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Web-enabled boundary spanners and their role in the knowledge flow network

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SIMMELIAN TIES, ORGANIZATIONAL JUSTICE, AND KNOWLEDGE SHARING IN VIRTUAL WORKGROUPS
Research-in-Progress

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Abstract

We argue that types of Simmelian-tied employee dyads (dyads embedded in three-person cliques) influences organizational justice perceptions, and knowledge sharing within and across organizational boundaries through virtual workgroups. We study the interaction between employees' advice and friendship ties, shared interpersonal, interactional, procedural and distributive justice perceptions, and the types of knowledge shared from a social network perspective. We predict that Simmelian-tied advice and friendship dyads influence justice perceptions, and in turn knowledge sharing. Compared to Simmelian-tied advice dyads, we suggest that Simmelian-tied friendship dyads were hypothesized to be strongly associated with congruent distributive, interpersonal, and interpersonal justice perceptions. Congruent procedural justice perceptions were likely to be associated with both Simmelian-tied advice and friendship ties. We hypothesized that distributive, procedural, and informational justice perceptions were likely to be shared across formal organizational boundaries through strong friendship ties. We also predicted that positive congruent procedural, interpersonal and informational justice perceptions influenced expert knowledge sharing while congruent distributive justice perceptions influenced product knowledge sharing.

Keywords: Simmelian Ties, Advice Ties, Friendship Ties, Social Network Analysis, Organizational Justice; Knowledge Sharing.

1   INTRODUCTION

Research shows that organizational justice perception, or how employees perceive fairness, influence performance-related work outcomes such as job satisfaction, organizational commitment (Aryee et al., 2002), performance (Kim & Mauborgne, 1997; Colquitt et al., 2002), and work motivation (Colquitt, 2002). Justice research in recent years has shifted from the individual perspective to the congruent perceptions of groups using social structure, influence, and interaction (Lind et al., 1998; Van Den Bos & Lind, 2001; Colquitt et al., 2002; Colquitt, 2004; Roberson, 2006a; Roberson, 2006b).

Several studies point to the impact of formal (Schminke et al., 2002; Ambrose & Schminke, 2003) and informal (Chia et al., 2006; Shapiro et al., 2008; Fang & Shaw, 2008) organization structures upon justice perceptions. Field network studies further confirm that justice perceptions not only transmit via social structure but also possess the ability to influence peers (Lamertz, 2002; Umphress et al., 2003).

This research is grounded on the notion of justice perceptions as a contagion (Degoey, 2000), such that individuals seek and provide justice perceptions based on uncertainties, past experiences and social structure. Our study adds to the current literature in three ways. First, we seek to extend and clarify existing studies to address the influence of strong social ties on congruent justice perceptions between employees. Second, we examine the ability of justice perceptions to endure across organizational and geographical boundaries. Finally, we consider the impact of congruent justice perceptions on knowledge sharing, an outcome of work performance.

2   THEORY AND HYPOTHESES

The manner in which employees seek advice or friendship leads to the emergence of informal ties (as opposed to formal ties, e.g. departments). These ties carry a myriad of organizational implications, such as knowledge sharing (Krackhardt & Stern, 1988; Tortoriello & Krackhardt, 2008) and social influence (Gibbons, 2004). As organizations adopt virtual workgroups, ties possess the ability to span and influence perceptions across local and geographical boundaries (Krackhardt & Stern, 1988).

Justice perceptions are not formed in isolation; rather, they are subject to the influence of social interaction. Through existing ties and referents of injustice (Kray & Allan Lind, 2002), employees exchange and process justice information (Chia & Fang, 2005; Chia et al., 2006; Fang & Shaw, 2008) to determine whether they were subjected to unfair treatment or as a means to avoid potential injustice. However, research involving the influence of ties on justice perceptions had yielded inconsistent results (Lamertz, 2002; Umphress et al., 2003; Roberson, 2006b).
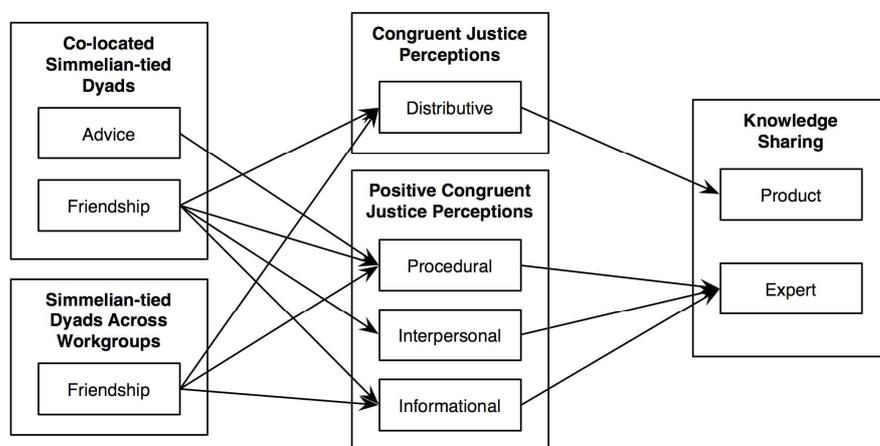

Figure 1: Proposed Research Model

This study aims in part to integrate and empirically examine these issues in the virtual workgroups of a knowledge-intensive organization. We also aim to study the knowledge sharing outcomes of such congruent justice perceptions, an area current literature is relatively silent about (Kim & Mauborgne, 1997; Lin, 2007). Therefore, we attempt to bridge these gaps by formulating a research model (Figure 1) and subsequently grounding the hypotheses in the literature.

2.1   Organizational Justice Perceptions

Justice perceptions of employees hold crucial implications for managers and organizations (Simons & Roberson, 2003). In our study on knowledge sharing, related outcomes include citizenship behavior (Niehoff & Moorman, 1993; Lavelle et al., 2007), job satisfaction (Wesolowski & Mossholder, 1997), rule compliance, commitment, and helping behavior (Colquitt et al., 2001). In order to distinguish the myriad of outcomes associated with justice perceptions, these perceptions have been distinguished as distributive, procedural, interpersonal, and informational (Colquitt, 2001).

Distributive justice perceptions refer to the fairness and equality of outcomes relative to one's contribution (Colquitt et al., 2001). On the other hand, procedural justice perceptions consider the process fairness or the ability to voice one's opinions during the decision process (Lind & Tyler, 1988) represent the cornerstone of procedural justice (Folger & Cropanzano, 1998). Interpersonal justice refers to whether individuals are treated with dignity and respect, while informational justice considers the completeness of processes and outcomes explanations (Colquitt et al., 2001).

2.2   Social Influence and Justice Perceptions

Sensemaking (sharing and clarifying perceptions) within groups serves as a source of social influence, leading to congruent perceptions of behavior and group norms (Salancik & Pfeffer, 1978). In the organization, justice perceptions are shared among colleagues to voice concerns and clarify ambiguities to determine fair outcomes and treatments (Degoey, 2000; Folger & Kass, 2000; Van Den Bos & Lind, 2001; Lamertz, 2002). For example, group ratings of justice perceptions were more significant compared to the individual (Lind et al., 1998; Van Den Bos & Lind, 2001; Roberson, 2006b), especially in highly interdependent groups (Colquitt, 2004).

We draw from social network analysis to examine this social heuristic phenomenon. Social network analysis provides insights into informal structures such as group cohesiveness (Gruenfeld et al., 1996) and relationships (Krackhardt & Kilduff, 2002). Early applications of social network analysis found evidence for congruent procedural and interactional (comprising of interpersonal and informational) justice perceptions between dyadic (2-person) and triadic (3-person) relations (Lamertz, 2002; Umphress et al., 2003; Chia & Fang, 2005).

These early network studies suggest that unambiguous work outcomes of distributive justice are not subject to social influence. However, this is contrary to later laboratory studies (Roberson, 2006a; Roberson, 2006b). We attempt to clarify social influence on justice perceptions within groups by utilizing the concept of Simmelian ties and distinguishing between different types of relationships.

2.3   Simmelian Ties

A Simmelian-tied dyad (Krackhardt, 1995) is a regular dyad embedded in a triad. While a strong dyad may foster congruent perceptions, a Simmelian-tied dyads enforces such perceptions by introducing three properties: (1) enforcing group interests through outvoting (2) reducing individual bargaining power (3) encouraging cooperation through mediation by a third party.

By utilizing the Simmelian-tied dyad, the complexities of studying groups are stripped away while retaining essence of the group by considering the common third-party common. This allows us to examine the associated influence, constraints and interactions. Simmelian-tied dyads offer opportunities for sensemaking and clarifying issues with similar others (Festinger, 1954; Krackhardt & Kilduff, 2002), forging shared perceptions and agreement. Related outcomes include increased

cognition of workplace relationships (Krackhardt & Kilduff, 2002), knowledge access (Tortoriello & Krackhardt, 2008), and social support spanning organizational boundaries (Krackhardt & Stern, 1988).

2.4 Advice and Friendship Ties

Informal relationships play an important role in the organization (Krackhardt & Hansen, 1993). For example, strong workplace friendship influences shared values (Gibbons, 2004). This study concentrates on two types of social ties: advice and friendship. Advice ties concerns with which individuals approach for work-related advice (Podolny & Baron, 1997), while friendship ties consider with whom individuals share perceptions, experiences and rely for social and political support (Coleman, 1990; Krackhardt & Kilduff, 1990).

Strong advice ties lead to organizational learning (Biele et al., 2008), information sharing, and performance (Verbeke & Wuyts, 2007), while friendship ties transmit affect and emotion, transcending boundaries such as demographics (Plickert et al., 2007), fostering congruent perceptions (Gibbons, 2004). Therefore, information transmitted over advice and friendship ties have the ability to reinforce justice perceptions in varying ways (Umphress et al., 2003; Chia & Fang, 2005).

2.5 Simmelian Ties, Social Influence, and Justice Perceptions

We have addressed the social influence effects of Simmelian ties, the characteristics of advice and friendship ties, and the existing justice research. We now attempt to integrate these factors.

Distributive justice perceptions are associated with objective, work-related outcomes (e.g. pay). While laboratories studies report congruent distributive justice perception through sensemaking (Roberson, 2006a; Roberson, 2006b), earlier network studies suggest the contrary. The unambiguous nature of distributive justice perception do not seem to provide avenues for sensemaking and social influence, and the objective work outcomes led earlier studies to associate this perception with work-related ties (Lamertz, 2002; Umphress et al., 2003; Chia & Fang, 2005).

We argue that distributive justice perceptions are susceptible to social influence through friendship ties rather than advice ties, particularly through Simmelian-tied friendship ties. While distributive justice perceptions work outcomes are objective and unambiguous, individual favorability perceptions of these outcomes remain highly personal and subjective (McFarlin & Sweeney, 1992; Sweeney & McFarlin, 1993; Colquitt et al., 2001). Sensitive and subjective perceptions subjected to sensemaking and social influence (Klein et al., 2001), particularly between strong friendship ties associated with trust and concern (Verbeke & Wuyts, 2007). Thus, we propose that compared to regular friendship dyads, Simmelian-tied friendship dyads are likelier to form congruent distributive justice perceptions.

Hypothesis H1. Compared to regular friendship dyads, Simmelian-tied friendship dyads are more likely to share congruent distributive justice perception.

Procedural justice perception is associated with the ability to voice concerns and appeal against work decisions. Compared to distributive justice perception, procedural justice perception concerns subordinate-leader exchanges and supervisor evaluation (Colquitt, 2001), which are of a less personal nature. Such perceptions are likely to be exchanged among friends in the workplace and workgroup members who may not necessarily be personal friends.

Recent studies found that work and friendship dyads exchanged and accepted procedural justice perceptions amongst themselves (Chia et al., 2006), while Simmelian-tied work dyads and groups were found to share congruent procedural justice perception (Van Den Bos & Lind, 2001; Lamertz, 2002; Colquitt et al., 2002). However, these findings have been met with inconsistency. In another study, friendship but not advice dyads shared procedural justice perceptions (Umphress et al., 2003).

We suggest that while regular advice and friendship dyads exchange and accept procedural justice perceptions, these do not necessarily mean that each individual receive other's justice reports as their own personal views. Reports of secondhand justice information may be seen as less reliable and biased compared to their own experiences (Van Den Bos & Lind, 2001). This issue may be mitigated in a

Simmelian-tied dyad, as justice perceptions may be reinforced with the presence of the third party.

Interpersonal justice perception is often associated with the subordinate's evaluation of the supervisor (Colquitt, 2001). The sensitive nature and consequences associated with the interpersonal perceptions of supervisors means that close friends who share emphatic concerns, social support, and trust are likelier to exchange such information compared to regular colleagues. Informational justice perception addresses the transparency work-related processes and outcomes (Greenberg, 1993). Considering that informational justice perception also deal with sensitive information such as treatment bias, we expect that like interpersonal justice perception, informational justice information is exchanged among close, trustworthy friends (Chia et al., 2006). Similarly, we predict that these notions will be further reinforced within Simmelian-tied friendship dyads.

In the context of our study, we aim to investigate if positive perceptions of procedural, interpersonal, and informational justice perceptions are likelier to promote greater levels of work performance and in turn motivate expert knowledge sharing. Explicit expressions of injustice have been proposed to be more susceptible to social influence and sensemaking (Shapiro et al., 2008). Therefore, in the absence of explicit sharing of injustice among Simmelian-tied dyads, we propose that it is also likely for Simmelian-tied individuals to share positive levels of these justice perceptions.

Hypothesis H2a. Compared to regular advice dyads, Simmelian-tied advice dyads are more likely to share positive congruent procedural justice perception.

Hypothesis H2b. Compared to regular friendship dyads, Simmelian-tied friendship dyads are more likely to share positive congruent procedural justice perception.

Hypothesis H3. Compared to regular friendship dyads, Simmelian-tied friendship dyads are more likely to share positive congruent interpersonal justice perception.

Hypothesis H4. Compared to regular advice dyads, Simmelian-tied friendship dyads are more likely to share positive congruent informational justice perception.

2.6   Workgroups and Justice Perceptions

Formal organization structure comprise of boundaries such as different workgroups, departments, and spatial locations. Depending on the type of informal ties, the increased use of virtual workgroups allows ties to span across boundaries, opening access to new information and perspectives (McEvily & Zaheer, 1999; Burt, 2004). For example, strong friendship ties spanning boundaries encourage cooperation and remove hindrances (Krackhardt & Stern, 1988).

Employees a part of virtual workgroups may have ties that span multiple countries and departments. This increases opportunities for employees to access and compare justice perceptions. We suggest that while colleagues may seek justice perceptions across boundaries (Chia et al., 2006), close friends forge congruent perceptions. Close friends demonstrate emphatic concern and support for unfair treatment in each other (Coleman, 1990; Krackhardt & Kilduff, 1990), fostering similar attitudes (Gibbons, 2004). However, colleagues place more importance on self-interests (Verbeke & Wuyts, 2007), particularly if they are from different workgroups.

Not all perceptions endure across physical boundaries. Interpersonal justice perceptions are oriented toward individual supervisors and not the organization as a whole. Perceived interpersonal justice by an employee does not apply to his/her friend with a different supervisor, and therefore do not necessarily lead to congruent interpersonal justice perceptions. By contrast, distributive, procedural and interpersonal justice perceptions may propagate across boundaries.

Close friends are likely to empathize and reinforce organization-oriented justice perceptions, such as distributive justice (Cropanzano & Ambrose, 2001). For example, an employee in location A expresses pay dissatisfaction to a colleague-friend in location B. While both employees may have different initial perceptions, both may conclude that the organization did not treat employees as equals and thus unfair. Alternatively, the employee in location B may convince the friend in location A

otherwise, or not at all. The presence of a third friend will aid reinforcing a particular position.

Procedural and informational justice perceptions involve the ability to appeal injustice and the degree of transparency across the organization. The relative ambiguity of these justice items also prompt employees in virtual workgroups to seek out perceptions to reduce treatment uncertainties, such as the case of procedural justice (Hakonen & Lipponen, 2008). Like distributive justice, procedural and information justice perceptions are also organization-oriented rather than being supervisor-specific. Thus, it is possible that organization-oriented perceptions will endure across boundaries.

> *Hypothesis H5a*. Simmelian-tied friendship dyads are likely to share distributive justice perceptions across distributed workgroups.

> *Hypothesis H5b*. Simmelian-tied friendship dyads are likely to share procedural justice perceptions across distributed workgroups.

> *Hypothesis H5c*. Simmelian-tied friendship dyads are likely to share informational justice perceptions across distributed workgroups.

2.7 Justice Perceptions and Knowledge Sharing

Knowledge sharing within the organization may be defined as the exchange of information, expertise or feedback (Cummings, 2004). While knowledge sharing has been recognized as crucial to organizational success, equally important is the type of knowledge shared. Product knowledge (e.g. documentation) saves time while expert knowledge (e.g. advice and experience) improves work quality and performance (Haas & Hansen, 2007). Employees were found to regard expert knowledge as their own and product knowledge as organizational property (Constant et al., 1994). Thus employees are obligated to share product and not expert knowledge (Jarvenpaa & Staples, 2000).

Distributive justice perception is associated with commitment, citizenship (Aryee et al., 2002), and compliance behavior (Kim & Mauborgne, 1997). Unlike other perceptions, distributive justice perceptions do not induce counterproductive work behavior (Jones, 2008). Also, individuals sharing similar perceptions (such as of the organization) are likely to be closer and familiar with each other, sharing resources to solve problems (McPherson & Smith-Lovin, 1987; Gruenfeld et al., 1996; Umphress et al., 2003). Therefore, we suggest that individuals who share congruent distributive justice perceptions will be inclined to share product knowledge in order to get the job done.

> Hypothesis H6. Congruent distributive justice perceptions will be positively related to product knowledge sharing.

Positive procedural justice perceptions allow employees the ability to voice concerns and influence decisions about their work. This encourages volunteering, helping, and discretionary service behavior (Kim & Mauborgne, 1997; Colquitt, 2001; Simons & Roberson, 2003; Spitzmüller et al., 2006). This motivate individuals fulfill more than the basic job requirements to share expert knowledge (Kim & Mauborgne, 1997; Spitzmüller et al., 2006), and contribute to the community (Wasko & Faraj, 2000).

Interpersonal justice perception concerns the supervisor (Colquitt, 2001), and also encourages work performance akin to procedural justice perception (Simons & Roberson, 2003; Roch & Shanock, 2006; Jones, 2008). Similarly, informational justice perception instills voluntary performance-oriented behavior through trust and transparency (Colquitt, 2001; Turel et al., 2008; Ellis et al., 2009).

As procedural, interpersonal, and informational perceptions are related to employees are treated, recognized (Constant et al., 1994), we predict that positive perceptions will allow employees to share expert knowledge. Unlike distributive justice however, negative perceptions of procedural, interpersonal, and informational justice lead to counterproductive work behavior (Jones, 2008). We suggest that employees are likely to withhold utilizing expert knowledge in their work to sabotage work quality if they harbor negative perceptions of procedural, interpersonal, and informational justice items. Therefore, such individuals would be in a position to share and reciprocate expert knowledge only if they hold to congruent positive justice perceptions.

Hypothesis H7. Positive congruent procedural justice perceptions will be positively related to the expert knowledge sharing.

Hypothesis H8. Positive congruent interpersonal justice perceptions will be positively related to expert knowledge sharing.

Hypothesis H9. Positive congruent informational justice perceptions will be positively related to expert knowledge sharing.

We have discussed the effects of Simmelian-tied dyads on congruent justice perceptions, and the effects of congruent justice perceptions upon knowledge exchange. We noted that with Simmelian-tied dyads, there are greater trust, shared cognition and congruent perceptions. Considering that such strong ties between employees foster like-mindedness and congruent perceptions, these similarities in turn encourage work performance (Phillips et al., 2004) and knowledge exchange (Levin et al., 2002). Thus, we hypothesize that congruent justice perceptions mediate the relationship between Simmelian-tied dyads and knowledge sharing.

Hypothesis *H10*. Congruent justice perceptions mediate the relationship between Simmelian-tied dyads and knowledge sharing.

3 PROPOSED METHOD

3.1 Research Participants

We will conduct this research within virtual workgroups in a global knowledge intensive organization. Within each workgroup, members are both co-located and distributed across different continents and time zones. Communication occurs over mediums such as face-to-face meetings, and emails. The collaborative nature of these workgroups allows us an appropriate setting to execute our study.

3.2 Measures

Advice and Friendship Dyads. To capture reciprocated advice dyads, respondents will be asked to whom they provide and seek work-advice. To capture reciprocated friendship dyads, respondents will be asked whom they consider a personal friend (Krackhardt & Kilduff, 1990; Shah, 1998). A reciprocated advice dyad existed only if person i gives to or seeks advice from person j, and vice versa. The same applies to a friendship dyad. This gives us the raw advice and friendship dyads.

Simmelian-tied Advice and Friendship Dyads. A hypergraph matrix illustrating every instance in which a respondent is tied to every other respondent is derived from the raw dyadic matrix obtained from the survey. From this hypergraph, the matrix of Simmelian ties is then derived to determine which respondents are Simmelian-tied (Krackhardt & Kilduff, 2002).

Workgroup Membership. To study whether Simmelian-tied dyads transmit justice perceptions within and across organizational and geographical boundaries, workgroup membership are used. We consider workgroup boundaries of members who span geographical boundaries.

Justice Perceptions. Shared justice perceptions refer to the congruence in distributive, procedural, interpersonal and informational perceptions within a Simmelian-tied dyad. Congruent perceptions within a dyad are measured by taking the absolute difference in the rated perception. The measures are adapted from Colquitt's (2001) four-factor justice model to fit the organization. All of the items were measured using a 5-point Likert-type scale (1 = strongly disagree).

Knowledge Sharing. The degree of knowledge shared by each respondent to another respondent will be measured by indicating the frequency and type of knowledge shared over different mediums. Frequency is measured over a Likert-type scale (1 = never and 5 = several times a day).

Control Variables. We include three other variables to eliminate alternative explanations for our hypotheses. Different job hierarchy may alter justice perceptions, e.g. managers may not be open in communicating or expressing fairness perceptions to subordinates. We also control for organizational tenure. New employees may not attune to the organizational dynamics, while long-staying employees may have accepted certain practices as a norm. Finally, we control for individual centrality, which have been shown to increase the social influence of interactional justice (Umphress et al., 2003).

3.3   Study Design and Procedures

The independent variables, mediating variables, dependent variables and control variables will be collected through an online survey. The moderating variables will be gathered by the organization. The network survey will contain a list of study participants to capture the respondents' social and communication structure. As we are examining the influence of congruent justice perceptions and reciprocal knowledge sharing within dyads, we adopt a dyadic level of measurement and analysis.

The network survey will request each respondent to note to whom they turn to for work-related advice and whom they consider friends. From this set of responses, raw advice and friendship matrices will be generated. We will utilize a social network analysis package, UCINET 6 (Borgatti et al., 2002), to calculate advice and friendship Simmelian-tied dyads. A similar procedure will be used to calculate reciprocated knowledge-sharing dyads.

Distributive justice perception congruence will be calculated by taking the negation of the absolute difference of each rated response pair. This generates a matrix where a higher value between each pair signifies greater congruence. This procedure will be repeated to generate matrices of the differences in job hierarchy and tenure for each pair. Positive congruent procedural, interpersonal, and procedural justice perceptions will be calculated by generating a matrix for each justice. Positive justice perceptions between each pair will be marked with a 1, or otherwise a 0 will be given.

In line with existing dyadic studies (Umphress et al., 2003), we will adopt quadratic assignment procedure analyses to perform bivariate correlations as this procedure demonstrated the ability to remain unbiased despite the autocorrelation of network data (Krackhardt, 1988). Hypotheses testing will be conducted with a multiple regression quadratic assignment procedure analysis.

4   CONCLUSION

Our research proposed a theoretical model utilizing congruent justice perceptions as a mediator between Simmelian-tied dyads and knowledge sharing. This study sought to address the limitations and conflicts found in existing studies to examine how social structure may potentially influence justice perceptions between employees.

The effects of congruent justice perceptions on organizational outcomes were also examined, which may potentially differ from the effects of individual justice perceptions. For example, in situations of perceived injustice, a dyadic perspective demonstrated that helping behavior might still occur between close, like-minded individuals, whereas a purely individual perspective may not yield contribution behavior toward the organization. We also attempted to explain between fulfilling minimum job requirements and discretionary behavior through congruent justice perceptions. This is particularly crucial for organizations attempting to motivate their employees into sharing and utilizing their expertise and to achieve greater levels of work performance.

This study also attempted to explain how justice perceptions might propagate across local and distal boundaries within the organization. The ability for justice perceptions to carry throughout the organization potentially holds important implications for managers and decision-makers. For example, there may be a greater need for uniformity in making and executing decisions across the organization regardless of location to eliminate perceptions of bias.

There is much room for future research. Future studies might consider the effects of other factors that may potentially affect the flow of justice information such as network size (Fang & Shaw, 2008), small world networks (Shapiro et al., 2008), and external ties (Umphress et al., 2003). Issues such as culture may also need to be readdressed in the context of justice perceptions in virtual workgroups. The interactional effects between different justice perceptions through the use of fairness theory (Colquitt et al., 2005) or fairness heuristics theory (Van Den Bos & Lind, 2001) may also reveal greater insights into how congruent justice perceptions are formed and influence outcomes.

As organizations increasingly rely on useful knowledge and adopts greater use of distributed workgroups, there is a greater need to understand the concepts and mechanisms underlying the interactional effects between informal structure and justice perceptions upon the individual contribution behavior.

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