf. Venkataramani et al., 2010, 2014).

One potential question that arises from these results relates to the role of employees' direct dyadic exchange relationship (i.e., LMX) with the leader. We would like to note here that we did control for LMX while testing all our hypotheses; network positions were related to voice beyond the effects of LMX. However, it is possible that employees who are central to the team's workflow will be likely to speak up more if they also have a higher quality LMX with their leader. We tested for this possibility in the form of a two-way interaction effect, but did not find support. Further, it is also likely that the facilitating (or constraining) effects of employees' and leaders' central positions in the teams' networks may be strengthened (or weakened) in the presence of a high quality LMX. In exploring this, we tested for all possible three-way interactions among these variables. However, none of these three-way interactions were significant, possibly due to low power in our sample to detect them. It is also possible that other moderating factors not measured in this study, such as employees' role perceptions (Van Dyne et al., 2008), could affect the interaction effect between LMX and network positions on employee voice. This would be a fruitful area for future research.

Some unexpected relationships in this data are also noteworthy. We did not find support for the moderating effect of employee friendship network centrality on the workflow network centrality–voice relationship (i.e., H2a). Perhaps, the effect of friendship centrality on the workflow centrality–voice relationship is further qualified by other factors not examined in this study. For example, given that voice behavior is associated with risk and individuals may be concerned about losing friends by challenging the status quo, employees with high agreeableness or risk aversion tendencies may still choose to not speak up even if they occupy central positions in the workflow as well as friendship networks. Similarly, it is possible that these relationships are further qualified by the type of issues that employees choose to speak up with. For example, such central employees might be comfortable raising issues related to suppliers and customers, but not regarding issues that might have direct implications in terms of affecting other team members (e.g., distribution of workload). These would be interesting areas for future research.

In addition to the lack of support for H2a, we did not find main effects of employees' (or leaders') centrality in the friendship network on voice. It might be possible that regardless of their own, or their leaders' centrality, employees refrained from speaking up unless they had something useful to share (by virtue of their exposure to such issues due to their central positions in the workflow), or if they felt that the group climate or team norms strongly discouraged challenging the status quo, thus indicating the presence of other moderators. On the other hand, although employees' negative centrality was not correlated with voice, our main effects model (Model 1, Table 2) indicates that it was positively related to voice in the presence of other controls. It would be interesting for future research to further examine these relationships and their boundary conditions in detail.

5.2. Limitations and directions for future research

Overall, we believe that the current study has several strengths such as utilizing multi-source data, controlling for different categories of variables in order to isolate the effects of our focal variables and testing our model using appropriate methods that matched the nested and multi-level nature of our data. Despite these notable strengths, our study has some limitations.

First, although we used a temporally lagged design in measuring our independent and dependent variables, we are unable to completely rule out reverse causality in our proposed relationships. For example, it is possible that employees who speak up more often are given more central positions in the team's workflow. We urge more longitudinal network research to unravel the causal relationships between employee voice and their workflow network positions.

Second, we argued that the study of network positions highlight certain unique relational mechanisms underlying voice, such as signaling credibility and legitimacy, providing access to social resources and providing cues regarding the appropriateness of voice behaviors. However, given the difficulty in measuring processes such as signaling and social cue effects in a survey design, we were unable to directly examine these mechanisms. Nonetheless, it would be productive for future research to empirically demonstrate these mechanisms using ethnographic or experimental designs.

Third, due to time constraints, we measured some of our network questions using dichotomous (yes/no) measures and restricted our network boundaries to that of employees' respective teams. It is possible that using a dichotomized measure for avoidance network (i.e., a negative network) decreased the variation in the responses, as individuals who had any negative interaction was likely to respond "Yes". Despite this possible decrease in variation, this study was able to detect effects of centrality in avoidance networks. Nevertheless, we urge future research to use valued measures where possible in replicating these findings, as well as to examine individuals' positions in the overall organizational network of communication relationships, which might provide greater access to resources for voice.

Fourth, given our Chinese sample, it is not clear how cultural factors might influence these findings. For example, it is possible that collectivists emphasize interpersonal relationships more and thus are more likely to speak up when they are central in positive relationship networks. However, it is also possible that collectivists might speak up less when they have central positions in positive relationship networks because they do not want to upset these relationships. Similarly, individuals who are high on power distance are likely more tolerant of unequal power structures and therefore, not affected if leaders are not central in the team's social networks. On the other hand, it is also possible that employees who expect power differentials are more sensitive to leaders' positions in informal networks, thereby speaking up more. Future empirical research is needed to unravel these possibilities.

5.3. Practical implications

Our results indicate that employees who are central to the task interactions in their group are more likely to articulate work-related suggestions or opinions, but that such central employees are less likely to voice their opinions if they are the target of avoidance of other team members. In this regard, our findings complement research by Casciaro and Lobo (2005), who found that employees prefer to work with "lovable fools" than "competent jerks", by showing that "competent jerks" also speak up less, likely because other members might not support them. We concur with Casciaro and Lobo that managers should leverage the opportunities and remove constraints for work central individuals to promote their speaking up and improving team performance. This suggests that managers should ensure that such central employees (and especially those who are both work central and socially unpopular) are given adequate opportunities to voice their opinions via behaviors such as consulting and seeking feedback.

In addition, team leaders may themselves also need to develop more informal friendship relationships with their team members through social events. This may help create a positive perception in the minds of employees that their team leader is approachable, and will help in persuading other members in implementing good ideas. Further, given our results regarding the constraining effects of leaders' avoidance network centrality on their employees' voice, these leaders may also need to take special care to ensure that their behaviors and actions do not alienate team members or make them feel unsafe in voicing their ideas.

6. Conclusion

Taking a relational perspective, this study shows that employees who are central, in terms of connecting otherwise unrelated actors in the workflow network of a team are more likely to speak up. Extending previous research examining network positions and voice behaviors, this study also suggests that when team leaders have more positive relationships (i.e., friendship) with team members, the positive association between employee workflow centrality and voice is stronger. In contrast, when employees or their team leaders have more negative (i.e., avoidance) relationships with team members, the positive effect of employees' centrality in the workflow network on voice is diminished. Taken together, this study contributes to the voice, social network, as well as leadership literatures by demonstrating that both informal and formal networks among both subordinates and leaders should be taken into consideration, to understand and shape employees' voice behaviors.

References

Ambrose, M. L., & Schminke, M. (2009). The role of overall justice judgments in organizational justice research: A test of mediation. *Journal of Applied Psychology, 94*, 491–500.

Baldwin, T. T., Bedell, M. D., & Johnson, J. L. (1997). The social fabric of a team-based MBA program: Network effects on student satisfaction and performance. *Academy of Management Journal, 40*, 1369–1397.

Balkundi, P., Barsness, Z., & Michael, J. H. (2009). Unlocking the influence of leadership network structures on team conflict and viability. *Small Group Research, 40*, 301–322.

Balkundi, P., & Harrison, D. A. (2006). Ties, leaders, and time in teams: Strong inference about network structure's effects on team viability and performance. *Academy of Management Journal, 49*, 49–68.

Bell, G. G. (2005). Clusters, networks, and firm innovativeness. *Strategic Management Journal, 26*, 287–295.

Borgatti, S. P. (2005). Centrality and network flow. *Social Networks, 27*, 55–71.

Borgatti, S. P., Brass, D. J., & Halgin, D. S. (2014). Social network research: Confusions, criticisms, and controversies. In D. J. Brass, G. Labianca, A. Mehra, D. S. Halgin, & S. P. Borgatti (Eds.). *Research in the sociology of organizations* (Vol. 40). Bradford, UK: Emerald Publishing.

Borgatti, S. P., Everett, M. G., & Freeman, L. C. (2002). *UCINET 6 for Windows: Software for social network analysis*. Natick, MA: Analytic Technologies Inc.

Borgatti, S. P., Mehra, A., Brass, D. J., & Labianca, G. (2009). Network analysis in the social sciences. *Science, 323*, 892–895.

Brass, D. J. (1984). Being in the right place: A structural analysis of individual influence in an organization. *Administrative Science Quarterly, 29*, 518–539.

Brass, D. J. (1992). Power in organizations: A social network perspective. *Research in Politics and Society, 4*, 295–323.

Brass, D. J., Galaskiewicz, J., Greve, H. R., & Tsai, W. (2004). Taking stock of networks and organizations: A multilevel perspective. *Academy of Management Journal, 47*, 795–817.

Brislin, R. W. (1980). Translation and content analysis of oral and written material. In H. C. Triandis & J. W. Berry (Eds.), *Handbook of cross-cultural psychology* (pp. 349–444). Boston, MA: Allyn & Bacon.

Burris, E. R. (2012). The risks and rewards of speaking up: Managerial responses to employee voice. *Academy of Management Journal, 55*, 851–875.

Burris, E. R., Detert, J. R., & Chiaburu, D. S. (2008). Quitting before leaving: The mediating effects of psychological attachment and detachment on voice. *Journal of Applied Psychology, 93*, 912–922.

Burt, R. S. (2004). Structural holes and good ideas. *American Journal of Sociology, 110*, 349–399.

Burt, R. S., Kilduff, M., & Tasselli, S. (2013). Social network analysis: Foundations and frontiers on advantage. *Annual Review of Psychology, 64*, 527–547.

Casciaro, T., & Lobo, M. S. (2005). Competent jerks, lovable fools, and the formation of social networks. *Harvard Business Review, 83*, 92–99.

Chua, R. Y. J., Ingram, P., & Morris, M. W. (2008). From the head and the heart: Locating cognition-and affect-based trust in managers' professional networks. *Academy of Management Journal, 51*, 436–452.

Crant, J. M., Kim, T., & Wang, J. (2010). Dispositional antecedents of demonstration and usefulness of voice behavior. *Journal of Business Psychology, 26*, 285–297.

Detert, J. R., & Burris, E. R. (2007). Leadership behavior and employee voice: Is the door really open? *Academy of Management Journal, 50*, 869–884.

Detert, J. R., & Edmondson, A. C. (2011). Implicit voice theories: Taken-for-granted rules of self-censorship at work. *Academy of Management Journal, 54*(3), 461–488.

Detert, J. R., & Treviño, L. K. (2010). Speaking up to higher-ups: How supervisors and skip-level leaders influence employee voice. *Organization Science, 21*, 249–270.

Edmondson, A. C. (2003). Speaking up in the operating room: How team leaders promote learning in interdisciplinary action teams. *Journal of Management Studies, 40*, 1419–1452.

Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: A new look at an old issue. *Psychological Methods, 12*, 121–138.

Erdogan, B., & Enders, J. (2007). Support from the top: Supervisors' perceived organizational support as a moderator of leader–member exchange to satisfaction and performance relationships. *Journal of Applied Psychology, 92*, 321–330.

Erickson, B. H. (1988). The relational basis of attitudes. *Social Structures: A Network Approach, 99*, 121.

Freeman, L. C. (1979). Centrality in social networks conceptual clarification. *Social Networks, 1*, 215–239.

French, J. R., Raven, B., & Cartwright, D. (1959). The bases of social power. *Classics of Organization Theory*, 311–320.

Fuller, J. B., Hester, K., Barnett, T., Frey, L., Relyea, C., & Beu, D. (2006). Perceived external prestige and internal respect: New insights into the organizational identification process. *Human Relations, 59*, 815–846.

Gibbons, D. E. (1996, August). Friendship and advice networks in organizations: Interlacing change with stasis. In *Electronic proceedings of the academy of management annual meeting*, Cincinnati, OH.

Gibbons, D. E. (2004). Network structure and innovation ambiguity effects on diffusion in dynamic organizational fields. *Academy of Management Journal, 47*, 938–951.

Gibbons, D., & Olk, P. M. (2003). Individual and structural origins of friendship and social position among professionals. *Journal of Personality and Social Psychology, 84*, 340–351.

Graen, G., Dansereau, F., & Minami, T. (1972). Dysfunctional leadership styles. *Organizational Behavior and Human Performance, 7*, 216–236.

Hanisch, K. A., & Hulin, C. L. (1990). Retirement as a voluntary organizational withdrawal behavior. *Journal of Vocational Behavior, 37*, 60–78.

Herold, D. M., Fedor, D. B., Caldwell, S., & Liu, Y. (2008). The effects of transformational and change leadership on employees' commitment to a change: A multilevel study. *Journal of Applied Psychology, 93*, 346–357.

Hofmann, D. A., & Gavin, M. B. (1998). Centering decisions in hierarchical linear models: Implications for research in organizations. *Journal of Management, 24*, 623–641.

Ibarra, H. (1992). Homophily and differential returns: Sex differences in network structure and access in an advertising firm. *Administrative Science Quarterly, 37*, 422–447.

Ibarra, H., & Andrews, S. B. (1993). Power, social influence, and sense making: Effects of network centrality and proximity on employee perceptions. *Administrative Science Quarterly, 38*, 277–303.

Kilduff, M., & Brass, D. J. (2010). Organizational social network research: Core ideas and key debates. *Academy of Management Annals, 4*, 317–357.

Kilduff, M., & Krackhardt, D. (1994). Bringing the individual back in: A structural analysis of the internal market for reputation in organizations. *Academy of Management Journal, 37*, 87–108.

Kish-Gephart, J. J., Detert, J. R., Treviño, L. K., & Edmondson, A. C. (2009). Silenced by fear: The nature, sources, and consequences of fear at work. *Research in Organizational Behavior, 29*, 163–193.
Knoke, D., & Burt, R. S. (1983). Prominence. In R. S. Burt & M. J. Minor (Eds.), *Applied network analysis* (pp. 195–222). Beverly Hills, CA: Sage.
Krackhardt, D. (1992). The strength of strong ties: The importance of philos in organizations. *Networks and Organizations: Structure, Form, and Action*, 216–239.
Labianca, G., & Brass, D. J. (2006). Exploring the social ledger: Negative relationships and negative asymmetry in social networks in organizations. *Academy of Management Review, 31*, 596–614.
Labianca, G., Brass, D. J., & Gray, B. (1998). Social networks and perceptions of intergroup conflict: The role of negative relationships and third parties. *Academy of Management Journal, 41*, 55–67.
Lamertz, K. (2006). Organizational citizenship behavior as performance in multiple informal network positions. *Organization Studies, 27*(1), 79–102.
LePine, J. A., & Van Dyne, L. (1998). Predicting voice behavior in work groups. *Journal of Applied Psychology, 83*, 853–868.
LePine, J. A., & Van Dyne, L. (2001). Voice and cooperative behavior as contrasting forms of contextual performance: Evidence of differential relationships with big five personality characteristics and cognitive ability. *Journal of Applied Psychology, 86*, 326–336.
Liang, J., Farh, C. I., & Farh, J. L. (2012). Psychological antecedents of promotive and prohibitive voice: A two-wave examination. *Academy of Management Journal, 55*, 71–92.
Likert, R. (1961). *New patterns of management*. New York, NY: McGraw-Hill.
Lin, Nan. (2001). *Social capital: A theory of social structure and action*. Cambridge: Cambridge University Press.
Lin, N. (1982). In P. Marsden & N. Lin (Eds.), *Social resources and instrumental action in social structure and network analysis* (pp. 131–145). Beverly Hills, CA: Sage.
Liu, W., Tangirala, S., & Ramanujam, R. (2013). The relational antecedents of voice targeted at different leaders. *Journal of Applied Psychology, 98*, 841–851.
Liu, W., Zhu, R., & Yang, Y. (2010). I warn you because I like you: Voice behavior, employee identifications, and transformational leadership. *The Leadership Quarterly, 21*, 189–202.
Mael, F., & Ashforth, B. E. (1992). Alumni and their alma mater: A partial test of the reformulated model of organizational identification. *Journal of Organizational Behavior, 13*, 103–123.
Marsden, P. V. (1990). Network data and measurement. *Annual Review of Sociology, 16*, 435–463.
Mehra, A., Dixon, A. L., Brass, D. J., & Robertson, B. (2006). The social network ties of group leaders: Implications for group performance and leader reputation. *Organization Science, 17*, 64–79.
Milliken, F. J., Morrison, E. W., & Hewlin, P. F. (2003). An exploratory study of employee silence: Issues that employees don't communicate upward and why. *Journal of Management Studies, 40*, 1453–1476.
Morrison, E. W. (2002). Newcomers' relationships: The role of social network ties during socialization. *Academy of Management Journal, 45*, 1149–1160.
Morrison, E. W. (2011). Employee voice behavior: Integration and directions for future research. *The Academy of Management Annals, 5*, 373–412.
Morrison, E. W. (2014). Employee voice and silence. *Annual Review of Organizational Psychology and Organizational Behavior, 1*, 173–197.
Morrison, E. W., & Milliken, F. J. (2000). Organizational silence: A barrier to change and development in a pluralistic world. *Academy of Management Review, 25*, 706–725.
Paulksztat, B., Steglich, C., & Wittek, R. (2011). Who speaks up to whom? A relational approach to employee voice. *Social Networks, 33*, 303–316.
Perry-Smith, J. E. (2006). Social yet creative: The role of social relationships in facilitating individual creativity. *Academy of Management Journal, 49*, 85–101.
Pondy, L. R. (1967). Organizational conflict: Concepts and models. *Administrative Science Quarterly, 12*, 296–320.
Pruitt, D. G., & Rubin, J. Z. (1986). *Social conflict: Escalation, impasse, and resolution*. Reading, MA: Addison-Wesley.
Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods*. Thousand Oaks, CA: Sage.
Scandura, T. A., & Graen, G. B. (1984). Moderating effects of initial leader–member exchange status on the effects of a leadership intervention. *Journal of Applied Psychology, 69*, 428–436.
Scott, J. (2000). *Social network analysis: A handbook*. London: Sage Publications.
Sias, P., & Cahill, D. (1998). From co-workers to friends: The development of peer friendships in the workplace. *Western Journal of Communication, 62*, 273–300.
Snijders, T. A. B., & Bosker, R. J. (1999). *Multilevel analysis: An intro- duction to basic and advanced multilevel modeling*. London, England: Sage.
Stamper, C. L., & Dyne, L. V. (2001). Work status and organizational citizenship behavior: A field study of restaurant employees. *Journal of Organizational Behavior, 22*, 517–536.
Tangirala, S., & Ramanujam, R. (2008). Employee silence on critical work issues: The cross level effects of procedural justice climate. *Personnel Psychology, 61*, 37–68.
Tangirala, S., & Ramanujam, R. (2012). Ask and you shall hear (but not always): Examining the relationship between manager consultation and employee voice. *Personnel Psychology, 65*, 251–282.
Van Dyne, L., Kamdar, D., & Joireman, J. (2008). In-role perceptions buffer the negative impact of low LMX on helping and enhance the positive impact of high LMX on voice. *Journal of Applied Psychology, 93*, 1195–1207.
Van Dyne, L., & LePine, J. A. (1998). Helping and voice extra-role behaviors: Evidence of construct and predictive validity. *Academy of Management Journal, 41*, 108–119.
Venkataramani, V., & Dalal, R. S. (2007). Who helps and harms whom? Relational antecedents of interpersonal helping and harming in organizations. *Journal of Applied Psychology, 92*, 952–966.
Venkataramani, V., Green, S. G., & Schleicher, D. J. (2010). Well-connected leaders: The impact of leaders' social network ties on LMX and members' work attitudes. *Journal of Applied Psychology, 95*, 1071–1084.
Venkataramani, V., Richter, A. W., & Clarke, R. (2014). Creative benefits from well-connected leaders: Leader social network ties as facilitators of employee radical creativity. *Journal of Applied Psychology, 99*, 966–975.
Venkataramani, V., & Tangirala, S. (2010). When and why do central employees speak up? An examination of mediating and moderating variables. *Journal of Applied Psychology, 95*, 582–591.
Wasserman, S., & Faust, K. (1994). *Social network analysis: Methods and applications (structural analysis in the social sciences)*. Cambridge, UK: Cambridge University Press.
Wellman, B. (1988). Structural analysis: From method and metaphor to theory and substance. In B. Barry Wellman & S. D. Berkowitz (Eds.), *Social structures a network approach* (pp. 19–61). Cambridge: Cambridge University Press.
Whiting, S. W., Maynes, T. D., Podsakoff, N. P., & Podsakoff, P. M. (2012). Effects of message, source, and context on evaluations of employee voice behavior. *Journal of Applied Psychology, 97*, 159–182.