

THE EFFECTS OF INSTRUMENTAL, FRIENDSHIP, AND MULTIPLEX NETWORK  
TIES ON JOB PERFORMANCE: A MODEL OF COWORKER RELATIONSHIPS

By

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In this dissertation, I take a social network perspective to investigate several explanatory pathways through which workplace relationships impact individual job performance. Workplace relationships, including both formal coworker relationships and informal friendships, are integral in understanding employee behavior<sup>1</sup> because they have been linked to access to resources such as information, advice, and emotional support<sup>2</sup>. Social network researchers also recognize the potential for multiplexity, or the coexistence of multiple elements in a social relationship. For example, it is possible for someone to be both a coworker and a friend<sup>3</sup>. Although this type of overlap is common

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<sup>1</sup> Mitchell, J. C. (1969). The concept and use of social networks. In J. C. Mitchell (Ed.), *Social networks in urban situations* (pp. 1-50). Manchester: University of Manchester Press.; Wellman, B. (1988). Structural analysis: From method and metaphor to theory and substance. In B. Wellman & S. D. Berkowitz (Eds.), *Social structures: A network approach* (pp. 19-61). Cambridge, UK: Cambridge University Press.

<sup>2</sup> Kram, K. E., & Isabella, L. A. (1985). Mentoring alternatives: The role of peer relationships in career development. *Academy of Management Journal*, 28, 110-132.; Rawlins, W. K. (1992). *Friendship matters: Communication, dialectics, and the life course*. Hawthorne, NY: Aldine.; Sias, P. M. (2005). Workplace relationship quality and employee information experiences. *Communication Studies*, 56, 375-395.; Sias, P. M., & Cahill, D. J. (1998). From coworkers to friends: The development of peer friendships in the workplace. *Western Journal of Communication*, 62, 273-299.; Winstead, B. A., Derlega, V. J., Montgomery, M. J., & Pilkington, C. (1995). The quality of friendships at work and job satisfaction. *Journal of Social and Personal Relationships*, 12, 199-215.

<sup>3</sup> Gluckman, M. (1962). Les rites de passage. In D. Forde, M. Fortes, M. Gluckman, & V. W. Turner (Eds.), *Essays on the ritual of social relations*. Manchester: Manchester University Press.; Verbrugge, L. M. (1979). Multiplexity in adult friendships. *Social Forces*, 58, 1286-1309.

in organizational contexts<sup>4</sup>, practically no research to date has examined the effects of these complex relations on job performance. To address this limitation, I propose and test a model predicting that multiplexity impacts job performance through two offsetting pathways: (a) *resource accumulation*, whereby the security, intimacy, and trust inherent in these relations increases a person's resources, eliciting a positive association with job performance and, (b) *resource depletion*, whereby the increased time and attention dedicated to these relations detracts from a person's available resources, eliciting a negative association with job performance. To test this model, data was collected from 182 employees of nine independent companies in the southeast United States. Overall, findings suggest that multiplex relationships that comprise both instrumentality and friendship are largely functional for work performance by providing a broader range of support resources, but also have significant trade-offs in the form of curtailing employees' ability to focus on their work.

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<sup>4</sup> Fischer, C. S. (1982). What do we mean by "friend"? An inductive study. *Social Network*, 3, 287-306.; Gersick, C. J. G., Bartunek, J. M., & Dutton, J. E. (2000). Learning from academia: The importance of relationships in professional life. *Academy of Management Journal*, 43, 1026-1044.

## CHAPTER 1 INTRODUCTION

Inevitably, people make social connections at their place of employment (Fine, 1986). Indeed, today's information-centric and collaborative workplace forces employees to constantly interact with their coworkers by blurring the boundaries between work and home (Lee, MacDermid, & Buck, 2000; Scandura & Lankau, 1997); the 60-hour workweek is now considered part-time and "the volume of interactions is headed toward infinity" (Miller & Miller, 2005). Moreover, the shift from independent routine tasks toward more collective interdependent tasks has increased team-based work, amplifying coworkers' salience and influence on employees' attitudes and behaviors (Devine, Clayton, Philips, Dunford, & Melner, 1999; Harrison, Johns, & Martocchio, 2000; Lawler, Mohrman, & Ledford, 1995). Specifically, eight out of ten U.S. organizations with 100 or more employees use teams, and of the organizations that utilize team-based work, 53% of employees are involved in a team (Gordon, 1992). In addition to the frequency with which workplace interactions occur, they are also extremely important from an organizational standpoint, as they have been linked to moral and material support, work and non-work advice, and quality information exchanges (Kram & Isabella, 1985; Sias, 2005; Sias & Cahill, 1998; Rawlins, 1992; Winstead, Derlega, Montgomery, & Pilkington, 1995). Consequently, coworkers are not only a vital part of a workplace's social environment, but they can also, literally, define it (Chiaburu & Harrison, 2008; Schneider, 1987).

One way that scholars have viewed these social interactions is through the lens of social networks. Rather than focusing on how the attributes of coworkers are fundamental determinants of behavior (Schneider, 1987), social network analysts take

the perspective that individual behavior is a function of the patterns of relational ties among individuals. More specifically, a social network consists of a set of social actors and the ties among them, and behavior is affected by the kinds of ties and networks in which people are involved, rather than by norms and attributes that individuals possess (Wellman, 1988).

Within the work context, social network researchers tend to distinguish between two forms of relational ties (Cutrona & Russell, 1987; Ibarra, 1993). *Instrumental ties* are closely bound to the formal organizational structure. They arise in the course of work role performance and are composed of formally specified relationships among people who interact to accomplish an organizationally defined task (Ibarra, 1993). *Expressive ties*, which are frequently considered friendship ties (Brass, 1992), may develop out of existing work relationships; however, they tend to be less closely bound to formal structure and work roles. They are characterized by discretionary patterns of interaction and higher levels of closeness than ties that are exclusively instrumental (Ibarra, 1993; Kram & Isabella, 1985).

Several theoretical and empirical studies have examined consequences of network relationships in the workplace, particularly job performance. Generally, the research that has been conducted suggests that instrumental ties have positive implications for individual-level job performance (Baldwin, Bedel, & Johnson, 1997; Cross & Cummings, 2004; Sparrowe, Liden, Wayne, & Kraimer, 2001), whereas friendship ties, albeit less useful in regard to performance, are associated with positive attitudes toward coworkers and the organization (Baldwin et al., 1997; Cohen, & Wills, 1985; Thoits, 1995; Winstead et al., 1995). Despite this work, however, relatively little

research has investigated the link from network relations to job performance through the resources they provide.

Moreover, although a large number of studies examine instrumental and friendship networks independently of one another (Ingram & Zou, 2008; Kram & Isabella, 1985; Lincoln & Miller, 1979), few have examined *multiplexity*, which refers to the number of exchange contents (e.g., friendship and coworker) in a single social relationship (Gluckman, 1962; Ibarra, 1992; Lincoln 1982; Verbrugge, 1979). Relationships are comprised of a bundle of specific interactions (Burt & Schott, 1985), and it is common for these interactions to overlap. For example, friendships frequently evolve from existing work relationships (Bridge & Baxter, 1992; Feld, 1981; Fine, 1986) due to factors such as frequent opportunities for contact, perceived similarities, and extra-organizational socializing (Lincoln & Miller, 1979; Sias & Cahill, 1998; Verbrugge, 1979). In this case, the norms associated with friendship and coworker roles are superimposed, creating multiple reasons for interaction. Even though researchers emphasize the importance of instrumental and friendship ties on employee behavior, to date we know relatively little about the explanations for how their joint effects—i.e., multiplexity—relate to job performance. In fact, to my knowledge, not one study has directly investigated the effects of multiplexity in individuals' ties on individual-level job performance.

In this dissertation, then, my primary goal is to investigate the various pathways through which multiplexity relates to job performance. In doing so, I address recent calls for research that adopts a “blended” view of workplace relationships—in other words, research that captures the “co-existence of affective and instrumental interest within the

same network relationship” (Ingram & Zou, 2008). Secondly, I examine multiplex relationships independently from exclusively instrumental and friendship ties in order to isolate their unique effects. This is particularly important because, to date, no research of which I am aware has weighed the costs and benefits of multiplex relationships in the same study (Ingram & Zou, 2008). Thus, I intend to examine both the positives associated with social networks in the workplace, as well as their associated tensions.

I use the theory of social capital as the conceptual grounding for the general predictions in this study because it provides an explanation for why workplace relationships influence performance. Specifically, the core idea guiding social capital is that the goodwill that others offer is a valuable resource. Research drawing from social capital theory predominantly focuses on the resources that are gained from network relationships (Adler & Kwon, 2002; Leana & Van Buren, 1999; Oh, Chung, & Labianca, 2004; Seibert, Kraimer, & Liden, 2001). Therefore, I propose, first, that network relations have positive effects on job performance as a function of *resource accumulation*, or the additional resources an individual has access to through their social network relations. This idea is consistent with literature on coping, whereby social networks provide social support in the form of informational and emotional support. However, when viewed from a coping perspective, there is reason to believe that social networks may also negatively impact performance through *resource depletion*, or the resources individuals lose as a result of attempts to manage these ties in a work context. Hence, I also propose that network relations have negative effects on job performance through the strains created by these ties.

## CHAPTER 2 LITERATURE REVIEW

### **Social Networks Literature**

In order to understand how social network relationships can contribute to employee performance, it is beneficial to begin by reviewing the literature on interpersonal relationships. In this section, I first overview the history of the social network perspective, then explain networks from a conceptual standpoint and, last, integrate the theoretical perspectives linking social networks to individual behavior and job performance. In the sections that follow, I evaluate the current state of the literature on workplace social networks, then consider how the integration of social network relations can enhance our understanding of the mechanisms that contribute to performance in the workplace, and conclude by discussing gaps in this work.

#### **A Brief History of the Network Perspective**

The study of interpersonal relationships has a long history, particularly in sociology, anthropology, and social psychology. Much of this preliminary work was conducted during the 1930s and 1940s. In sociology, Simmel (1955) formally introduced theoretical discourse on relational ties by discussing the formation of and loyalty towards various affiliations. He noted that individuals establish contacts that are “related” to them “by virtue of similarity of talents, inclinations, activities, and so on” (p. 128). This sparked sociological research examining interaction and communication as fundamental in understanding of social life (Cooley, 1964; Park, 1924), much of which focuses on the sources and determinants of social relations (Merton, 1957; Parsons, 1956, 1960). Meanwhile, in the footsteps of exchange theorists (Frazer, 1919; Lévi-Strauss, 1969), anthropologists began to emphasize the content of network

relationships (Homans, 1961). Finally, in what was arguably the most influential development preceding contemporary social networks, Jacob Moreno coined the term *sociometry* and conducted the first long range sociometric study from 1932 to 1938 at the New York State Training School for Girls (Freeman, 2004). The word sociometry has its origins in the Latin word “socius,” meaning social, and the Latin “metrum,” meaning measure, implying a way to measure the degree of relatedness among people. At its core, sociometry shows the patterns of how individuals associate with each other (Wasserman & Faust, 1994). As part of his study, Moreno used sociometric techniques to assign female residents to residential cottages, and found that assignments on the basis of sociometry reduced the number of runaways from the facility (Moreno, 1953). Influenced by Moreno’s work, social psychologists enriched the idea that the “self” develops within a connected group of social relationships by studying communication networks in small groups (Leavitt, 1951; Lindzey & Byrne, 1968). For instance, Bavelas (1950) demonstrated that various communication patterns had unique implications for recognized leadership, errors in performance, and group member satisfaction.

However, not until the 1960s and 1970s did researchers begin systematic observations of interpersonal relationships. Although previous work drew from social network concepts, and had adopted methods to visually depict relational ties through sociometric graphs, it was at this point that networks transformed from a metaphorical concept to a mathematical one (Tichy, 1981). Methodological advancements provided researchers with a foundation to illustrate structural features of social contexts that are more than the sum of individual properties (Alba, 1982), and led Mitchell (1969) to define social networks as “a specific set of linkages among a defined set of persons,

with the additional property that the characteristics of these linkages as a whole may be used to interpret the social behavior of the persons involved” (p. 2).

From the contemporary perspective, a social network is comprised of a set of “nodes” (which represent individuals, groups, or organizations) and a set of ties that represent some sort of interaction between the nodes. These interactions can be characterized by resources that are transferred through the ties, such as communication or advice, or by the content of the relationship, such as friendship or trust.

### **Theoretical Perspectives of Social Networks**

The notion that resources are transferred through network ties is conceptualized theoretically in a number of ways, but the theory of social capital is conceivably the most salient (Lin, 1999). Generally, the underlying premise of the social capital perspective is that the investment in social relations provides various returns (Lin, 1999). More specifically, social capital is “the sum of actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit” (Nahapiet & Goshal, 1998, p. 243). In this way, social capital encompasses both the network itself and the assets that can be mobilized through the network (Bourdieu, 1986; Burt, 1992). Although social capital can take many forms, each form shares two key characteristics, namely, that they constitute some aspect of the social structure, and that they facilitate the actions of individuals within the structure (Coleman, 1990). The numerous forms of social capital can be categorized more definitively into three broad dimensions: structural, cognitive, and relational.

Structural social capital is the most traditional perspective, whereby social capital is viewed as a characteristic of the structure of a network, and resources are accessed through individuals’ location in their network and the pattern of ties between them and

others (Burt, 1992; Mitchell, 1969). It concerns the configuration of the entire social system (i.e., the overall pattern of connections between people in the whole network). In other words, structural social capital considers who you reach and how you reach them (Burt, 1992). One of the most popular examples of this form of social capital is Burt's (2000) theory of structural holes. A structural hole is said to exist between two people who are not connected to each other in a network (Burt, 1992). According to this theory, it is advantageous for an individual to be connected to many other people who are not connected to each other; in other words, to be the "broker" between two individuals in a network. In this way, in order for the two unconnected people to communicate, they must do so indirectly through the broker. Thus, the broker has the ability to control the flow of information, and can decide upon his discretion which information to pass on, and which to retain (Burt, 2000; Pollock, Porac, & Wade, 2004). According to Burt (1992, 1997), networks rich in structural holes provide an individual with three primary benefits: more unique and timely access to information, greater bargaining power and control over resources, and greater visibility and career opportunities throughout the social system.

Cognitive social capital is a second but much less researched form of social capital, which refers to those resources that provide shared representations, interpretations, and systems of meaning among parties. From this perspective, knowledge and meaning are social artifacts that are necessarily embedded in social context (Nahapiet & Ghoshal). Through mutual identification and meaningful communication between individuals, a shared context or shared paradigm can be created, which facilitates a common understanding of collective goals and the proper or

acceptable behaviors in a social system (Tsai & Ghoshal, 1998). Further, this shared cognition can facilitate the creation of intellectual capital (i.e., the knowledge and “knowing” of a social collectivity), which is a particularly valuable resource for productive activity (Marshall, 1965). This dimension captures the core of what Coleman (1990) described as “the public good aspect of social capital” (p. 315). In an organization, a shared vision can help promote group actions that, ultimately, benefit the organization as a whole.

The final form, relational social capital, is characterized by the kind of personal relationships people have developed with each other through a history of interaction (Granovetter, 1992), and the assets that are rooted in these relationships (Tsai & Ghoshal, 1998). It focuses on the particular relationships people have, for example, instrumental or friendship, that influence their behavior. In other words, while the structural dimension is concerned with whether employees are connected at all, the relational dimension focuses on the quality or nature of those connections (Bolino, Turnley, & Bloodgood, 2002). This is the form that I focus largely on in this dissertation. Relational capital is quite similar to Granovetter’s (1973) theory of strong and weak ties. Tie strength can range from weak (superficial links lacking emotional investment) to strong (close, stable, and binding), and is a function of “the amount of time, the emotional intensity, the intimacy (mutual confiding), and reciprocal services that characterize the tie” (Granovetter, 1973, p. 1361). A multitude of network literature emphasizes the instrumental benefits of weak ties. For example, research in this camp suggests that weak ties provide unique, non-redundant information because they create a “bridge” to parts of the social system that are otherwise disconnected, whereas strong

ties produce redundant information because they tend to form between similar others that are all interconnected (Krackhardt, 1990).

Within organizations, however, both strong and weak ties can be desirable, despite potential redundancies. On one hand, weak ties can facilitate the completion of job tasks because they do not complicate the nature of the work interaction by integrating personal issues that can create distractions (Wellman, 1993). Weak ties have been associated with getting a job (Granovetter, 1973), and career success (Seibert et al., 2001). On the other hand, strong ties provide a wider breadth of social support (Wellman & Wortley, 1990), and influence and persuasion are most easily exercised in social relations that are close and intense (Granovetter, 1982; Stinchcomb, 1987). Strong ties have been linked to getting assistance in an uncertain or crisis situation (Granovetter, 1982; Kaplan, 1984, Krackhardt, 1992) and developing more central positions in organizational networks (Brass, 1984; Ibarra, 1992).

It is important to note that although the dimensions of social capital are categorized as independent, they are actually highly interrelated (Nahapiet & Ghoshal, 1998). Indeed, competitive advantage is not due to tie weakness, per se, but the strength of ties in conjunction with one's original position in the hierarchical social structure. For example, Lin and colleagues assert that network social structures have a pyramid shape in terms of accessibility to instrumental resources, and some people have a position nearer to the top than others (Lin, Vaughn, & Ensel, 1981a, b). They argue that weak ties facilitate reaching people with higher status. Thus, having weak ties is only important to the extent that an individual's original position on the hierarchy is low. If one already holds a high status position, however, then weak ties do not

provide any advantage over strong ties. Taken together, these three perspectives provide a useful foundation for understanding various interpersonal networks within organizations.

### **Social Capital and Job Performance**

Keeping in mind that social capital in general, and relational social capital more specifically, emphasizes how interpersonal relationships have a significant impact on behavior, it seems particularly relevant to investigate how these network relationships may impact work behavior. One of the most critical behaviors within the work context is job performance, which includes actions and behaviors that are under the employee's control, are prescribed by formal role requirements, and that contribute to essential organizational functioning (Motowidlo & Van Scotter, 1994; Rotundo & Sackett, 2002). Because job performance concerns the nature of individual employee behavior, most research attempts to predict performance with concepts unique to particular individuals, such as employee motivation, organizational commitment, job satisfaction, and individual traits (Barrick & Mount, 1991, 1993; Iaffaldano & Muchinsky, 1985; Judge & Bono, 2001; Kluger & DeNisi, 1996). However, since social capital allows individuals to achieve ends that would be otherwise impossible without it, or that could only be achieved at an extra cost, it is also important to consider how the interpersonal interactions individuals have in the workplace can enhance or constrain performance.

### **Networks within the Work Context**

Although the study of interpersonal relationships spans across multiple scholarly domains (Tichy, 1981), most applicable to this dissertation are those relationships that employees form within the work context. Workplace relationships are unique interactions that have important implications for the individuals in those relationships

and the organizations in which the relationships exist and develop (Sias, 2005); they function as decision-making, information-sharing, and instrumental and emotional support systems (Kram & Isabella, 1985; Rawlins, 1992). As with any relationship, workplace relationships can range from non-intimate acquaintances that are relatively narrow and superficial to intimate relationships that are more profound, consequential, and broad in scope (Granovetter, 1973).

### **Instrumental and Friendship Network Ties**

In the interest of understanding the characteristics of interpersonal relationships that occur in the work context, researchers tend to distinguish between two forms of relational ties: *instrumental* and *expressive* (Cutrona & Russell, 1987; Dean & Lin, 1977; Ibarra, 1993). These ties are referred to as uniplex because they involve one exclusive type of content, in this case, work-related or affective, respectively (Burt & Schott, 1985). According to Podolny (2001), network ties function as pipes, or conduits, through which contents flow. Consistent with the idea that the content of the transaction between two individuals indicates what the tie represents, instrumental and expressive ties are most often characterized by the content transferred. Tichy, Tushman, and Fombrun (1979) noted two basic contents: (a) the exchange of information and ideas and (b) the exchange of affect. Along these lines, researchers indicate that the relevant resource for instrumental ties is information, and the relevant resource for friendship ties is affect or social liking (Brass, 1992).

### **Instrumental networks defined**

Instrumental network ties are those that “arise in the course of work role performance and involve the exchange of job-related resources, including information, expertise, professional advice, political access, and material resources” (Ibarra, 1993, p.

59). These ties refer almost explicitly to the formally defined roles that employees serve when providing task-related help, advice, or information.

### **Expressive networks defined**

Expressive network ties tend to be less closely bound to formal structure and work roles, and involve interpersonal affect and the exchange of emotional support that is not related to the task itself (Ibarra, 1993; Lazega & Pattison, 1999). The origin of expressive ties is not as straightforward as for instrumental ties, so they deserve a more detailed review. They are not formally prescribed, but develop from discretionary interactions. These ties are most often characterized (and, as such, will be described throughout the remainder of this dissertation) by friendship (Brass, 1992), which Wright (1984), defined as “a relationship involving voluntary or unconstrained interaction in which the participants respond to one another personally, that is, as unique individuals rather than as packages of discrete attributes or mere role occupants” (p. 119). Ingram and Zou (2008) offer a similar definition, describing friendship as a personal, affective relationship, whereby “personal signifies that the relationship is contingent on the specific participants...Affective highlights that the friendly interaction is based on intimacy and emotive exchange” (p. 170). The common thread in these two definitions is that the individuals involved in the friendship could not be substituted without changing the fundamental nature of the relationship. It is important to note here that the term friendship is persistently ill-defined (cf. Fisher, 1982; Krackhardt, 1990). It tends to be used casually, covering varying degrees of intimacy (Halpern, 1996). In this dissertation I intend to capture friendships that involve frequent socializing both within and outside the work context about work and personal issues. I purposefully omit friendships that could be considered “friendly relations”—which refers to cordiality extended to

acquaintances (Bullis & Bach, 1991; Kurth, 1970)—because whereas friendship involves making an emotional investment in a relationship and includes behavioral requirements such as a history of interaction, “friendly relations” can develop very rapidly without any significant investment of time or history of interaction (Casciaro & Lobo, 2008).

Consistent with the criteria that characterizes strong ties (Granovetter, 1973), in his model of friendship, Wright (1984) extended two criteria to represent the strength of a friendship: *person-qua-person*, or the degree of mutual concern and interest that the individuals show for one another, and *voluntary interdependence*, or the degree that the individuals commit free time to interacting with one another. Thus, relationships characterized by friendship are fundamentally different than instrumental relationships because they include a certain degree of preference and liking. Due to the companionship inherent in these ties, research has shown that friends engage in more frequent, intimate, and open communication than do acquaintances (Sias, 2005; Sias & Cahill, 1998).

### **Forms of network participation**

Before reviewing the research that has been conducted on instrumental and friendship ties, it is necessary to explain the different ways in which people can participate in these networks. In general, the most common ways to conceptualize the extent to which people are involved in a network is the concept of *network centrality*. This refers, generally, to how prominent an individual is in a network (Scott, 2000). More specifically, though, centrality can be divided into two structural components, which capture the quantity of network ties and the quality of network ties. In terms of quantity, the most applicable centrality measure is termed degree centrality, which refers

explicitly to the number of ties an individual in a network has. Freeman (1979) conceptualized this measure as “activity”, and Burt (1982) refers to it as network size. For example, in an instrumental network, the greater number of people an individual has available to go to for instrumental reasons, the greater his degree centrality. This measure does not take into account the value of information received, only the amount of it.

However, job performance is, to some extent, a product of obtaining the “right” information. In terms of quality, then, the most applicable centrality measure is *betweenness centrality*. As a parallel to the concept of structural holes (Burt, 2000) discussed earlier, betweenness centrality refers to the extent to which an individual falls between two other individuals on the shortest path that connects them and who are not otherwise connected to each other (Freeman, 1979). Thus, resources such as information transferred through the network ties can only be indirectly transferred from one individual to another through the focal individual. Conceptually, betweenness can be interpreted as control (whereby individuals are dependent on the “between” individual for access to resources) (Brass, 1992). Betweenness centrality in an instrumental network, for example, may be particularly useful in increasing one’s perspective and facilitating access to more useful knowledge. More specifically, because a “between” individual is linked to two people who are not connected to each other, the individual may have greater access to unique, non-redundant information. These concepts of centrality will be revisited in the section concerning the theory and hypotheses associated with this dissertation. But, a basic understanding of these concepts helps to explain research that has been conducted on workplace relationships.

## Research on instrumental and friendship networks

The research conducted to date on instrumental and friendship ties can be divided into three categories. The first is concerned with the formation of these relationships. For example, Lincoln and Miller (1979) found that informal relations were more often formed based on attributes such as gender and race, whereas instrumental ties were more likely to be formed based on authority and education. Further, Ibarra (1992) showed gender differences in relational patterns, such that men were more likely to form both friendship and instrumental ties with other men. Conversely, women were more likely to form differentiated network patterns, such that they primarily selected women for friendship ties, but selected men for instrumental ties.

Related to the latter study, the second category of research on instrumental and friendship ties is comprised of work that examines the gender differences in receipt of network returns. There is some evidence that women do not benefit to the same extent as men from their network position due to homophily<sup>5</sup> (the predisposition to interact with similar others; McPherson, Smith-Lovin, & Cook, 2001), whereby women who befriend other women are unlikely to gain access to useful information or have the opportunity to interact with high-status others (Ibarra & Smith-Lovin, 1997). However, there is also research contradicting this conclusion, suggesting that women are marginalized “more from exclusionary pressures than from their preferences for women friends (Mehra, Kilduff, & Brass, 1998, p. 441). For example, Ibarra (1992) found that, relative to women, men received greater returns on their network investments in the form of more centrally located network positions. Moreover, McGuire (2000a) suggested that informal

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<sup>5</sup> More specifically, homophily is the principle that a network tie between similar people occurs at a higher rate than among dissimilar people (see McPherson et al., 2001 for a review).

networks contribute to gender inequality, such that women's requests for help will have less priority for their network members, contributing to their indirect exclusion from informal networks. Likewise, McGuire (2000b) concluded that women occupied positions of lower status that limited their access to powerful coworkers.

The third category of research on instrumental and friendship ties includes research conducted on the consequences of network ties. This research predominantly focuses on positive outcomes of these ties. To date, researchers have identified links between network ties and access to resources such as social support, and have identified direct links between network ties and more distal outcomes such as career success, performance, or satisfaction. However, there is relatively little research that investigates the link from networks to performance through the resources they provide.<sup>6</sup>

When considering the link between social network ties and access to resources, the primary resources that are examined are informational and emotional support (Lin, Ye, & Ensel, 1999). Interestingly, research shows that not all types of network ties provide the same kind of support (Wellman & Wortley, 1990). In terms of access to information, a good deal of research indicates that instrumental coworker relationships are a valuable source of information. For instance, in an extension of the idea that information is intended to help newcomers cope with uncertainty, Miller and Jablin (1991) examine the means by which newcomers seek information. In accordance with Katz's (1980, p. 95) assertion that employees "reduce uncertainty primarily through interpersonal and feedback processes and interactions," they conclude that instrumental

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<sup>6</sup> A notable exception is the study conducted by Seibert et al. (2001). These researchers modeled indirect pathways from network ties to indicators of career success through access to information, access to resources, and career sponsorship.

relationships with coworkers are a valuable source of information regarding role clarification and development of one's self-image. Similarly, in a study of accountants from five large firms, Morrison (1993) focuses on the role of information in the newcomer socialization process because, by definition, "socialization involves the process of learning and adjustment, both of which require information" (p. 558). Interestingly, she not only found that newcomers received social feedback and normative information from instrumental peers, in general, but that they sought information from these peers more often than from supervisors or from impersonal sources such as manuals and computer-generated reports.

Moving past informational resources, research shows that friendship ties provide access to emotional resources. In the words of Ralph Waldo Emerson (1960), "friendship is for aid and comfort through all the relations and passages of life and death" (p. 44). Along these lines, Lazega and Pattison (1999) conducted a case study in a corporate law firm to examine the routine transfers or exchanges among individuals of various kinds of resources. They asserted that friends demonstrate a willingness to help with personal difficulties by providing emotional support. Further, McGuire (2007) developed a typology of social support that coworkers provide and, through a series of interviews, found that the more an individual perceived intimacy in a relationship, the more they reported to receive emotional support such as listening, counseling, and encouragement.

There is also research that directly examines the relationships between network ties and outcomes such as performance and job satisfaction. Generally, this research implies that instrumental ties have positive implications for job performance, whereas

friendship ties have benefits related to job attitudes (Cohen & Wills, 1985; Lazarus & Folkman, 1984; Thoits, 1995). For example, Sparrowe, Liden, Wayne, and Kraimer (2001) sampled five organizations composed of 38 work groups to examine the effects of instrumental networks on performance. They examined a specific type of instrumental network, namely, an advice network, which they explain is comprised of relations through which individuals share resources such as information, assistance, and guidance that are related to completion of their work. They found that centrality in an instrumental advice network was positively related to individual job performance.

Likewise, Cross and Cummings (2004) focus on the impact of information network structure on individual performance. They hypothesize that centrality in an information network should provide access to expertise and information relevant to job performance and found that involvement in an information network was positively related to performance ratings in a sample of engineers and consultants. Similarly, Baldwin, Bedell, and Johnson (1997) asked a sample of M.B.A. students to indicate “which individuals are important sources of school-related advice or whom you approach if you have a school-related problem.” They used this information to construct a communication network, which they explain is more purely instrumental than are friendships. The results of this study showed that centrality in a communication network was positively related to individual grades.

Conversely, research findings suggest that friendship ties are less useful in regard to facilitating job performance, but they are associated with positive attitudes toward coworkers and the organization (Cohen, & Wills, 1985; Lazarus & Folkman, 1984; Thoits, 1995). For example, Baldwin and colleagues (1997) found that centrality

in a friendship network was not significantly associated with individual performance, but that it was positively related to reports of satisfaction. Further, Winstead, Derlega, Montgomery, and Pilkington (1995) sampled faculty and staff at two universities, and demonstrated that greater frequency of interaction with friends at work was positively related to job satisfaction.

However, much of the research on the consequences of instrumental and friendship ties is also inconsistent. For example, whereas some research suggests that instrumental ties have positive implications for performance because they provide information, assistance, and guidance regarding task completion (Sparrowe et al., 2001), research has shown, conversely, that going to coworkers for information necessary to get their job done is negatively related to quality of information received (Sias, 2005). Similarly, although Sias and Cahill (1998) found that individuals who were friends with their coworkers tended to engage in more frequent, intimate, and open communication, research also suggests that workplace friendships can intensify relational costs by creating misunderstandings and incompatible goals (Bridge & Baxter, 1992; Ingram & Zou, 2008; Winstead et al., 1995).

One explanation for these inconsistencies is that, overwhelmingly, researchers fail to distinguish, both conceptually and methodologically, between those relationships that contain both affective and instrumental content and those that are exclusively instrumental or expressive. For example, when asking individuals to identify who they perceive as their instrumental ties, researchers most often fail to inquire whether these ties also serve an affective function. In this way, the effects of exclusively instrumental ties are not truly isolated, and “causal inferences may be inaccurate because observed

effects may actually be due to the expressive component of these relationships” (Ibarra, 1993, p. 60). I am aware of only one study that explicitly isolates instrumental and affective network ties from each other to examine their unique effects. Specifically, Rook (1984) instructed participants to name the people from whom they received instrumental and emotional support, and then constructed a measure of the number of people who performed each function by “summing the number of unique names given” (p. 1100) and excluding those names that were listed in both networks. Notably, though, ties that are exclusively instrumental do not necessarily refer to ties with people to whom an individual does not like. Exclusively instrumental ties can be positively or negatively valenced. For example, an employee can have a friendly, polite relationship with a coworker to whom they go for instrumental purposes, but who they consider more of an acquaintance than a “friend” according to the definition provided earlier (Halpern, 1996; Wright, 1969, 1984). Furthermore, employees could approach coworkers who they do not particularly like, but who they must work with to get a job done (Wellman, 1993).

### **Multiplex Network Ties**

Although network researchers often distinguish between task-related interactions and interactions based on interpersonal attraction, organizational and network scholars have also documented a significant overlap in these functions. Indeed, affective and task-related foundations for network ties are unavoidably intertwined in any workplace social interaction (Homans, 1961; Lindenberg, 1997; Tichy, 1981), and this idea provides a potential avenue for addressing the inconsistencies noted in the previous section. In particular, work relationships are not stable and invariable but are, rather, dynamic, constantly developing and broadening in scope. Thus, it is difficult to conceive of network ties as comprising of only one type of resource (Oh et al., 2004). On one

hand, relationships that originally served only an instrumental function can evolve into serving an emotional function. For example, at a certain point, employees form friendships with people to whom they initially only went to for instrumental reasons since, as Fine (1986, p. 185) noted, “work is frequently punctuated by acts of friendship.” On the other hand, friendships can take on an auxiliary component, since friendships may also be instrumental in obtaining other relevant resources such as information or rewards (Krackhardt, 1992). According to Lincoln and Miller (1979), friendship networks are not merely sets of linked friends, but also “systems for making decisions, mobilizing resources, concealing or transmitting information, and performing other functions closely allied with work behavior and interaction” (p. 196).

As opposed to uniplex ties, the degree to which two participants are linked through multiple relationships is referred to as *multiplexity* (Burt, 1983; Burt & Schott, 1985; Ibarra, 1992; Verbrugge, 1979). Multiplexity is most often examined as some combination of instrumental and affective components within the same relationship. This dissertation is particularly concerned with multiplex relationships that constitute an instrumental component provided by relationships with coworkers and an affective component provided by relationships with friends. In fact, this is quite common; for instance, Gersick, Bartunek, and Dutton (2000) conducted interviews with faculty members from six management schools, and found that 57% of them describe people as both friends and colleagues.

### **Forms of multiplex network participation**

Unlike the research addressing instrumental-only and friendship-only ties, the research that has been conducted on multiplexity does not take a “centrality” perspective. Rather, scholars implicitly take a “tie strength” approach, whereby the

strength of a network tie refers to the balance of personal network relationships that are “close, stable, and binding relative to weaker, more superficial links lacking emotional investment” (Ibarra, 1993, p. 62). According to Ibarra (1993) and Brass (1992), the more relationships that link one person to another, the stronger the link. Therefore, a majority of the research on multiplexity theorizes that multiplex ties are stronger than exclusively instrumental or friendship ties (Brass, 1992; Granovetter, 1982). Although this argument has merit, scholars have not yet examined multiplexity from a centrality perspective. However, it is reasonable to believe that the concepts of degree and betweenness centrality also apply to multiplex networks. More specifically, degree centrality would provide access to a greater number of alternative individuals who serve multiplex functions, whereas betweenness centrality would allow access to a greater variety of non-redundant, and likely more useful, resources.

### **Research on multiplex networks**

Unfortunately, altogether there has been surprisingly little research conducted to directly examine multiplexity in instrumental and friendship relations. However, as stated in the previous section, relationships that involve the overlap of instrumental and affective relations are common in the organizational context. So, I draw from organizational literature to, first, introduce research on organizational relationships that indirectly exemplify multiplexity, specifically, literature on developmental relationships (Kram & Isabella, 1985).

Mentoring relationships offer a relevant example of workplace interactions that may not be exclusively instrumental or affective in nature. In particular, Kram and colleagues (Higgins & Kram, 2001; Kram, 1988) focus on mentor-protégé relationships, and theorize that these developmental relationships range in strength, characterized by

reciprocity, mutuality, and interdependence (Fletcher, 1996; Miller, 1986). Rather than take the traditional perspective that mentoring relationships fill only a singular role, they advocate that these relationships should be viewed as multidimensional because, on one hand, they enhance opportunities for career advancement and, on the other hand, they provide psychosocial support.

Moreover, Kram and Isabella (1985) look beyond the traditional superior-subordinate mentoring relationships to propose a continuum of peer relationships. They find that “information peer” relationships are similar to those that we describe as exclusively instrumental, whereas “special peer” and “collegial peer” relationships are more similar to exclusively friendship and multiplex relationships, respectively. Information peer relationships focus largely on information about work and the organization, and are characterized by low levels of trust and self-disclosure. This tends to be the most common form of peer-coworker tie. One respondent in their study provided the following insight: “I think it’s just a friendly exchange, very little giving back and forth. It’s primarily informational” (p. 119). Special peer relationships are more analogous to exclusively friendship ties. These relationships are characterized by intimacy and confirmation, as well as continuity and stability, and include a high degree of self-disclosure. One respondent described special peer relationships by stating, “It’s relatively intangible...I think we enjoy one another’s company...It is nice to have someone to talk to about [personal] things” (p. 121). Finally, Kram and Isabella’s conceptualization of collegial peers are those that are most similar to multiplex relationships. Collegial peers are characterized by increasingly complex individual roles and widening boundaries; the information sharing function is joined by increasing levels

of emotional support, feedback, and confirmation. A respondent described this type of relationship in the following manner: “There’s a lot of give and take – on a professional basis and on a social basis” (p. 121). The research on peer mentoring provides a useful foundation from which to build propositions about the influential nature of relationships that blur the boundary between strictly formalized and more informal content.

Moving past organizational research that parallels the notion of multiplexity, I review, next, the bulk of the literature that has been conducted on multiplexity to date. However, because multiplexity can refer to overlap in a domain (e.g., work and home), relationship content (e.g., friendship, advice, socializing), or attributes that characterize the meaning of the relationship (e.g., race, age, occupation), the respective research is unnecessarily sporadic in terms of its application. For example, Verbrugge (1979) examined adult friendships to determine the causes of multiplexity among kin, neighbors, and coworkers. She posed three critical questions: (a) what motivates adults to develop multiplex relationships? (b) does multiplexity occur throughout a person’s friendship network, such that if one close friend is, for example, also a relative, are other close friendship also relatives? and (c) are friendships often highly multiplex, for example, kin friends who are also coworkers and neighbors, as well? She found that frequent opportunities for contact and individual preferences predicted formation of multiplex relationships and, interestingly, that individuals with one multiplex relationship are likely to duplicate it in other relationships, but that these relationships are likely to only have two overlapping relations (e.g., friend and coworker) rather than three or more (e.g., friend, coworker, and neighbor).

Moreover, Tomeh (1964) applied the concept of multiplexity to residential patterns. She surveyed adults in the Detroit area to investigate whether living in a suburban versus an urban area was associated with the formation of informal social relationships (or, multiplexity among neighbors, relatives, coworkers, or friends). She concluded that place of residence tended to differentiate the population relative to informal group affiliations; more specifically, her results showed that place of residence has no impact on informal contact with coworkers, whereas as distance from urban areas increased, so too did informal contact with neighbors and friends.

Further, Sias and Cahill (1998) investigated the factors that predict friendships with coworkers to understand how they form and develop over time. By conducting interviews with a sample of working adults, they found that transitioning from being perceived as an instrumental acquaintance to a friend was characterized by contextual factors, such as proximity and shared tasks, and individual factors, including perceived similarity and personality.

Following earlier research explicating factors contributing to the formation of multiplex relationships, scholars began to examine a variety of consequences. For instance, Krohn, Massey, and Zielinski (1988) examined the role of multiplexity to explain the variance in adolescent cigarette smoking. They argued that the overlap of role sets (e.g., school and community) becomes a source of interdependence, social control, and conformity, and conceptualize multiplexity as the degree to which friends or parents participate in more than one social activity, such as school clubs, church, and music groups. Consistent with their expectation, they found that adolescents who

participate in multiple formal contexts with either their parents or friends are less likely to smoke.

In a sample of graduate students, Bullis and Bach (1991) combined multiplexity with the study of job-related communication to predict organizational identification. They explain that the association between multiplexity and organizational identification is best viewed as a pattern that evolves while individuals become assimilated to their organization. They posit that establishing multiplex communication links will relate to identification with the organization by providing the opportunity to seek information about the organization's values and by providing influential messages. They found that, in fact, multiplexity was a significant predictor of organizational identification. Moreover, Brass, Butterfield, and Skaggs (1998) presented a theoretical model exploring how the relationship between characteristics of individuals, issues, and organizations and unethical behavior are impacted by the type and structure of network relationships. More specifically, they asserted that multiplexity adds a constraint on unethical behavior because acting unethically runs the risk of ending a relationship, and this cost has greater implications for people who have stronger ties with each other. Finally, one of the most applicable studies to date was conducted by Casciaro and Lobo (2008). In this study, the authors sampled employees from three organizations to investigate whether positive or negative feelings toward a coworker influence the likelihood that employees will select a competent coworker as a partner in task interactions. They found that affect moderated the response to competence, such that employees consistently shows a preference for people they liked but considered mediocre at the task over competent but unpleasant people. This study provides preliminary evidence that the combination of

“liking” a coworker and whether they can be instrumental have an important impact on task behaviors and performance.

Upon reviewing the current state of the multiplexity literature, it is likely that the co-occurrence of instrumental and friendship relations would have unique implications for job performance, over and above ties that are exclusively instrumental or friendship. For instance, Verbrugge (1979) noted that when two sets of norms are superimposed, the relationship feels more secure, and the emotional and instrumental exchanges between two people are expanded. Thus, multiplexity affords “resource accretion,” whereby an individual’s bundle of resources is enhanced. More specifically, rather than having access to a fixed set of resources, the instrumental aspect of a multiplex relationship provides help and cooperation whereas, in addition, the friendship aspect provides empathy, affection and consensus.

### **Limitations of the Existing Networks Literature**

Collectively, this review of the existing literature highlights several theoretical and empirical gaps on the examination of network ties. Most importantly, although this research provides evidence that exclusively instrumental ties tend to provide access to informational support from coworkers and exclusively friendship ties tend to provide access to emotional support, these conclusions remain largely atheoretical. Although the overarching theory of social capital provides a foundation for the generalization that social network ties provide access to resources, there is no underlying explanation for why instrumental and friendship ties provide access to *different* resources. Relatedly, we have limited knowledge about whether multiplex relationships (i.e., the combination of both instrumental and friendship ties) elicit unique types of social support.

Second, empirical research exploring the relationship between social network ties and performance tend to either examine the link between network ties and access to resources, or the direct link between network ties and performance. These approaches translate into one of two problematic assumptions: (a) that receipt of resources equates to performance outcomes, or (b) that the mere existence of network ties equates to receipt of resources. However, practically no studies to date have comprehensively modeled the indirect links from network ties to performance through various resources. Further, no research to date has explicitly examined the potential linkage between multiplexity and job performance.

Finally, a limitation that might be evident from this review is that practically no research addresses the costs associated with these relationships. Extant research drawing on the social capital perspective overwhelmingly focuses on the gains received from these ties, at the expense of examining the potential detriments. Some research has begun to address the effects of antagonistic interpersonal relationships. Baldwin and colleagues (1997), for instance, examine the impact of adversarial networks (which they considered to be any difficult or harmful relationship) on satisfaction and performance in M.B.A student networks. They found that centrality in an adversarial network was negatively associated with satisfaction, but had no relationship with individual or team performance. Additionally, Sparrowe and colleagues (2001) examined hindrance networks, which include people who make it difficult to complete work by withholding valuable information, resources, or opportunities. These researchers found that presence in a hindrance network was negatively associated with both in-role and extra-role performance. Furthermore, Rook (1984) measured

problematic social ties as those that result in either having one's privacy invaded, being taken advantage of, having promises of help broken, or provoking conflicts. She found that the number of problematic social ties was significantly related to lower well-being. Rather than focusing on the negative effects of "negative" relationships, however, it is also important to investigate the detrimental effects of relationships that are generally perceived as positive.

### CHAPTER 3 THEORY AND HYPOTHESES

In light of the numerous gaps in the existing literature on network relationships in the workplace, this dissertation intends to make several contributions to network theory and research. In order to address the first limitation, I extend research on social network theory to consider that instrumental, friendship, and multiplex ties provide access to different resources, eliciting unique relationships with performance. To do so, I draw from literature on coping—the cognitive and behavioral efforts to manage demands that are appraised as taxing or exceeding one’s resources (Lazarus & Folkman, 1984). More specifically, I integrate theory suggesting that interpersonal relationships provide a mechanism to cope with work demands (Lazarus & Folkman, 1984) to argue that the complex nature of multiplex relationships fosters several resources simultaneously. This approach directly addresses recent calls for an explicit recognition of both affect and instrumental content within the same relationship (Ingram & Zou, 2008).

Concerning the second limitation, I examine the link from network relationships to performance through the resources they provide. A persistent criticism of the social support literature is that when measures of networks are used to indicate benefits of social relationships, researchers make the questionable assumption that having a relationship is equivalent to getting support from it (Schaefer, Coyne, & Lazarus, 1981). Rather than assuming that instrumental, friendship, and multiplex relations provide distinct resources, I directly assess this assertion by empirically investigating their association. Consequently, I also explore the link between multiplexity and performance.

Finally, through the combination of coping, social capital, and role conflict perspectives (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964; Thoits, 1995), I address the third limitation by concurrently examining the potential advantages and associated tensions of network relationships. Though the extant literature provides evidence that people combine instrumentality and affect in their work relationships, little is known about the trade-offs they make in doing so. To date, no research of which I am aware weighs the costs and benefits against each other in the same study (Ingram & Zou, 2008). So, I explore the possibility that these relationships can have mixed effects for job performance. Related to this contribution, existing literature on the costs of these relationships is largely theoretical or qualitative (cf. Bridge & Baxter, 1992). Thus, I also seek to address recent calls for research that directly measures outcomes associated with tensions inherent in business relationships.

### **Consequences of Network Ties**

Given the evidence offered in the literature review, social network relationships are expected to be positively associated with receipt of resources that likely contribute to job performance. However, this proposition “ignores the demands, constraints, and conflicts also associated with social relationships” (Schaefer et al., 1981, p. 383). Indeed, the complications generated from significant social relationships comprise a significant share of the stresses people experience in their daily lives. Further, the balance between the costs and benefits of social ties probably differ among social roles. Therefore, I expect that network ties lead to performance through two offsetting processes: the resources accumulated through network ties, and the resources depleted in trying to manage network ties. The model presented in Figure 3-1 summarizes these relationships. The expectation that there are two conflicting pathways

is consistent with the coping literature, whereby individuals can cope with stressful work demands by using their social networks to gain access to additional resources, but as coping resources are invested in one arena, there are fewer available to dedicate to others (Hobfoll & Freedy, 1993).

### **Resource Accumulation**

“Resource accumulation” refers to the idea that socially negotiated relationships at work provide additional resources that can be used to facilitate action and cooperation and counter stressful work demands (Putnam, 1993). I argue that three concepts are important when considering resources accumulated through social networks: informational support, emotional support, and trustworthiness.

### **Informational support**

The first important concept I consider when discussing potential resources accumulated through network ties is informational support. Informational support includes resources such as advice, communication, or feedback that help individuals directly address work demands. Research shows that access to information and work-related help can contribute to successful job performance (Baldwin et al., 1997; Cross & Cummings, 2004; Sparrowe et al., 2001). The work individuals’ perform as part of their job is undoubtedly enhanced by task-related information available from others. Having access to information that is directly related to completion of work tasks facilitates problem solving through the accumulation of knowledge about task-related problems and potential solutions (Baldwin et al., 1997; Sparrowe et al., 2001). Therefore, I expect that access to informational support will be positively associated with job performance.

**Hypothesis 1:** Informational support is positively related to job performance.

## **Emotional support**

Emotional support is another resource that can also be accessed through network ties. Emotional support includes resources such as attachment, compassion, and being able to rely on and confide in someone, that are not related to the task itself (Ibarra, 1993; Lazega & Pattison, 1999). Emotional support provides a mechanism to minimize distress (Lazarus & Folkman, 1984). This form of support is commonly linked to employees' health and well-being (cf. House, 1981; Turner, 1983; Wallston, Alagna, DeVellis, & DeVellis, 1983). For example, Cohen and Wills (1985) conducted a detailed review to clarify the nature of the relationship between social support and well-being, and concluded that increases in social support results in an increase in well-being. Similarly, Schaefer, Coyne, and Lazarus (1981) demonstrated that lower emotional support was related to reports of depression.

Unfortunately, the overemphasis on health as an outcome of emotional support has resulted in little research addressing the relationships between emotional support and job performance (McGuire, 2007). Undoubtedly, though, the function of emotional support extends beyond serving as a buffer against stress. Emotional support is understood as a form of support that is not related to work tasks themselves; rather, it is a "backstage resource" that allows employees to indirectly manage their work demands (Lazega & Pattison, 1999). More specifically, rather than being a source of work-related communication, emotional support comprises communication regarding good things at work, bad things at work, and non-work topics (Beehr, Jex, Stacy, & Murray, 2000), and having access to an outlet that allows the discussion of non-work related topics and concerns fulfills socioemotional needs (Cobb, 1976; Cohen & Wills, 1985). Thus, emotional distress experienced by employees can be effectively managed with

emotional support, decreasing the saliency of emotional distractions and, ultimately, allowing employees the opportunity to address work tasks. Along these lines, both AbuAlRub (2004) and Beehr and colleagues (2000) found a positive association between emotional support and job performance. Taken together, there is evidence to suggest that access to emotional support will decrease attention paid to emotional distractions and increase productive work time, which will positively impact job performance.

**Hypothesis 2:** Emotional support is positively related to job performance.

### **Trust**

Trust can be defined as the willingness to be vulnerable to another party with the expectation that the other party will behave with the best interest of the focal individual (Mayer, Davis, & Schoorman, 1995). Mishra (1996) argues that this willingness to be vulnerable arises from confidence in several factors: (1) belief that the other person has good intentions, (2) belief in his/her competence and capabilities, (3) belief that he/she is reliable, and (4) belief in his/her perceived openness (Ouchi, 1981; Szulanski, 1996). Essentially, trust alleviates the fear that a colleague will behave opportunistically (Bradach & Eccles, 1989). Working together frequently requires employees to be interdependent; consequently, people need to depend on their peer coworkers in certain ways in order to accomplish their goals (Mayer et al., 1995). Mayer and colleagues original model of trust considers an individual's trust for a specific referent. However, subsequent research supports that groups of people can be considered a referent for trust as well. Specifically, Mayer and Davis (1999) investigated employees' levels of trust for their organization's top management team. Similarly, I argue that, in smaller

organizations where it is relatively easy to identify behavior, it makes sense to consider a small group of peer coworkers as a referent for trust, as well.

There is evidence that trust is linked to job performance. One explanation is that when trust exists in a relationship, individuals are more willing to engage in positive, cooperative activity (Fukuyama, 1995; Putnam, 1993). When two people trust each other, they become more willing to share their resources without worrying that they will be taken advantage of. Consequently, cooperative behavior will likely emerge when trust is present, increasing individuals' access to valuable resources. In this way, differences in levels of trust in a relationship may result in different levels of resource availability and eventual performance.

A second underlying explanation stems from the consequences of the *lack* of trust in a relationship. Specifically, when a relationship is characterized by a lack of trust, resources must be dedicated to monitoring and defensive behaviors (McAllister, 1995). Monitoring refers to observing an unreliable person with the intention of controlling their behavior. Defensive behaviors are proactive behaviors intended to prevent a task from not getting done because the person who was asked to perform the task is undependable, for example, when an employee makes a request far in advance and from multiple people to ensure the task gets done. According to McAllister (1995), allocating resources to these behaviors leaves fewer resources remaining with which to accomplish work objectives. This is consistent with Mayer and Gavin's (2005) assertion that when coworkers are untrustworthy, employees' cognitive resources will be preoccupied with nonproductive issues, including self-protection (Ashforth & Lee, 1990). Extending this argument, then, individuals who trust their coworkers do not need to

expend resources in attempts to monitor their behavior. Therefore, it is conceivable that the presence of trust in a relationship prevents the need to expend useful resources that could otherwise be dedicated to performing work tasks. Moreover, empirical evidence suggests a positive link between trust and task performance (Colquitt, Scott, & LePine, 2007).

**Hypothesis 3:** Trust is positively related to job performance.

### **Resource Depletion**

“Resource depletion” occurs because the act of maintaining social relationships can sap an individual’s available resources, leaving fewer resources to counter stressful work demands. I argue that two concepts are particularly important when considering the resources that are depleted through social networks: ability to focus and maintenance difficulty.

### **Ability to focus**

The ability to focus is defined as the ability to pay attention to value-producing activities without being concerned with extraneous issues such as off-task thoughts or distractions (Mayer & Gavin, 2005). There are several characteristics of the work environment that can detract from employees’ ability to focus. The first is the existence of organizational politics, defined as “unsanctioned influence techniques that seek to promote self-interest at the expense of organizational goals” (Randall, Cropanzano, Bormann, & Birjulin, 1999, p. 161). Specifically, individuals are especially attentive to the interpersonal climate at work, and when employees perceive their coworkers as manipulative and self-serving, they are unlikely to be motivated to invest in the organization, thereby contributing as little effort as is reasonably possible (Randall et al.,

1999). Thus, being unable to focus on work due to perceptions of politics in the organization will likely lead to lower performance.

The second way that employees may be unable to focus on their jobs is through distractions, or interruptions, defined as “unexpected encounter[s] initiated by another person that interrupts the work flow and continuity of an individual’s work and brings that work to a temporary halt” (Jett & George, 2003). According to Jett and George (2003), when interruptions do occur, they impede or delay employees as they attempt to make progress on work tasks. More specifically, when individuals are pressured to spend time focusing on activities that are not instrumental for the task they are currently performing, they may be left with insufficient time to meet a deadline, achieve a goal, or simply complete a task. Additionally, distractions can hinder an individual’s ability to become completely engaged in his work (Jett & George, 2003). Even if an individual is intrinsically motivated to perform the task, a disturbance can disrupt his focused attention, instating unwelcome time constraints. Moreover, O’Conaill and Frohlich (1995) found that when individuals are unexpectedly interrupted during a work task, 41 percent of them fail to return to the interrupted task beyond the duration of the interruption. Therefore, issues that distract individuals from dedicating all of their attention to a particular activity can reduce their effectiveness when performing that activity by reducing available time to complete the task and by hindering the ability to continue the process of task completion. Thus, in the absence of issues that divert one’s attention from a task, individuals will likely be able to perform at a higher level (Kanfer & Ackerman, 1989).

**Hypothesis 4:** Ability to focus is positively related to job performance.

## **Maintenance difficulty**

Maintenance difficulty refers to the degree of difficulty individuals experience in interpersonal relationships due to misunderstandings, incompatibility of goals, and the time and effort necessary to cope with disagreements (Winstead et al., 1995; Wright, 1984). In an effort to minimize the difficulty of managing workplace relationships, individuals may spend more time attempting to resolve tensions or disagreements (Winstead et al., 1995), which diverts resources away from productive work tasks. Having to expend effort in resolving disputes, however, can leave employees feeling overextended which, according to Wright and Cropanzano (1998) is characterized by depletion of physical and psychological resources.

Thus, individuals experiencing maintenance difficulty are unable to perform their job effectively because their resources are inadequate to meet work demands, they are unable to prepare effectively, and they employ depersonalization tactics, whereby they withdraw from job demands (Cordes & Dougherty, 1993; Hobfoll, 1988; Maslach & Jackson, 1985; Wright & Cropanzano, 1998). Consistent with this expectation, Maslach & Jackson (1985) found that decreased resources were related to decreases in quality of job performance due to inability to effectively to prepare. Therefore, because efforts to cope with difficulties inherent in work relationships deplete available resources, I expect that maintenance difficulty will have a negative association with job performance.

**Hypothesis 5:** Maintenance difficulty is negatively related to job performance.

## **The Role of Social Networks in Relation to Job Performance**

When considering the various types of interpersonal relationships that comprise organizations, each relationship can serve a unique function and, thus, provide a unique set of resources (Tichy, 1981). However, despite extant research suggesting that

instrumental and friendship ties provide access to different resources (e.g., Baldwin et al., 1997; Kram & Isabella, 1985), there is a lack of theoretical grounding to explain why this occurs. We believe that this limitation can be addressed by considering theory related to the manner in which individuals cope with stressful job demands (Endler & Parker, 1990, 1994; Folkman & Lazarus, 1980; Lazarus & Folkman, 1984).

When faced with work demands, individuals employ various strategies of coping (Lazarus & Folkman, 1984). When individuals engage in *problem-focused coping*, they expend effort “defining the problem, generating alternative solutions, weighing the alternatives in terms of their costs and benefits, choosing among them, and acting” (Lazarus & Folkman, 1984, p. 152). When individuals engage in *emotion-focused coping*, they attempt to lessen the emotional distress by avoiding the demand, minimizing its importance and distancing themselves from it physically or cognitively. Although individuals cope with stressful demands by drawing upon the resources provided by work relationships (Lazarus & Folkman, 1984), not all network ties are equally suited to the same type of coping. I argue here that instrumental, friendship, and multiplex network relationships have different implications for the different coping strategies, which in turn, impact job performance. More specifically, coping strategies in the form of social network relationships provide access to various resources, including informational support, emotional support, and trustworthiness that aid in job performance (Lazarus & Folkman, 1984). Conversely, however, research also suggests that employing coping strategies through network relations can also create unforeseen costs, including ability to focus and maintenance difficulty, that may hinder job performance (Hobfoll & Freedy, 1993). In order to understand how network ties in

general, and multiplexity more specifically, might relate to job performance, I first identify which mechanisms link instrumental and friendship ties, independently, to performance, following by the mechanisms linking multiplexity to performance.

### **Instrumental network ties**

As shown in Figure 3-1, I predict that centrality in an instrumental network is related to job performance through two offsetting mechanisms. First, I propose that centrality in an instrumental network is positively related to receipt of informational support. I argue that individuals who have instrumental ties receive informational support because they are inherently displaying a problem-focused coping strategy. According to Lazarus and Folkman (1984), problem-focused coping facilitates the act of seeking and using informational support by utilizing work relations productively. More specifically, because instrumental ties are comprised of people to whom individuals go for work-related help, such as advice, information, and expertise (Ibarra, 1993), the underlying function of instrumental ties is to provide a way for employees to proactively seek assistance in completing work tasks. Extending this general idea that having instrumental ties provides access to informational support, I draw from my earlier discussion of network centrality to suggest that employees can have access to a large quantity of information as well as to quality information. First, as with other types of resources, more is generally better than less (Leana & Van Buren, 1999). In this light, research has shown that the size of a person's network influences their receipt of social support (Rook, 1984). There is reason to believe, then, that individuals with greater degree centrality (i.e., a larger pool of instrumental coworkers) will gain access to a greater quantity of information (Kram & Isabella, 1985; Lin & Westcott, 1991; Thoits,

1995). Thus, I expect that degree centrality in an instrumental network will be positively associated with receipt of informational support.

Certainly, though, some employees have access to better information than others. This variance is likely associated with the extent to which they seek out information from individuals with non-redundant information (e.g., Kramer, 1994; Morrison, 1993).

Informational support varies with respect to quality, which is typically assessed through accuracy, timeliness, and usefulness (Allen, 1992, 1996; Sias, 2005). Along these lines, scholars increasingly note that quality of information has “replaced tangible resources as a measure of power” (Eisenberg & Goodall, 2004, p. 16). Therefore, I also expect that betweenness centrality in an instrumental network (i.e., access to quality information from coworkers) is positively associated with informational support<sup>7</sup>.

Extending this argument, I further expect that centrality in an instrumental network will be indirectly related to job performance through informational support.

**Hypothesis 6:** Instrumental network centrality is positively related to informational support.

**Hypothesis 7:** Instrumental network centrality has a positive indirect relationship with job performance, as mediated by informational support.

### **Friendship network ties**

Similar to the conflicting pathways proposed for instrumental network ties, I predict that friendship network ties are positively related to performance through the emotional support resources provided. I argue that in contrast to the expectation that instrumental ties reflect problem-focused coping, individuals who develop friendship ties are

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<sup>7</sup> Although I expect that both degree and betweenness centrality are important indicators of receipt of resources, I do not expect that they will have different effects. Therefore, for this and all future hypotheses, I refer to these variables generally as “centrality.”

inherently displaying an emotion-focused coping strategy by drawing upon intimate relationships for emotional resources. According to Lazarus and Folkman (1984), emotion-focused coping facilitates the act of seeking reassurance through emotional support (Cassel, 1976; Cobb, 1976; Lazarus & Folkman, 1984).

More specifically, because friendship ties are comprised of people to whom individuals go to for non-work related help, such as empathy, goodwill, and consideration (Ibarra, 1993), the underlying function of friendship ties is to provide an outlet for individuals to disclose and manage emotions. As noted in the previous section, more support does not necessarily mean better support. The quality of emotional support varies with respect to the extent to which coworkers have similar experiences or perceive similar work demands or hassles. Further, when seeking emotional support, it may be useful to be able to verify that the way one is dealing with their distress is effective. For instance, if an employee experienced a distressing situation, such as unfair treatment from an employer, he may first want to validate the he is interpreting the occurrence accurately. Centrality in a friendship network, then, allows an individual to check for fallacies in their thinking by deducing from knowledge that is shared by others through social verification (Bandura, 2001). Thus, I predict that individuals who are more centrally located in a friendship network will have access to a large quantity and variety of emotional support resources and, consequently, perform effectively because emotional support provides a mechanism to cope with distress.

**Hypothesis 8:** Friendship network centrality is positively related to emotional support.

**Hypothesis 9:** Friendship network centrality has a positive indirect relationship with job performance, as mediated by emotional support.

## **Multiplex network ties**

As shown in Figure 3-1, I predict that multiplexity provides not only a wider range of resources than ties that are exclusively instrumental or friendship, but that they also increase the possibility that resources will be depleted in an attempt to manage them. First, I argue that because multiplex relations are made up of both instrumental and friendship relations, they not only provide access to more resources (i.e., “resource accumulation”), as do ties that are exclusively instrumental or friendship, by they also afford “resource accretion” (Verbrugge, 1979), whereby individuals gain access to a pool of resources that has greater depth and utility than the resources available from exclusively instrumental or friendship ties. As Kanter (1988, p. 190) explains, multiplex relationships allow individuals “to go across formal lines and levels in the organization to find what they need.”

Because multiplex relations are comprised of both instrumental and affective components, they provide an enhanced mechanism to cope with work demands by transmitting an enhanced set of resources (Oh et al., 2004). This facilitates more probing, follow-ups and, in turn, greater understanding of how the problems at hand can be dealt with. Indeed, research shows that coworkers who are friends communicate more intimately about work and non-work related topics than those who are not friends (Sias & Cahill, 1998; Sias, Smith, & Avdeyeva, 2003). Along these lines, Nahapiet and Ghoshal argue that richer interactions are important where the meaning of information is uncertain and ambiguous, such that social relations constitute information channels that reduce the amount of time and investment required to gather information. Similarly, Burt (1992) proposed that these information benefits manifest in three forms: access, timing, and referrals. “Access” highlights the role of networks in providing an efficient

information-screening and -distribution process for its members; specifically, it allows individuals to receive valuable information and know who else might be able to use it. “Timing” refers to the ability of network contacts to provide information faster than it becomes available to individuals without those contacts. Finally, “referrals” occur when information is available to people in the network about available opportunities, and frequently include endorsements for the reputations of the people involved in the network. Thus, having multiple relational contents within one relationship makes the coping process more efficient with access to timelier and better information.

Further, the range of social support resources increases with the quality of the relationship individuals have with their coworkers (Ibarra, 1993). Thus, rather than providing only one type of social support, it is likely that multiplexity provides both informational and emotional support. Although the research conducted on multiplexity to date has not taken a centrality approach, I argue that centrality in a multiplex network is also important to consider. Extending the arguments from centrality in instrumental and friendship networks, I argue that centrality in a network comprised of multiplex relations will provide greater access to both informational and emotional support. Further, considering the previously specified link between informational and emotional support and job performance, I expect that centrality in a multiplex network will be positively related to job performance through the augmented resources provided.

**Hypothesis 10:** Multiplex network centrality is positively related to (a) informational support and (b) emotional support.

**Hypothesis 11:** Multiplex network centrality has a positive indirect relationship with job performance, as mediated by informational support.

**Hypothesis 12:** Multiplex network centrality has a positive indirect relationship with job performance, as mediated by emotional support.

Additionally, even though multiplex relations are composed of both instrumental and friendship components, I argue that they are functionally unique and, in a sense, more than the sum of their parts. The theoretical rationale for this expectation is that because multiplex relationships tend to be more secure, enduring, supportive, and influential than other relationships (Stohl, 1984; Verbrugge, 1979) they engender a strong emotional bond between individuals. These relationships provide a sense of respect, warmth, and personal regard (Kahn, 1998; Mossholder, Settoon, & Henagan, 2005), which provide an outlet to disclose “central ambivalences and personal dilemmas” (Kram & Isabella, 1985), and vulnerabilities. Through repeated social interaction, and the gradual expansion of the relationship to incorporate additional components, individuals develop more trusting relationships (McEvily, Perrone, & Zaheer, 2003). Indeed, according to theory of social capital (Leana & Van Buren, 1999), trust implies a somewhat intimate relationship among individuals (McEvily, Perrone, & Zaheer, 2003). In other words, a greater shared history and experience base is likely to enhance perceptions of trust. Along these lines, Oh, Chung, and Labianca (2004) found that informal socializing provided work group members with greater opportunity to interact, which evolved into more trusting relationships.

Within the literature on trust, scholars have identified two components: affect-based trust and cognition-based trust (McAllister, 1995). Affect-based trust refers to emotional bonds between individuals that presuppose genuine care and concern for the welfare of trusting partners. Cognition-based trust focuses more on knowledge and expectations regarding an individual’s competence and performance reliability. These dimensions parallel Mayer, Davis, & Schoorman’s (1995) concepts of benevolence and

competence, respectively. With these two dimensions in mind, we can see how the combination of the two would result in trust being a unique outcome of multiplexity. Specifically, multiplexity combines the formal respect for a coworker with the benevolent concern for a friend, which is less likely to be engendered by weaker relationships. Taken together, this research suggests that trust is likely to exist in more intimate relationships that are broader in scope, and in relationships that are gauged by both instrumental and affective behaviors. Therefore, I argue that perceptions of trust are unique to multiplex ties because people in these relationships have received evidence through past interactions that the trustee (the person being trusted) not only has the trustor's (the trusting party) best interests in mind, but also represents a respectable and competent colleague. Consequently, I also expect that multiplexity will be positively associated with job performance through trust. Therefore, I hypothesize:

**Hypothesis 13:** Multiplex network centrality is positively related to trust.

**Hypothesis 14:** Multiplex network centrality has a positive indirect relationship with job performance, as mediated by trust.

Conversely, however, I argue that in addition to providing access to beneficial resources, multiplex relations also detract from individuals' available resources by impacting their ability to focus on their work tasks. Importantly, individuals with multiplex relationships have more opportunities to exchange "social wares" (Mossholder et al., 2005) and, thus, discuss a wider range of work and non-work topics (Jett & George, 2003). These exchanges increase the probability that people in multiplex relationships will be distracted from work tasks more frequently, and also will be exposed to off-task information exchanged in informal relationships but is irrelevant for performing one's job. Foremost, individuals are more likely to have their work unexpectedly interrupted by

coworkers with whom they have multiplex relationships. Along these lines, research shows that individuals are more likely to approach coworkers with whom they have multiplex relationships when they have questions or concerns about work, even if that individual is not an expert on the topic as opposed to approaching a less preferred coworker who is more knowledgeable (Casciaro & Lobo, 2008). Further, knowing more about one's coworkers (i.e, knowing whether or not a given piece of information is applicable to them) creates a greater variety of reasons to initiate conversations with them, increasing the frequency of interruptions. For example, an employee who receives a humorous email may be more likely to instigate an interruption in order to share this humor with a coworker who they think would appreciate it. In this way, individuals in multiplex relationships are more vulnerable to receiving interruptions and distractions from their coworkers, as well as more likely to initiate these interruptions.

Additionally, participation in multiplex relationships broadens the range of interpersonal information exchanged, resulting in increased access to off-task information such as gossip or organizational politics that are irrelevant to performing one's job. For example, whereas an instrumental-only colleague would schedule an in-office meeting that is exclusively task-focused, a multiplex colleague might suggest a meeting over lunch that involves conversation that is both task-related and off-task. Not only does an occurrence like this require more time away from work-tasks, but it also makes individuals aware of topics that are irrelevant to work that may consume their thoughts. Thus, relationships with both instrumental and affective content may require an individual to multitask by simultaneously managing a variety of work-related and personal responsibilities (Jett & George, 2003).

Overall, the interruptions and access to off-task information associated with multiplex relationships results in employees having fewer cognitive resources to dedicate to work tasks because they cannot pay attention to their work. Thus, I hypothesize:

**Hypothesis 15:** Multiplex network centrality is negatively related to ability to focus.

**Hypothesis 16:** Multiplex network centrality has a negative indirect relationship with performance, as mediated by ability to focus.

In addition to the inability to focus generated by multiplex relations, I also expect that multiplex ties are difficult to maintain. Indeed, Granovetter (1973) noted that, in general, strong ties are more difficult to maintain. In an organizational context, the existence of overlapping instrumental and friendship roles within a relationship can foster feelings of conflict regarding which role to prioritize (Kahn et al., 1964). Specifically, the informal behavior associated with friendship may, at times, present a contradiction to behaviors that are appropriate for a formal coworker role. As such, this consequence is unique to multiplex relations.

Individuals tend to base their behavior on cognitive “scripts” that identify appropriate behaviors. A script is a hypothesized cognitive structure that helps us make inferences about a situation, that guides interaction strategies, and that simplifies the task of navigating through recurrent life or work experiences (Fiske & Taylor, 1984; Schank & Abelson, 1977). There are scripts for different aspects of social interactions. For example, a “friendship script” contains an individual’s characterizations of a friend, expectations for how a friend should act, and a set of behavioral guidelines appropriate for the context of the relationship (Halpern, 1994, 1996). However, the scripts that define the behavior that is appropriate for friendships may contradict the behavior

appropriate for business scripts, making it difficult to employ both scripts at the same time. This is similar to the idea of inter-role conflict (Kahn et al., 1964). For instance, Bridge and Baxter (1992) conducted interviews with individuals who reported that they were close friends with a work associate and identified several contradictions between friendship and coworker roles. These included “openness versus closedness,” such that being open and honest with friends can conflict with the necessity to keep important work matters confidential, and “impartiality versus favoritism,” such that giving friends special treatment can conflict with having to behave impartially and treating all coworkers fairly. Consequently, there is also the possibility that being friends with coworkers might “involve disputes, embarrassment, envy, and invasion of privacy” (Rook, 1984, p. 1097).

In addition to potential external conflict between an individual and their “business friends,” another fundamental conflict is between the basic desire for belonging and maintaining a positive self-concept (Ingram & Zou, 2008). Multiplex relations facilitate belonging by ensuring acceptance and avoiding rejection (Fiske, 2004); however, they are also a threat to one’s self-concept. Ingram and Zou (2008) offer an example whereby an employee and a colleague have been on the same work team for a while and become close friends. However, they were both up for a promotion, which the colleague is awarded. In this instance, it becomes difficult for the employee to manage internal conflict between believing he deserved the promotion and wanting to remain friends with his colleague. Therefore, “the degree of conflict when a person is in a relationship that encompasses both affective and instrumental concerns can be

substantial” (Ingram & Zou, 2008, p. 172). Taken together, the incompatibility between friend and coworker roles elicits maintenance difficulty.

In another vein, Krackhardt (1999) introduced a fascinating contradiction to Burt’s (1992) traditional idea that being located between others in a network provides positional advantages and the least behavioral constraints. More specifically, Krackhardt described how people are not only constrained by their membership in a particular role (defined as a set of expectations about how people should relate to other network occupants), but also how they are expected to behave towards individuals in other roles. In other words, although there are general expectations for behavior, we may not behave consistently with those expectations depending on with whom we are interacting. For example, police officers are stern and unassailable with criminals, but they are helpful and polite with the general law-abiding public. Krackhardt’s argument considers the implications of being tied to others with multiple and potentially conflicting expectations. In particular, he explicates that (1) strong bonds constrain an individual’s ability to act independently, (2) people are constrained by the norms of the groups with which they associate, and (3) the norms of various groups may be conflicting. Consequently, a person bridging a hole between two groups with competing norms is subject to two sets of restrictions. Although Krackhardt’s analysis refers to the constraints of triadic, rather than dyadic relationships, this concept of competing norms can be seamlessly applied to the consequences of being tied to an individual who fills competing roles, i.e., a coworker and a friend, and highlights the inherent difficulties in maintaining these relationships.

Further, despite evidence that multiplex relations are difficult to maintain within a work context, it is likely that individuals will dedicate time and effort to preserving them. Individuals with multiplex ties are quite embedded in these relationships; the stronger the relationship the more difficult it is to neglect it (Mitchell, Holtom, Lee, Sablynski, & Erez, 2001). Therefore, in an effort to minimize the conflicts inherent in multiplex relationships, individuals may deplete their resources in an attempt to resolve perceived tensions (Winstead et al., 1995).

**Hypothesis 17:** Multiplex network centrality is positively related to maintenance difficulty.

**Hypothesis 18:** Multiplex network centrality has a negative indirect relationship with performance, as mediated by maintenance difficulty.

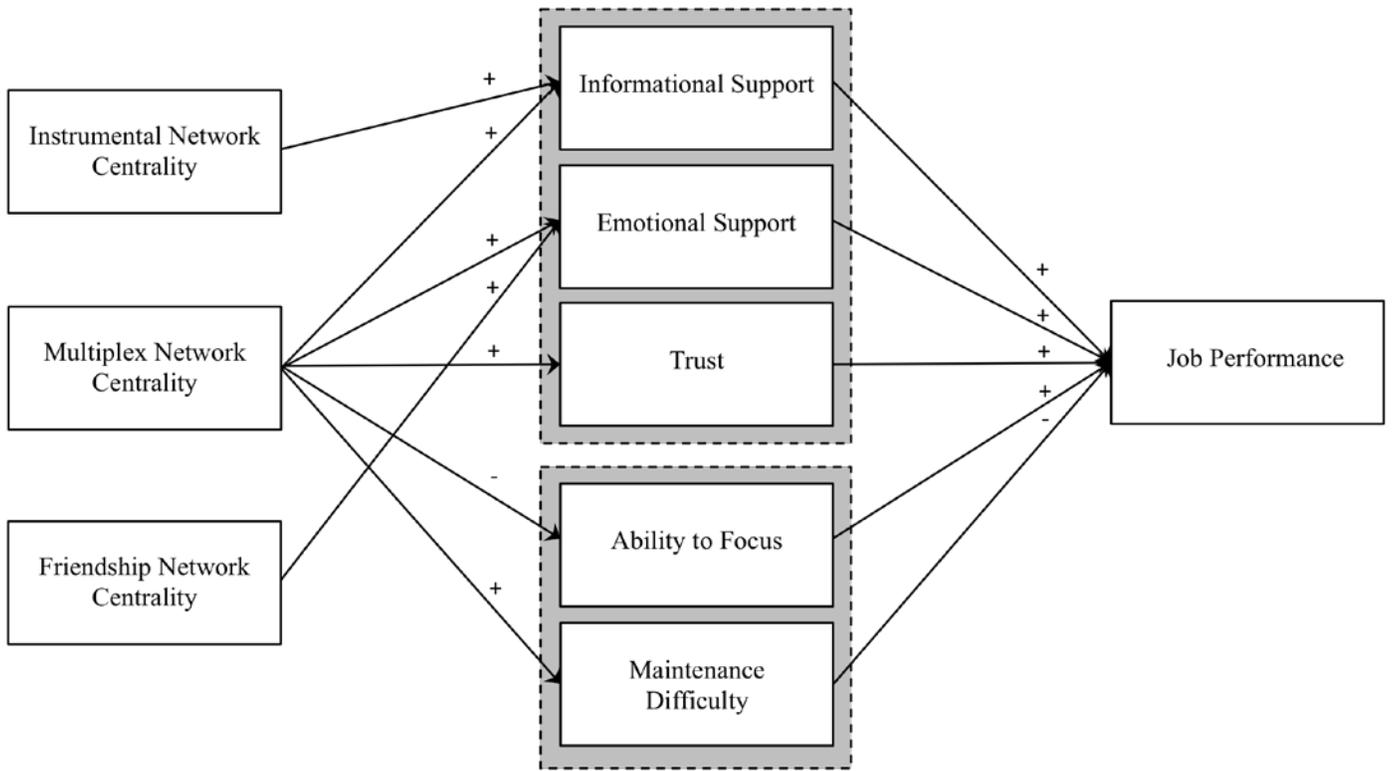


Figure 3-1. Model of hypothesized relationships

## CHAPTER 4 METHODS

### **Sample and Procedure**

Participants were recruited from nine organizations in the southeast United States. To solicit participation, I approached the general managers and explained the goal of the study. The managers of three retail stores (that specialize in clothing and accessories) and six restaurants consented to participate. Although the organizations were all associated with the service industry, they varied with respect to size, age, ownership, and location. Specifically, they ranged in size from 7 to 49 employees, in age from eleven months to fifteen years, and were located throughout the southeast. Thus, the sample provided a wide range of employees in different organizations and was well suited to providing variation in the variables of interest. Additionally, due to the nature of the jobs, the structure of the organizations imposed very few restrictions on employees' interactions. The jobs had a fluid structure, making it possible for employees to shift positions horizontally within the organization on a temporary basis. This fluidity made it possible for members of the organizations to get to know each other.

Every employee that was not of manager status was encouraged by the general managers to respond to the survey. Managers at each store location circulated surveys to the employees, who returned them in preaddressed, sealed envelopes to the principal researcher. Employees were informed that participation was voluntary and completely confidential. I followed up with the managers two week after distribution of the survey to encourage non-respondents to participate. A total of 201 surveys were distributed, and 182 were returned, for a response rate of 90.5%. Sixty-two percent of the respondents were women and 38% were men; 73% were Caucasian, 10% were

African American, 10% were Hispanic, 2% were Asian, and the rest indicated “other” or did not specify their ethnicity. The mean age was 27.16 years (SD = 5.47), the mean tenure was 1.51 years (SD = 1.28), and 82% of the respondents had at least some college education.

Four to six weeks after the employee surveys were returned, I requested that supervisors provide performance evaluations. A total of 43 supervisors provided performance ratings and, on average, supervisors rated 4.13 employees (SD = 3.84).

## **Measures**

### **Network Relations**

A common technique to collect whole-network data is the recognition method, whereby respondents are presented with a list of all members of the group and are asked indicate the content of their relationship with each person listed (Ferligoj & Hlebec, 1999). Associates were presented with a roster of all of the employees at their store location. They were first asked to indicate whether they “know this person.” Then, respondents were presented with questions regarding instrumental and friendship relations. To assess instrumental networks, respondents indicated if they “go to this person for help, assistance, or information regarding work-related issues.” Responses were valued, and ranged from 0 = not at all to 5 = very often. To assess friendship networks, respondents indicated if they “are friends with this person, including seeing them socially outside of work, discussing personal issues with them, and being able to confide in them.” Again, responses were valued, and ranged from 0 = not a friend to 5 = best friend. The stipulation “seeing them socially outside of work” was included as part of the friendship question to ensure consistency across respondents in the definition of friendship (Fischer, 1982; Ibarra, 1992). Although these rating scales differ in that the

first is with respect to frequency of contact and the latter is with respect to the closeness of the relationship, both scales are described as valid “indicators” of tie strength, and are highly associated with each other in terms of indicating tie strength (Marsden & Campbell, 1984).

The raw data collected from the respondents was used to compose two independent networks: instrumental and friendship. More specifically, square matrices were created for both networks. A matrix is an arrangement of a set of elements, in this case, employees, with the names of each employee listed along both the rows and columns in each matrix (Scott, 2000). By convention, the person listed on the row of the matrix answers the question in relation to the person listed on the column (i.e., the sender of the tie is the row and the target of the tie is the column; Hanneman & Riddle, 2005).

In order to create a multiplexity network, the instrumental and friendship matrices were entered into the social network analysis software package UCInet (Borgatti, Everett & Freeman, 2002). Once in UCInet, it was first necessary to dichotomize the valued data. Specifically, the social network tools of interest in this study were developed to handle binary data only. Thus, since I measured the strength of ties among respondents, it was necessary to turn these values into data that represents only the presence or absence of a tie (i.e., zero or one). The goal here is to choose an “optimal” cut-point, or threshold, that reflects a minimum loss of information from the valued network data (Thomas & Blitzstein, 2009). Therefore, I selected a cut-off value of “greater than 1” that allowed me to retain the most information about the potential existence of a tie. More specifically, for instrumental network relations, I treated

responses of 0 (not at all) and 1 (very infrequently) as a “0” (no tie) and the values 2 (infrequently), 3 (sometimes), 4 (often), and 5 (very often) as a “1” (a tie exists). For friendship network relations, I used the same cutoff for substantive reason, in that the values of 0 and 1 had anchors that represented the absence of a friendship; responses of 0 (not at friend) and 1 (acquaintance) were assigned a “0” (no tie) and the values 2 (friend), 3 (close friend), 4 (very close friend), and 5 (best friend) were assigned a “1” (a tie exists). The result were two binary matrices—one for friendship and one for instrumental—of zeros (when the original scores were 0 or 1) and ones (when the original scores were 2, 3, 4, or 5).

Next, the two independent matrices were combined into a single summary matrix indicating the existence of instrumental, friendship, and multiplex relations. More specifically, where there is no tie in either the instrumental or friendship matrix, the cell is assigned a zero (0); where there is an instrumental tie but no friendship tie, the cell is assigned a one (1); where there is a friendship tie but no instrumental tie, the cell is assigned a two (2); and where there is both an instrumental and a friendship tie, the cell is assigned a three (3). Combining the multiple relations in this way yields a qualitative typology of the kinds of network relations that are present among the employees (Hanneman & Riddle, 2005). It is important to note, though, that these values do not represent the strength of a tie (such that a zero would be the weakest form and a three would be the strongest). Rather, they are nominal values that simply distinguish between the qualitative types of ties that exist between a pair of employees.

Once this summary matrix was created, UCInet was used to calculate degree centrality and betweenness centrality for each type of network. Degree centrality is

defined at the number of links, or relationships, an individual has. Because the network data is directed (such that respondents nominate coworkers with whom they have relationships), I calculated two separate measures of degree centrality for each individual. Out-degree centrality is the number of ties an individual directs at others, and in-degree is a count of the number of ties directed to the individual (i.e., the number of coworkers who nominate the focal individual). With regard to positive relationships such as the ones in this study, out-degree tends to be interpreted as a form of gregariousness or being more influential, and in-degree centrality can be interpreted as popularity or having greater prestige. It is beneficial to include both measures for two reasons. First, it provides two distinct perspectives of the same relationship. For example, in an instrumental network, this directed information allows for the possibility that an individual may give work-related information to a coworker, but may not receive information from that individual. In this example, out-degree centrality refers to the number of coworkers the focal individual goes to for work-related information (i.e., the extent to which the focal individual receives information from others, or information-receiving), whereas in-degree centrality is a measure of the number of individuals who report going to the focal individual for work-related information (i.e., the extent to which the focal individual provides information, or information-giving). For this particular study, out-degree centrality may be more valid predictor of performance, since individuals who receive more information from a greater number of others have more alternative sources of job-related information (should an important source of information be absent on a particular day, leave the organization, or refuse to share information for some reason) and, thus, have more control over how they accomplish their work (Sparrowe et

al., 2001; Zagenczyk & Murrell, 2009). However, I expect similar relationships for in-degree centrality, as well, because individuals who engage in more information-giving likely have control over how they accomplish their work, since the requests they get for information may indicate that they are perceived as being knowledgeable (Settoon & Mossholder, 2002).

The second advantage of including both measures of centrality is that in-degree does not suffer from the limitations of self-reports as out-degree centrality does. Specifically, because network representations of a group's social structure are derived from information provided by each of the group members (whereby each individual reports their personal perceptions about what relational ties exist), the aggregation of the information may include systematic biases about how they view their position in the network (such as inflating one's own role in the network). There are two common biases from which this self-report data can suffer. The first relates to the simple ability to recall the existence of relationships. For instance, Freeman, Romney, and Freeman (1987) found that when individuals were not accurately able to remember whether certain people attended the target session of a colloquia series, they used prior information about long-term patterns of attendance at past social events to draw a general inference about whether the person was likely to have attended the session. These authors concluded that respondents' recall is biased by prior patterns of behavior. The second bias involves the motivation to inflate one's own status. Along these lines, Kumbasar, Romney, & Batchelder (1994) analyzed the cognitive reports of friendship ties among 25 employees who worked in the same circuit design department of a large computer company. They had respondents report not only about their personal relationships with

the others in the department, but also about the perceived ties between every other pair of members in the department. From these reports, they were able to compare each individual's perception of the existing network to the aggregate of every member's reports of the structure of the network (which provides a more objective depiction of the true network structure). From their comparisons, they found that individuals tend to perceive themselves as more central in the network than others actually perceive them. However, they did ultimately conclude that there is a close correspondence between individual representations of a network and the globally shared representation. This provides evidence that individuals are fairly reliable judges of the true pattern of relationships. Therefore, both measures of centrality are particularly important to consider.

Betweenness centrality is a measure of the frequency with which an individual lies on the shortest path between two other individuals who are otherwise not directly connected to each other. Individuals with greater betweenness centrality tend to have control over the flow of information in a network (Hanneman & Riddle, 2005). It is important to note that betweenness centrality is only defined for symmetric, or undirected data—such that corresponding cells (e.g., cell 2,5 and cell 5,2) must have the same value. However, my data was asymmetric, (i.e., directed; because each employee made their own independent nominations), so there were four possible dyadic relationships: employee A and employee B are not connected, A says a tie exists with B, B says a tie exists with A, or A and B both say the tie exists. In order to calculate betweenness centrality, it was necessary to transform my asymmetric data into symmetric data. I chose to symmetrize based on the maximum value, such that I

entered the larger of the numbers found in both cells. For example, if employee A reports a relationship with employee B (a “1” is in the matrix cell), and employee B does not report a relationship (a “0” is in the matrix cell), then the “maximum” command assumes that a relationship exists, and enters a “1” in both cells. I felt this was an accurate decision because I was interested in any perception that a relationship existed. As such, the existence of a tie between employee A and employee B was best represented as the strongest of the ties between them. All measures of centrality were normalized in order to control for the differences in network size across organizations. Thus, the centrality scores had a possible range from 0 to 100.

### **Social Support**

Informational support and emotional support were measured using a combination of items from Schaefer and colleagues’ (1981) scale, Mossholder and colleagues’ (2005) scale, and several ad hoc items. Sample items for informational support include “My coworkers give me information, suggestions and guidance that I find helpful” and “I receive work-related information from my coworkers.” Sample items for emotional support include “My coworkers provide encouragement and emotional support” and “My coworkers empathize with my concerns and feelings.” Respondents rated these items on a scale ranging from 1 = strongly disagree to 5 = strongly agree.

### **Trust**

Trust was measured using seven items from Mayer and Gavin’s (2005) scale. Items include “If I had my way, I wouldn’t let my coworkers have any influence over issues that are important to me” (reverse-coded) and “I would be comfortable giving my coworkers a task or problem which was critical to me, even if I could not monitor their

actions.” Respondents used a rating scale ranging from 1 = strongly disagree to 5 = strongly agree.

### **Ability to Focus**

Six items measuring ability to focus originated from Mayer and Gavin’s (2005) scale. Items included “The work climate here allows me to focus on doing my job” and “There are issues in this company that take my attention away from doing my job.”

Respondents used a rating scale ranging from 1 = strongly disagree to 5 = strongly agree.

### **Maintenance Difficulty**

Select items from the maintenance difficulty scale of the Acquaintance Description Form (ADF; Wright, 1969), items from Rizzo, House, and Lirtzman’s (1970) role conflict scale, and items created specifically for this study were used to measure the degree to which respondents experience tension with their friends at work. Sample items include “I sometimes find it difficult to behave in a way that is appropriate for my job, but that pleases the friends that I work with” and “It is difficult to maintain friendships with my coworkers.” Responses were on a rating scale ranging from 1 = strongly disagree to 5 = strongly agree.

### **Performance**

Supervisors were asked to rate employees’ performance using five items developed by Williams & Anderson (1991). This scale measures performance of critical core job tasks, duties, and responsibilities. Items include, “Adequately completes assigned duties,” “Fulfills responsibilities specified in his/her job description,” and “Performs tasks that are expected of him/her.” Items were rated on a scale from 1 = strongly disagree to 7 = strongly agree.

## **Control Variables**

Because prior research suggests women and men differ in their composition of friendship and instrumental networks (Ibarra, 1993), I considered gender as a potential control. I also considered hours per week each employee works and their tenure, as these factors may contribute to the extent to which individuals have had the time and opportunity to cultivate relationships, as well as impact their performance ratings. I also asked respondents to report the number of friends they have outside the company, because research on how individuals balance their work and non-work lives suggests that individuals who have an comprehensive support system external to the work environment may seek fewer relationships within the work environment to fill these needs (Cohen & Wills, 1985; Greenhaus & Beutell, 1985). I also measured the personality traits agreeableness, extraversion, and conscientiousness using Donnellan, Oswald, Baird, & Lucas's (2006) scales because these traits may impact the degree to which individuals develop and participate in the various networks. Participants responded from 1 = strongly disagree to 5 = strongly agree, with items for agreeableness including "sympathize with others' feelings," and "feel others' emotions," items for extraversion including "talk to a lot of different people at parties," and "keep in the background" (reverse-coded), and items for conscientiousness including, "get tasks done right away," and "like order."

## CHAPTER 5 RESULTS

### **Network Characteristics**

Although this dissertation is concerned with the pattern of relationships for each individual employee (such that differences in how connected they are can be consequential for their behavior), the pattern of ties in the organizations as a whole can be important, as well. For example, typically, more connected populations can better mobilize their resources, such as information. Therefore, in Table 5-1, I present descriptive information about the organizations' networks. The first network concept is the degree of network centralization, which describes the overall cohesion or integration of the organization population as a whole; centralization can also be thought of as an expression of how tightly a network is organized around its most central point (Scott, 2000). More specifically, network centralization expresses the degree of inequality, or variance, in a network as a percentage of that of a perfect star network (i.e., a network where all of the actors except one have a degree of "1") of the same size (Hanneman & Riddle, 2005). For the organizational networks in this study sample, the average in-degree centralization across all nine organizations is 16% for the instrumental networks, 29% for the friendship networks, and 32% for multiplex networks. Further, the average out-degree centralization across all nine organizations is 25% for the instrumental networks, 43% for the friendship networks, and 42% for multiplex networks. Finally, the average betweenness centralization is 6% for the instrumental networks, 10% for the friendship networks, and 8% for multiplex networks. Taken together, we can conclude that there is a substantial amount of concentration in these whole networks. In other words, the power of individual employees varies quite substantially and this means that,

overall, positional advantages are rather unequally distributed in these networks (Hanneman & Riddle, 2005).

In addition to network centralization, Table 5-1 also reports the average density of the study networks, which is the total number of existing ties divided by the total number of possible ties. It can also be thought of as the completeness of a network, or the extent to which all possible relations are actually present (Scott, 2000). Specifically, because most employees are not likely to be directly connected to most other employees in the organizations, it is important to go beyond examining the immediate connections between employees and determine how connected, or dense, the whole network is. The table shows that, on average, 6% of instrumental ties, 23% of friendship ties, and 49% of multiplex ties are present in the sampled organizations. These percentages suggest that relationships that center on work-related information only are extremely limited, in that the majority of the possible instrumental-only ties do not exist. Conversely, the friendship and multiplex networks are much more dense, suggesting that the sampled employees are able to develop and maintain informal relationships with one another. Finally, I calculated network reciprocity—for example, if employee A chose employee B as a friend, did employee B also choose employee A? The percentage of reciprocated ties was calculated as the ratio of the number of pairs with a reciprocated tie relative to the number of pairs with any tie (Hanneman & Riddle, 2005). Networks with ties that are predominantly reciprocated tend to be more stable than those with more asymmetric connections. Networks with fewer reciprocated ties often represent more of a hierarchy. Given that this study focuses on peer relationships, it is expected that the networks have a higher percentage of reciprocated ties. We can see

in Table 5-1 that, on average, the friendship and multiplex networks showed moderate reciprocity (54% and 42%, respectively). These percentages are neither high nor low in an absolute sense, but do seem to suggest that a considerable degree of horizontal connection exists within these organizations. With regard to the instrumental network, reciprocated ties were less frequent (23%). This may be the case because instrumental relationships are commonly asymmetrical, such that an employee who is approached by his coworkers for work-related help may be more knowledgeable about the work, and less likely to need to ask his coworkers for help in return. In this way, he is more likely to provide work-related help than to request it.

To supplement these whole network descriptive statistics, Figures 5-1A, B, and C depict the instrumental, friendship, and multiplex (respectively) relationships of one of the nine sampled organizations. Just as an example, I selected to model these networks using betweenness centrality as an attribute of the nodes (i.e., employees), such that the larger the size of a node, the greater its betweenness centrality in that network. In Figure 5-1A, we can see that employee “AA” is highly central in the instrumental network, whereas “SK” is relatively isolated to the periphery of the network. Further, employees “MS” and “JS” reported only have instrumental relationships with each other, and are otherwise isolated from the whole network. Figure 5-1B depicts a sample friendship network, and is clearly much more connected than the instrumental network. Specifically, each employee reported being friends with at least three other employees. This is likely because of the nature of the organization, which allows for a significant amount of informal interaction. We can also see that employee “JS” has the greatest betweenness centrality in this network, meaning that this employee tends to be friends

with other employees who may not be friends with each other. Finally, Figure 5-1C illustrates that, in the multiplex network, employees “JL” and “LC” have the highest betweenness centrality, whereas “ChL” has only one multiplex tie and is not at all central in the network.

### **Measurement Model**

Consistent with convention, I assessed the fit of the data to a measurement model prior to assessing the substantive relationships using Mplus 4.0 (Muthén & Muthén, 2006). In this model, I loaded each individual item onto its respective higher order factor (informational support, emotional support, trust, ability to focus, maintenance difficulty, and job performance), which, by default, I allowed to correlate. To account for variance due to measurement artifacts, in this case, item-wording similarity, I allowed error variances for two maintenance difficulty items to correlate. This model fit the model fairly well ( $\chi^2 [511] = 948.756$ ; CFI = .89; SRMR = .07; RMSEA = .07). However, it also indicates some specific problems. Foremost, the loadings for two of the three reverse-coded trust items and one ability to focus item were quite low (“I really wish I had a good way to keep an eye on my coworkers” = .290, “I am afraid of what my coworkers might do to me at work” = .211. & “I don’t feel like I need to worry about the politics in this company” = .348) and consequently they have a relatively high proportion of unique variance (.916, .955, and .879, respectively). Further, the correlation residuals of these indicators with those of the other factors were not high, which suggests that switching the loading of these indicators to a different factor would not substantially improve model fit (Kline, 2005), nor would it be supported theoretically. Therefore, I respecified the measurement model by removing the three low-loading items. In Table 5-2, Model 1 is the final measurement model, after removing the three

problematic items. As the fit statistics in Table 5-2 indicate, Model 1 fit the data well in an absolute sense ( $\chi^2 [418] = 705.93$ ; CFI = .93; SRMR = .06; RMSEA = .06), and fit significantly better than the originally specified model ( $\Delta\chi^2 [93] = 242.83$ ,  $p < .01$ ). Additionally, all of the loadings of the items onto their respective latent variables, shown in Table 5-3, were statistically significant and strong (average estimate/standard error = 12.27; average loading = .77). I compared Model 1 to more parsimonious nested alternative models that combined latent constructs to assess discriminant validity of the latent variables. In the alternative models, I combined informational and emotional support (Model 2), emotional support and trust (Model 3), trust and inability to focus (Model 4), and ability to focus and maintenance difficulty (Model 5). The statistics and fit indices in Table 5-2 show that none of the alternative models fit the data as well as the hypothesized model. Chi-square difference tests indicate statistically significant differences in model fit favoring Model 1. Altogether, this analysis supports the adequacy of the measure to test the hypothesized structural relationships.

### **Descriptive Statistics and Correlations**

Table 5-4 reports the means, standard deviations, and zero-order correlations among all study variables. As shown in the table, the study variables (when applicable) each possess an acceptable degree of internal consistency reliability. In preliminary support of the hypotheses, instrumental network centrality is positively related to both informational support and job performance, friendship network centrality is positively related to emotional support and somewhat related to job performance (depending on the centrality variable) and, finally, multiplex network centrality is positively related to informational support, emotional support, trust, maintenance difficulty and job performance.

## Analysis of Independence

Because the employees worked in nine independent organizations, I assessed the possibility that there existed an organization effect for the performance outcome (such that employees are likely to perform better or worse for reasons associated with their employing organization) by estimating random coefficient models using Hierarchical Linear Modeling (HLM 6.06; Raudenbush, Bryk, & Congdon, 2000). This model produces variance estimates for the between- and within-supervisor components of performance, which I used to calculate the respective intraclass correlation coefficient (ICC1). ICC1s calculated from random coefficient models range from 0 to 1 and, when used to assess independence, are interpreted as the proportion of total variance that can be attributed to group membership (Bliese, 2000). A statistically significant ICC1 indicates a group (organization) effect that differs from 0 and, thus, a lack of independence in the ratings. Indeed, I found a significant ICC1 for job performance (ICC1 = .30 ( $\chi^2 [8] = 69.42, p < .01$ ). Thus, there was evidence of an organization effect on performance in the data.

Additionally, because the employees in the sample were nested within 43 supervisors, I explored whether there was a supervisor effect on the performance outcomes by estimating random coefficient models using Hierarchical Linear Modeling (HLM 6.06; Raudenbush, Bryk, & Congdon, 2000). The ICC1 for job performance (ICC1 = .09 ( $\chi^2 [42] = 51.96, p > .05$ ) was non-significant, indicating that there was not a supervisor rating effect in the data.

From these calculations, there is evidence that it is necessary to take into account the independent organizations when assessing my hypotheses. In other words, because variance in performance ratings can be accounted for by membership in the

various organizations, the necessary assumption of data independence for ordinary least squares regression is violated. Conducting ordinary least squares regression on this data would result in parameter estimates that are accurate, but the associated standard errors would be underestimated, resulting in test-statistics that are overstated and, ultimately, leading to Type 1 error rates that are too large. For this reason, it was necessary for me to estimate my models using a method that accounts for the clustering of the dependent variable by organization.

### **Structural Models**

The non-independent nature of the data implies that group-level differences in performance need to be modeled separately from individual variation. Accordingly, I tested the hypotheses using multi-level structural equation modeling in Mplus 4.0 (Muthén & Muthén, 2006). Mplus is a statistical modeling program that provides the same advantages as other structural equation modeling programs, (i.e., it allows for the examination of relations proposed by theory and controls for the biasing effects of measurement error), but unlike other programs, it also has the capability to analyze multilevel data.

### **In-degree Centrality and Performance**

Consistent with the theory outlined earlier, I first specified a fully latent model including all direct and indirect paths—where all three of the network independent variables predicted informational support, emotional support, trust, ability to focus, and maintenance difficulty which, in turn, predicted job performance—to determine, in a general sense, whether multiplexity has an effect on the proposed mediators and performance over and above the other network variables. As shown in Table 5-5, this first structural model (Model 1a) fit the data well in an absolute sense ( $\chi^2 [502] = 843.59$ ,

CFI = .92, SRMR = .09, RMSEA = .06). Given that multiplexity did in fact have independent effects, I next estimated a restricted model (Model 1b) that corresponds exactly to the hypothesized model, in which I only specified paths I explicitly hypothesized. I note here that this and every subsequent model tested in this dissertation includes the direct effects from the network variables to the dependent variable, namely because I am primarily interested in interpreting the indirect effects of these relationships. This model also displayed relatively good fit ( $\chi^2 [510] = 858.95$ , CFI = .91, SRMR = .09, RMSEA = .06); however, a comparison of the difference in chi-square showed that this model fit significantly worse than Model 1a ( $\Delta\chi^2 [8] = 15.36$ ,  $p < .01$ ). I examined why the fit may be depreciatively worse by inspecting the modification indices. From these suggestions, I could justify adding several paths. Specifically, I added a path from instrumental network in-degree centrality to ability to focus with the expectation that an individual to whom many people go for work-related help will experience a greater number of unexpected daily distractions and work interruptions that make it difficult for him to focus on required work tasks. Further, I added paths from friendship in-degree centrality to informational support (because work-related information may be the foundation of any work relationship) and to trust (because it is possible that individuals who share personal information with their friends are more willing to be vulnerable to them). So, I estimated this third model with the modified paths, and it fit the data well ( $\chi^2 [507] = 844.42$ , CFI = .92, SRMR = .09, RMSEA = .06). Also, there was no significant difference between this model and Model 1a ( $\Delta\chi^2 [5] = 0.83$ ,  $p > .05$ ), so Model 1c is superior to the first because it is more parsimonious and fits the data equally as well.

In consideration of potential control variables, I examined the correlations between the measured controls and the model variables and found that tenure, agreeableness, extraversion, and conscientiousness were significantly correlated with several independent variables, several mediators, and/or the dependent variable. Specifically, tenure exhibited a correlation with friendship in-degree centrality ( $r = -.16$ ), multiplex in-degree centrality ( $r = .32$ ), and emotional support ( $r = .18$ ); agreeableness was correlated with multiplex in-degree centrality ( $r = .15$ ), informational support ( $r = .28$ ), emotional support ( $r = .28$ ), trust ( $r = .23$ ), and job performance ( $r = .26$ ); extraversion was correlated with multiplex in-degree centrality ( $r = .16$ ), informational support ( $r = .20$ ), and emotional support ( $r = .30$ ); and conscientiousness was correlated with both emotional support ( $r = .19$ ) and job performance ( $r = .18$ ). In order to ensure that the estimated relationships in Model 1c were not spurious, I respecified this model, with the inclusion of tenure, agreeableness, extraversion, and conscientiousness as control variables. The resulting model displayed all of the same patterns of significant relationships as those in Model 1c. It is important to note, however, that according to Kline (2005), statistical precision will be adequate when the ratio of the sample size to observed variables exceeds 5 to 1, and the addition of these control variables brings the ratio for this model to 3.87 to 1, whereas the model excluding the controls allowed the ratio to be 5.35 to 1 and is more parsimonious. Therefore, I retained Model 1c without the controls.

The standardized path estimates from Model 1c are depicted in Figure 2A (note that only the estimates for the highest order factors are included). These estimates indicate support for Hypotheses 1, 3, and 4 in that the paths from informational support

( $\beta = .47, p < .01$ ), trust ( $\beta = .14, p < .01$ ), and ability to focus ( $\beta = .34, p < .01$ ) to job performance were positive and statistically significant. These results support the expectation that individuals who reported receiving work-related information from their coworkers, who are willing to be vulnerable to their coworkers, and who do not perceive extraneous distractions had higher levels of job performance. Hypothesis 2 was not supported: in contrast to my expectation that emotional support would be positively related to job performance, it displayed a significant but negative relationship with performance ( $\beta = -.20, p < .01$ ). This finding is quite interesting because it suggests that having coworkers who provide empathy and boost individuals' spirits may actually detract from performance. Similarly, Hypothesis 5, which stated that maintenance difficulty would be negatively related to job performance, was not supported ( $\beta = -.06, p > .05$ ).

### **Tests of hypotheses for instrumental in-degree centrality**

The path estimates in Figure 2A also support Hypotheses 6 and 7 in that instrumental in-degree centrality was positively and significantly related to informational support ( $\beta = .12, p < .01$ ), and there was a statistically significant indirect effect of instrumental in-degree centrality on job performance through informational support (tests of indirect relationships can be found in Table 5-6). This suggests that individuals who are approached by a greater number of their coworkers regarding work-related information not only report receiving more support and work-related help, but this work-related support also translates into higher job performance. Additionally, this model included a path between instrumental in-degree centrality and ability to focus that was not originally hypothesized. Indeed, instrumental in-degree centrality was positively and significantly related to ability to focus and, further, there was a significant positive

indirect relationship between instrumental in-degree centrality and performance through ability to focus. However, the direction of this relationship is contrary to my (un-hypothesized) expectation for this relationship in that, rather than individuals who are frequently approached by coworkers for work-related help reporting a lower ability to focus, they actually reported experiencing an increased ability to focus, which increased performance. This finding suggests that those individuals who are frequently approached by many of their coworkers for work-related help actually find it less difficult to focus on their work, perhaps because the content of these disruptions is work-related and, thus, allows them to retain their focus.

### **Tests of hypotheses for friendship in-degree centrality**

While Hypothesis 8 was supported, Hypothesis 9 was not. Specifically, friendship in-degree centrality was positively related to receipt of emotional support; however, given the negative relationship between emotional support and job performance, there was a significant but unexpectedly negative indirect relationship from friendship in-degree centrality to job performance through emotional support. This finding suggests that employees who are nominated by a larger number of coworkers as being a friend perceive a greater degree of emotional support, but this support is somewhat detrimental in terms of effective performance. In addition to the explicitly hypothesized relationships, this model also included paths from friendship in-degree centrality to informational support and trust. The results show a positive and significant relationship between friendship in-degree centrality and informational support, as well as a significant indirect relationship from friendship in-degree centrality to performance through informational support, suggesting that employees' who are nominated by a greater number of their coworkers as being a friend report receiving more information

about their work and, subsequently, receive higher ratings of performance. However, although there was a positive relationship between friendship in-degree centrality and trust, this effect was not significant, nor was the indirect effect from friendship in-degree centrality to performance through trust.

### **Tests of hypotheses for multiplex in-degree centrality**

Next, I examined the pattern of relationships among multiplex in-degree centrality and performance through the proposed mediators. Specifically, Hypothesis 10a and 10b were supported, as multiplex in-degree centrality was positively and significantly related to both informational and emotional support. Further, Hypothesis 11 received support in that multiplex in-degree centrality showed a positive indirect relationship with job performance through informational support; however, Hypothesis 12, which stated that multiplex in-degree centrality is positively related to performance through emotional support, was not supported in that this relationship was significant but in the opposite direction as hypothesized. This suggests that employees who are nominated by a greater number of coworkers as being both someone to go to for work-related help and a friend report receiving a broader range of social support, but only the support that is focused on task-related exchanges translates into higher performance.

Hypotheses 13 and 14 were supported in that multiplex in-degree centrality was positively related to trust, and there was a positive and significant indirect relationship between multiplex in-degree centrality and performance through trust. These results suggest that employees who are nominated by a greater number of coworkers as being both someone to approach for work-related help and a friend report greater willingness to be vulnerable to their coworkers, and this trust facilitates higher ratings of performance.

Hypotheses 15 and 16, however, were not supported: multiplex in-degree centrality was not significantly related to ability to focus, and the indirect effect of multiplex in-degree centrality to job performance through ability to focus was non-significant. Finally, although Hypotheses 17 was supported in that there was a positive and significant relationship between multiplex in-degree centrality and maintenance difficulty, Hypothesis 18 was not supported, such that there was a non-significant indirect effect for multiplex in-degree centrality to performance through maintenance difficulty. These findings suggest that employees who are nominated by a greater number of coworkers as being both someone to go to for work-related help and a friend report greater difficulty in maintaining informal relationships with their coworkers, but this difficulty does not necessarily result in lower supervisor ratings of performance. Taken together, these results support the independent role of multiplexity on performance.

### **Out-degree Centrality and Performance**

Applying a parallel process to that used to test the structural models in the previous section, I first specified a fully latent model including all direct and indirect paths. Table 5-5 shows that this first structural model (Model 2a) fit the data well in an absolute sense ( $\chi^2 [502] = 865.985$ , CFI = .91, SRMR = .09, RMSEA = .06). Again, there was evidence for the independent effects of multiplexity, so I proceeded to estimate a restricted model (Model 2b) in which I only specified paths I explicitly hypothesized (and all direct paths from the network variables to the dependent variable). This model also fit the data relatively well ( $\chi^2 [510] = 897.85$ , CFI = .91, SRMR = .10, RMSEA = .07); however, the difference in chi-squares indicated that they hypothesized model fit significantly worse than Model 2a ( $\Delta\chi^2 [8] = 31.87$ ,  $p < .01$ ). I again looked at possible

modifications, and from these suggestions, I could theoretically justify adding several paths that would contribute to model fit. Specifically, I added a path from instrumental network out-degree centrality to ability to focus for similar reasoning to that of the in-degree centrality in the previous section, namely, that they will have the capability to focus on their work, albeit in work-related conversation with their colleagues. Further, similar to the in-degree centrality model, I added a path from friendship out-degree centrality to informational support. I estimated this third model (Model 2c) with the modified paths, and it fit the data well ( $\chi^2 [508] = 877.98$ , CFI = .91, SRMR = .10, RMSEA = .06). Also, there was no significant difference between Model 2c (with the modifications) and Model 2a (with all of the paths modeled;  $\Delta\chi^2 [5] = 11.99$ ,  $p > .05$ ).

Before moving forward to interpret the results from the more parsimonious model (Model 2c), I again considered any potential control variables by examining their correlations with the study variables. I found that agreeableness, extraversion, and conscientiousness were significantly correlated with several independent variables, several mediators, and/or the dependent variable. Specifically, agreeableness was correlated with multiplex out-degree centrality ( $r = .18$ ), informational support ( $r = .28$ ), emotional support ( $r = .28$ ), trust ( $r = .23$ ), and job performance ( $r = .26$ ); extraversion was correlated with multiplex out-degree centrality ( $r = .15$ ), informational support ( $r = .20$ ), and emotional support ( $r = .30$ ); and conscientiousness was correlated with friendship out-degree centrality ( $r = .17$ ), multiplex out-degree centrality ( $r = -.15$ ), emotional support ( $r = .19$ ) and job performance ( $r = .18$ ). In order to ensure that the estimated relationships in Model 2c were not spurious, I respecified this model by including agreeableness, extraversion, and conscientiousness as control variables. Again, this

model displayed all of the same patterns of significant relationships as those in Model 2c. Because inclusion of these observed variables results in a ratio of the sample size to observed variables that is less than 5 to 1, I proceeded to interpret Model 2c without the controls.

The standardized path estimates from Model 2c are depicted in Figure 2B. These estimates provide further support for Hypotheses 1, 3, and 4 in that the paths from informational support ( $\beta = .42, p < .01$ ), trust ( $\beta = .18, p < .01$ ), and ability to focus ( $\beta = .42, p < .01$ ) to job performance were positive and statistically significant. Again, neither Hypothesis 2 nor Hypothesis 5 was supported in that emotional support was significantly related to job performance ( $\beta = -.25, p < .01$ ), but in the opposite direction than hypothesized, and there was no significant effect for maintenance difficulty to performance.

### **Tests of hypotheses for instrumental out-degree centrality**

The results provide further support for Hypotheses 6 and 7 in that instrumental out-degree centrality was positively and significantly related to informational support ( $\beta = .27, p < .01$ ), and there was a statistically significant indirect effect of instrumental out-degree centrality on job performance through informational support (which can be found in Table 5-6). This suggests that individuals who report having a greater number of people available to approach about work-related questions also report receiving more support and work-related help, and this work-related support translates into higher job performance. Additionally, this model included a path between instrumental out-degree centrality and ability to focus that was not originally hypothesized. In this case, and contrary to the relationship displayed for instrumental in-degree centrality, instrumental out-degree centrality was negatively and significantly related to ability to focus, and

there was a significant negative indirect relationship between instrumental out-degree centrality and performance through ability to focus. Thus, those individuals who report having a large number of instrumental coworkers to ask for work-related help find it difficult to focus on their work tasks and, subsequently, receive lower ratings of performance.

### **Tests of hypotheses for friendship out-degree centrality**

Similar to the pattern of results for in-degree centrality, friendship out-degree centrality was positively related to receipt of emotional support (Hypothesis 8), but there was a significant negative indirect relationship from friendship out-degree centrality to job performance through emotional support (Hypothesis 9), which is the opposite direction than what was hypothesized. This suggests that employees who report having a larger number of friends at work are more likely to feel as though they have people who can improve their mood, but this hinders, rather than improves, performance. In addition to the hypothesized relationships for friendship out-degree centrality, this model also included a path from friendship out-degree centrality to informational support. The results show a positive and significant relationship between friendship out-degree centrality and informational support, as well as a significant indirect relationship from friendship out-degree centrality to performance through informational support, suggesting that employees' who report having a large number of coworkers who are friends report receiving more information about their work and, subsequently, receive higher ratings of performance.

### **Tests of hypotheses for multiplex out-degree centrality**

Finally, I examined the pattern of relationships among multiplex out-degree centrality and performance through the proposed mediators. Specifically, Hypothesis

10a and 10b were supported, as multiplex out-degree centrality was positively and significantly related to both informational and emotional support. Further, Hypotheses 11 and 12 received support in that multiplex out-degree centrality showed a positive indirect relationship with job performance through both informational support and emotional support. These findings imply that employees who report having a greater number of coworkers who they can approach for work-related help and who they also consider a friend report receiving a broader range of social support. However, whereas the support that is focused on task-related exchanges translates into higher performance, the support that focuses more on uplifting spirits and providing empathy detracts from performance.

Hypotheses 13 and 14 were supported in that multiplex out-degree centrality was positively related to trust, and there was a positive and significant indirect relationship between multiplex out-degree centrality and performance through trust. These results suggest that employees who perceive that they have a greater number of coworkers who serve work-related functions and are also considered friends report greater willingness to be vulnerable to their coworkers, and this trust is linked to higher ratings of performance.

Hypotheses 15 and 16 also received support: multiplex out-degree centrality was significantly and negatively related to ability to focus, and the indirect effect of multiplex out-degree centrality to job performance through ability to focus was negative and significant, suggesting that employees reporting a larger number of instrumental coworkers who are also friends are less able to focus on their work tasks, which results in lower performance. Finally, whereas Hypothesis 17 received support in that multiplex

out-degree centrality was positively and significantly related to reports of maintenance difficulty, there was not a significant indirect effect through maintenance difficulty (Hypothesis 18). Again, these results provide further support for the independent role of multiplexity on job performance.

### **Betweenness Centrality and Performance**

In a final attempt to establish the unique effects of multiplexity, I first specified a fully latent model for betweenness centrality including all direct and indirect paths. Table 5-5 shows that this first structural model (Model 3a) had relatively adequate fit to the data ( $\chi^2 [502] = 862.89$ , CFI = .91, SRMR = .09, RMSEA = .06).

Next, I specified a restricted model (Model 3b) that corresponds to the hypothesized paths. Consistent with the previous models, this structural model fit the data well ( $\chi^2 [510] = 880.09$ , CFI = .91, SRMR = .10, RMSEA = .06); but compared to Model 3a, it fit significantly worse ( $\Delta\chi^2 [8] = 17.21$ ,  $p < .01$ ). Upon inspection of the proposed modifications, I added one justifiable path from friendship betweenness centrality to informational support because this central position allows an individual to be in control of information flow throughout the network. Estimation of Model 3c with the modified paths resulted in relatively adequate fit ( $\chi^2 [509] = 873.41$ , CFI = .91, SRMR = .10, RMSEA = .06). Also, there was no significant difference between this model and Model 3a ( $\Delta\chi^2 [5] = 10.52$ ,  $p > .05$ ).

Before moving forward to interpret the results from Model 3c, I respecified the model by including agreeableness and conscientiousness as potential control variables because of their significant correlations with the mediators and job performance. Again, this model retained all of the same significant relationships as those in Model 3c. But, because inclusion of these observed variables results in a ratio of the sample size to

observed variables that is less than 5 to 1, I proceeded to interpret Model 3c without the controls.

The standardized path estimates of the highest order factors from Model 3c are depicted in Figure 2C. These estimates indicate support for Hypotheses 1, 3, and 4 in that the paths from informational support ( $\beta = .45, p < .01$ ), trust ( $\beta = .16, p < .01$ ), and ability to focus ( $\beta = .42, p < .01$ ) to job performance were positive and statistically significant. Hypotheses 2 (which stated that there is a positive relationship between emotional support and performance) and 5 (which stated that there is a negative relationship between maintenance difficulty and performance) were not supported.

#### **Tests of hypotheses for instrumental betweenness centrality**

The path estimates in Figure 2C also support Hypotheses 6 and 7 in that instrumental betweenness centrality was positively and significantly related to informational support ( $\beta = .15, p < .01$ ), and there was a statistically significant indirect effect of instrumental betweenness centrality on job performance through informational support. This suggests that individuals who have greater control over the flow of information in the organization not only report receiving more work-related help, but this work-related support also translates into higher job performance.

#### **Tests of hypotheses for friendship betweenness centrality**

Neither Hypothesis 8 (which stated that there is a positive relationship between friendship betweenness centrality and emotional support) nor Hypothesis 9 (which stated that there is a positive indirect relationship between friendship betweenness centrality and job performance through emotional support) was supported. However, the non-hypothesized path between friendship betweenness centrality and informational support significant, and there was a significant positive indirect relationship between

friendship betweenness centrality and performance through informational support. This finding suggests that employees who are centrally located between two of their friends have valuable access to information that may travel through an informal network that, ultimately, increases performance.

### **Tests of hypotheses for multiplex betweenness centrality**

Lastly, I examined the pattern of relationships among multiplex betweenness centrality and performance through the proposed mediators. Again, Hypothesis 10a and 10b were supported, as multiplex betweenness centrality was positively and significantly related to both informational and emotional support. However, multiplex betweenness centrality only showed an indirect relationship with performance through informational support (Hypothesis 11), but not through emotional support (Hypothesis 12). This suggests that employees who are centrally located between coworkers who function both as sources of work-related information and as friends can gain access to work-related information that facilitates performance.

Hypotheses 13 and 14 were supported in that multiplex betweenness centrality was positively related to trust, and there was a positive and significant indirect relationship between multiplex betweenness centrality and performance through trust. These results suggest that employees who frequently fall on the shortest path between two individuals who are seen to serve both instrumental and friendship functions have increased perceptions of trust in their coworkers, which subsequently benefits performance.

Hypotheses 15 and 16 were not supported: multiplex betweenness centrality was not significantly related to ability to focus, and the indirect effect of multiplex betweenness centrality to job performance through ability to focus was non-significant.

Finally, Hypotheses 17 and 18 were also not supported, such that multiplex betweenness centrality was not related to reports of maintenance difficulty, and there was no indirect relationship between multiplex betweenness centrality and job performance through maintenance difficulty.

### **Summary of Structural Model Results**

To summarize, the overall pattern of results for each of the network variables provides relatively strong support for the hypothesized relationships. Indeed, for in-degree centrality, 11 of the 18 hypotheses received support. Specifically, in terms of in-degree centrality, employees who were perceived by their coworkers to be more central in the organizations' instrumental networks reported that they received significantly more informational support from their coworkers, and also reported a greater ability to remain focused on their work tasks, and both of these experiences translated into higher supervisor performance ratings. Additionally, employees who were nominated by their coworkers as being highly central in the organizations' friendship networks reported receiving higher levels of both informational and emotional support, but whereas access to more work-related information translated into higher ratings of performance, receipt of emotional support, unexpectedly, translated into lower performance. Finally, the employees who were perceived by their coworkers as functioning simultaneously as both an instrumental coworker and a friend reported higher levels of informational support, emotional support, perceptions of trust in their coworkers, but also reported feeling that it was difficult to maintain friendships with their coworkers. As expected, greater access to both informational support and trust resulted in higher levels of performance whereas, unexpectedly, receiving higher levels of emotional support resulted in lower levels of performance.

With respect to out-degree centrality, 13 of the 18 hypotheses were supported. Specifically, employees who nominated a greater number of their coworkers as being available to provide work-related information reported receiving more informational support, and access to useful work-related information facilitated higher levels of performance. However, these same individuals also reported that these relationships made it more difficult for them to focus on their work, which translated into lower performance. Further, those employees who reported having more friends at work also reported that they received more work-related information as well as more emotional support from their coworkers. While receiving more work-related assistance facilitated better work performance, receipt of more emotional support detracted from performance. Finally, as hypothesized, employees who indicated that they have a larger number of relationships with instrumental coworkers who were also friends also reported receiving more informational and emotional support, having more trust in their coworkers, having less capability to focus on work tasks, and having greater difficulty in managing friendships with coworkers. The availability of informational support, emotional support, and trust translated into higher performance, whereas the decreased ability to focus on work tasks resulted in lower ratings of performance.

The final model tested was with respect to betweenness centrality, in which 9 of the 18 hypotheses were supported. In this case, as expected, individuals who fall between two other instrumental coworkers who are not connected to each other reported receiving more work-related information. This is consistent with previous conclusions about the benefits of brokering a relationships between others in that the central individual gains the most control over flows of information in the network, and is

more likely to receive access to more information and in a timelier manner (Burt, 1992). In contrast to the previous models of centrality, having higher betweenness centrality in a friendship network (in other words, being friends with two people who are not friends with each other) did not result in receiving higher levels of emotional support. Additionally, employees with greater friendship betweenness centrality actually reported receiving less informational support, which translated into lower ratings of performance. Finally, employees with greater multiplex betweenness centrality (having multiplex relationships with two coworkers who do not have multiplex relationships with each other) resulted in higher levels of informational support, emotional support, and trust, of which informational support and trust contributed to higher performance ratings.

Table 5-1. Whole network descriptive statistics

Network Variable Averages	Network		
	Instrumental	Friendship	Multiplex
In-degree network centralization	16%	29%	32%
Out-degree network centralization	25%	43%	42%
Betweenness network centralization	6%	10%	8%
Density	6%	23%	49%
Percentage of reciprocated ties	23%	54%	42%

Percentages are calculated based on the overall average across the nine sampled organizations.

Table 5-2. Measurement model

Structure	$\chi^2$	<i>df</i>	CFI	SRMR	RMSEA	$\Delta\chi^2$ ( <i>df</i> )
Model 1: 6 Factors	705.926	418	.93	.06	.06	
Model 2: 5 Factors, IS & ES Combined	1207.575	423	.80	.08	.10	501.649 (5)
Model 3: 5 Factors, ES & T Combined	970.304	423	.86	.10	.09	264.378 (5)
Model 4: 5 Factors, T & AF Combined	1060.279	423	.84	.13	.09	354.353 (5)
Model 5: 5 Factors, TP & H Combined	979.841	423	.86	.09	.09	273.915 (5)

*n* = 180 after listwise deletion of missing data. IS, informational support; ES, emotional support; T, trust; AF, ability to focus; MD, maintenance difficulty; TP, job performance; H, helping; CFI, comparative fit index; SRMR, standardized root mean square residual; RMSEA, root-mean-square error of approximation. All  $\chi^2$  and  $\Delta\chi^2$  values are *p* < .001.  $\Delta\chi^2$  tests relative to Model 1.

Table 5-3. Study items and factor loadings

	Factor Loading
<b>Informational Support</b>	
My coworkers give me information, suggestions, and guidance that I find helpful	.86
My coworkers are willing to extend themselves in order to help me perform my job	.77
I receive work-related information from my coworkers	.86
My coworkers provide me with advice that is relevant to performing my job	.87
My coworkers are helpful in providing me with work-related information	.90
<b>Emotional Support</b>	
My coworkers share related personal experiences as an alternative perspective to my problems	.78
My coworkers provide encouragement and emotional support	.88
My coworkers boost my spirits when I feel low	.81
My coworkers listen to me when I'm frustrated about something and need to vent	.83
My coworkers empathize with my concerns and feelings	.85
<b>Trust</b>	
If I had my way, I wouldn't let my coworkers have any influence over issues that are important to me	.70
I would be willing to let my coworkers have complete control over my future in this company	.51
I would be comfortable giving my coworkers a task or problem that was critical to me, even if I could not monitor their actions	.82
I would tell my coworkers about mistakes I've made on the job, even if they could damage my reputation	.70
If my coworkers asked why a problem happened, I would speak freely even if I were partly to blame	.59
<b>Ability to Focus</b>	
The work climate here allows me to focus on doing my job	.63
In this company, you need to make sure you "cover your backside"	.68
There are issues in this company that take my attention away from doing my job	.69
I need to spend a fair amount of time getting information to protect myself	.72
If you don't watch out for yourself around here, you won't get what's coming to you	.73

Table 5-3. Continued

Maintenance Difficulty	Factor Loading
I sometimes find it difficult to behave in a way that is appropriate for my job, but that pleases the friends that I work with	.74
It is difficult to maintain friendships with my coworkers	.70
I have to do things to please my friends at work but that should be done differently	.78
Working with friends makes me feel like there are incompatible expectations of me	.70
I sometimes have to break a rule in order to make a friend at work happy	.64
I do things that are apt to be accepted by one person at work and not accepted by others	.64
<b>Job Performance</b>	
Adequately completes assigned duties	.94
Fulfills responsibilities specified in his/her job description	.93
Performs tasks that are expected of him/her	.92
Meets formal performance requirements of the job	.87
Engages in activities that will directly affect his/her performance evaluations	.69
All factor loadings are significant at $p < .01$ . $n = 180$ after listwise deletion.	

Table 5-4. Descriptive statistics and correlations for study variables

	Mean	s.d.	1	2	3	4	5	6	7	8
1. Instrumental Out Degree	7.52	9.62	-							
2. Instrumental In Degree	6.43	6.54	.18	-						
3. Instrumental Betweenness	1.50	2.60	.59**	.26**	-					
4. Friendship Out Degree	24.33	19.05	-.13	-.01	-.01	-				
5. Friendship In Degree	22.03	15.23	.15*	-.17*	.07	.29**	-			
6. Friendship Betweenness	2.51	3.85	-.14	-.18*	-.10	.28**	.12	-		
7. Multiplex Out Degree	49.70	24.02	.09	-.26**	.09	-.38**	-.01	-.08	-	
8. Multiplex In Degree	44.33	20.85	-.13	-.22**	-.05	.13	-.29**	.06	.45**	-
9. Multiplex Betweenness	1.97	3.01	.06	-.10	-.06	.06	-.09	-.04	.24	.43**
10. Informational support	3.22	.93	.27**	.03	.20*	.14	-.13	-.22*	.14	.25**
11. Emotional support	3.23	.94	.04	-.13	.08	.25**	.27**	.08	.32**	.40**
12. Trust	2.83	.69	.16*	-.07	.12	.06	.00	-.03	.24**	.41**
13. Ability to focus	3.47	.74	-.19*	.09	-.16*	.12	-.03	-.06	-.17*	.08
14. Maintenance difficulty	2.42	.68	.01	-.16*	-.02	-.18*	-.02	.06	-.41**	.26**
15. Job performance	5.19	1.19	.18*	.13	.13	.27**	-.02	-.11	-.10	.27**

*n* = 180 after listwise deletion of missing data. Coefficient alpha reliabilities on diagonal. \**p* < .05, \*\**p* < .01.

Table 5-4. Continued

	9	10	11	12	13	14	15
1. Instrumental Out Degree							
2. Instrumental In Degree							
3. Instrumental Betweenness							
4. Friendship Out Degree							
5. Friendship In Degree							
6. Friendship Betweenness							
7. Multiplex Out Degree							
8. Multiplex In Degree							
9. Multiplex Betweenness	-						
10. Informational support	.18*	(.93)					
11. Emotional support	.20	.52**	(.92)				
12. Trust	.29**	.41**	.29**	(.79)			
13. Ability to focus	.00	.01	-.06	.08	(.81)		
14. Maintenance difficulty	.08	-.10	.10	.05	-.29**	(.87)	
15. Job performance	.15*	.45**	.17**	.38**	.35**	-.24**	(.93)

*n* = 180 after listwise deletion of missing data. Coefficient alpha reliabilities on diagonal.

\**p* < .05, \*\**p* < .01.

Table 5-5. Structural models

Structure	$\chi^2$	<i>df</i>	CFI	SRMR	RMSEA	$\Delta\chi^2$ ( <i>df</i> )
In-degree centrality						
Model 1a: Model with All Direct and Indirect Paths	843.592*	502	.92	.09	.06	
Model 1b: Hypothesized Model	858.949*	510	.91	.09	.06	15.36* (8)
Model 1c: Model with Modifications	844.420*	507	.92	.09	.06	0.83 (5)
Out-degree centrality						
Model 2a: Model with All Direct and Indirect Paths	865.985*	502	.91	.09	.06	
Model 2b: Hypothesized Model	897.852*	510	.91	.10	.07	31.87* (8)
Model 2c: Model with Modifications	877.979*	508	.91	.10	.06	11.99 (5)
Betweenness centrality						
Model 3a: Model with All Direct and Indirect Paths	862.886*	502	.91	.09	.06	
Model 3b: Hypothesized Model	880.093*	510	.91	.10	.06	17.21* (8)
Model 3c: Model with Modifications	873.406*	509	.91	.10	.06	10.52 (5)

*n* = 179 after listwise deletion. CFI, comparative fit index; SRMR, standardized root mean square residual; RMSEA, root-mean-square error of approximation. \**p* < .05.  $\Delta\chi^2$  tests relative to each structure's Model a, respectively.

Table 5-6. Tests of indirect effects

Relationship	Indirect Effect through				
	Informational Support	Emotional Support	Trust	Ability to Focus	Maintenance Difficulty
In-degree centrality					
Instrumental→Job Performance	0.06*	—	—	0.05*	—
Friendship→Job Performance	0.12**	-0.07*	0.02	—	—
Multiplex→Job Performance	0.17**	-0.12*	0.06*	0.05	-0.02
Out-degree centrality					
Instrumental→Job Performance	0.12**	—	—	-0.07*	—
Friendship→Job Performance	0.11**	-0.04*	—	—	—
Multiplex→Job Performance	0.09**	-0.05*	0.04*	-0.07*	0.01
Betweenness centrality					
Instrumental→Job Performance	0.07**	—	—	—	—
Friendship→Job Performance	-0.09**	-0.01	—	—	—
Multiplex→Job Performance	0.08*	-0.02	0.05*	0.00	0.00

*n* = 179 after listwise deletion. Significance tests are one-tailed because calculated from z-estimates. All estimates are standardized. Dashes represent paths not modeled. \*  $p < .05$ , \*\*  $p < .01$

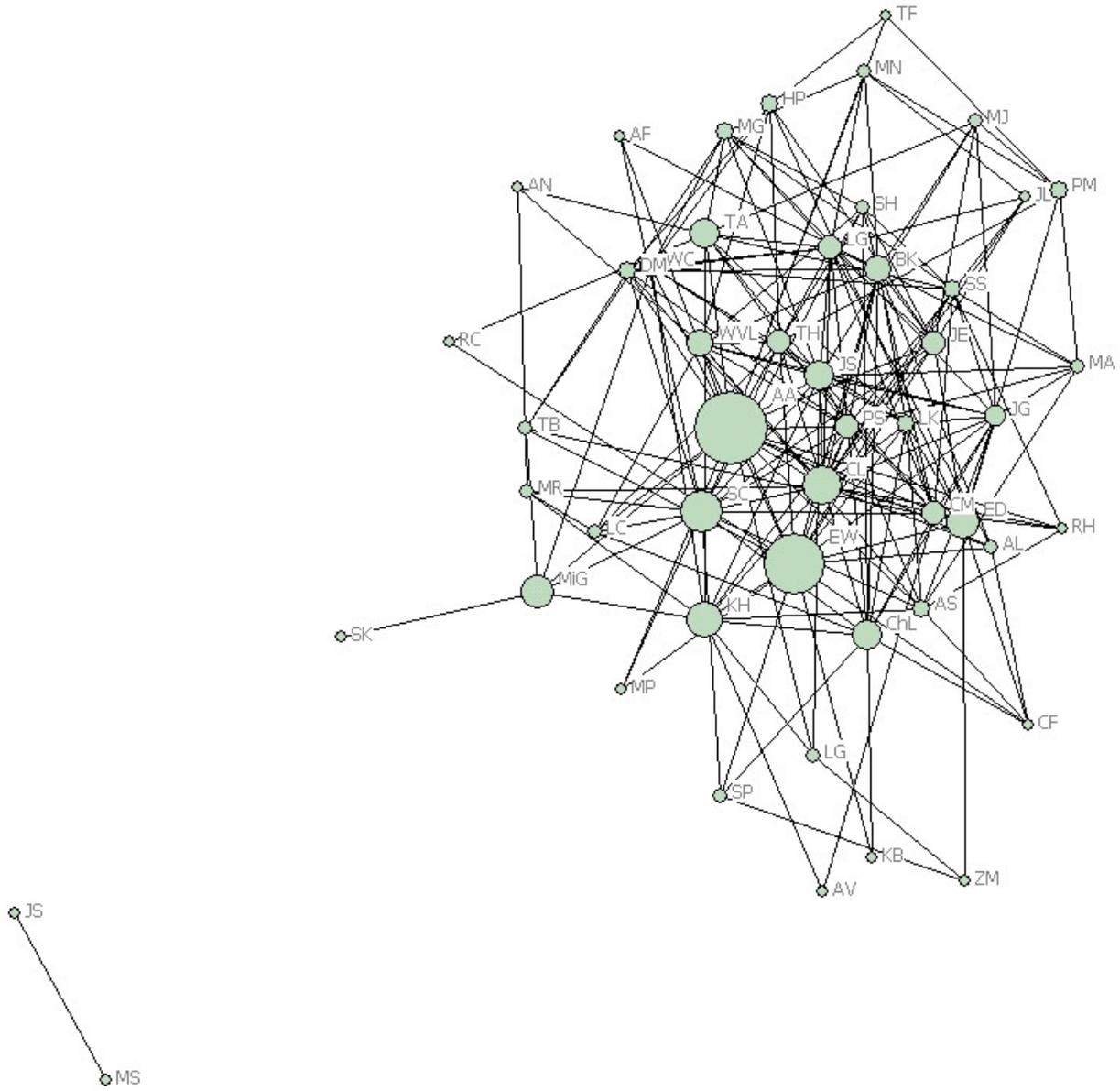


Figure 5-1. Network betweenness centrality for one sampled organization. A) Instrumental network.



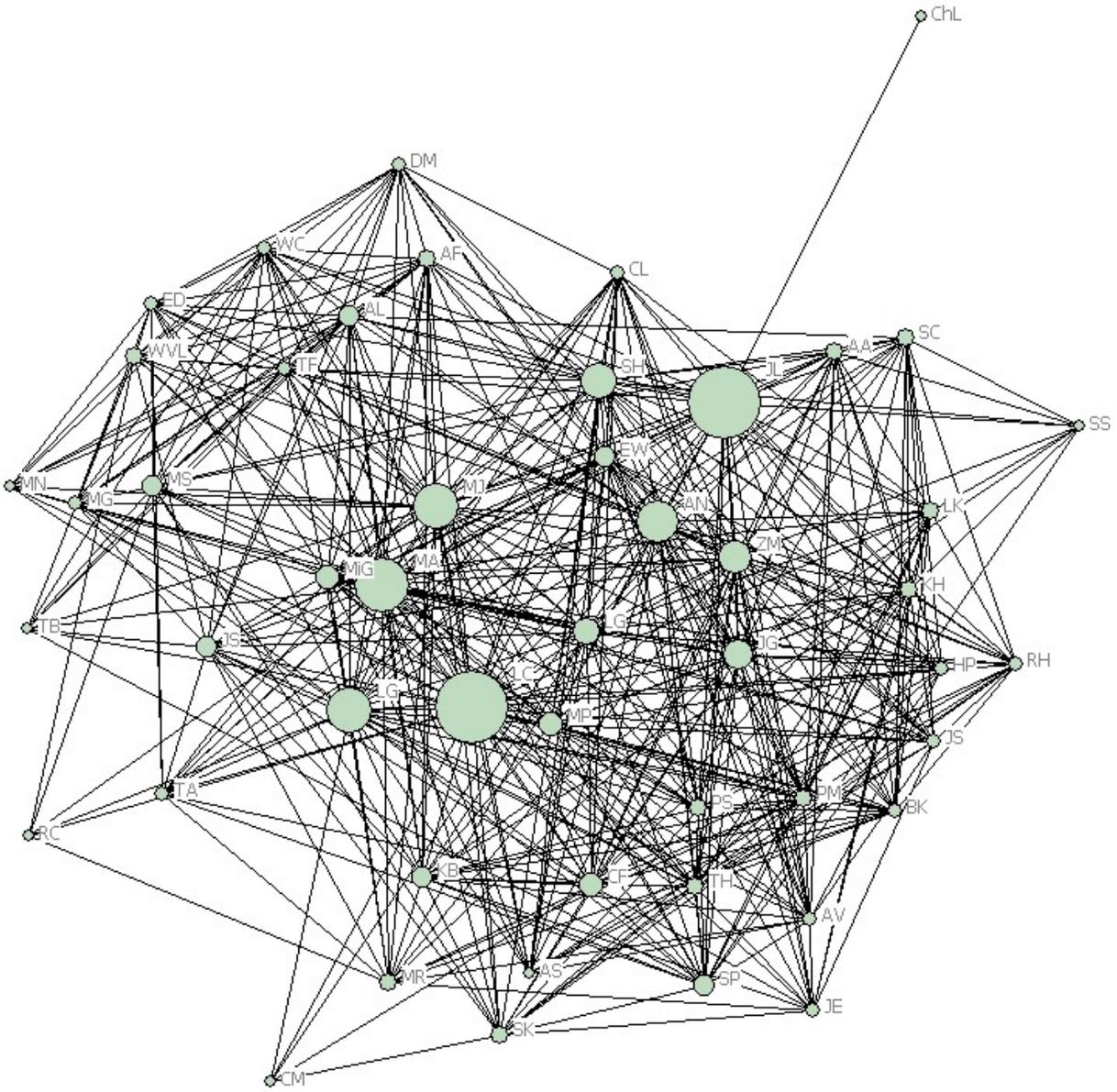


Figure 5-1. Network betweenness centrality for one sampled organization. C) Multiplex network.

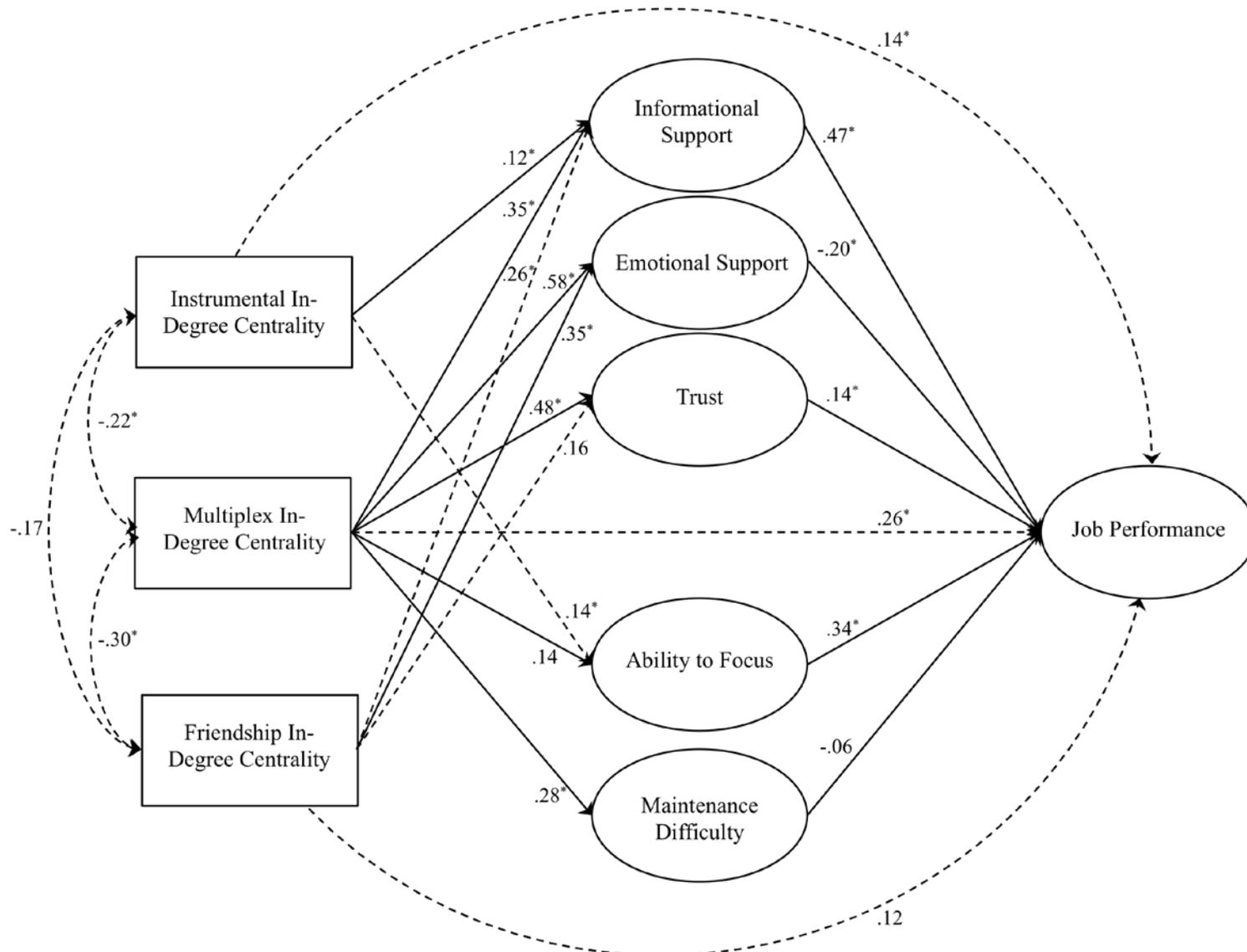


Figure 5-2. Structural model. A) In-degree centrality on performance. Only the structural model is reported. All paths are standardized. Dashed lines indicate paths not hypothesized in Figure 3-1.

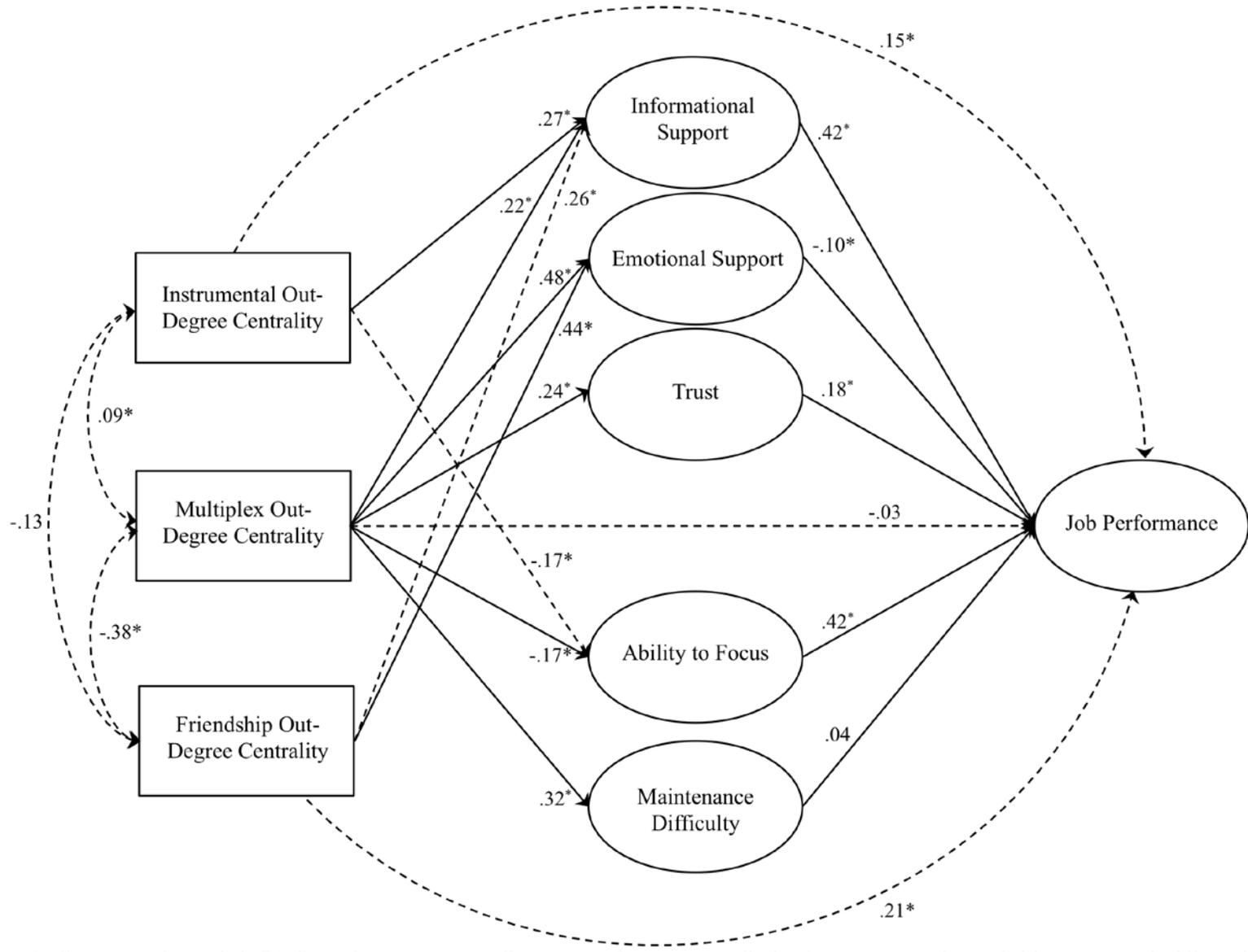


Figure 5-2. Structural model. B) Out-degree centrality on performance. Only the structural model is reported. All paths are standardized. Dashed lines indicate paths not hypothesized in Figure 3-1

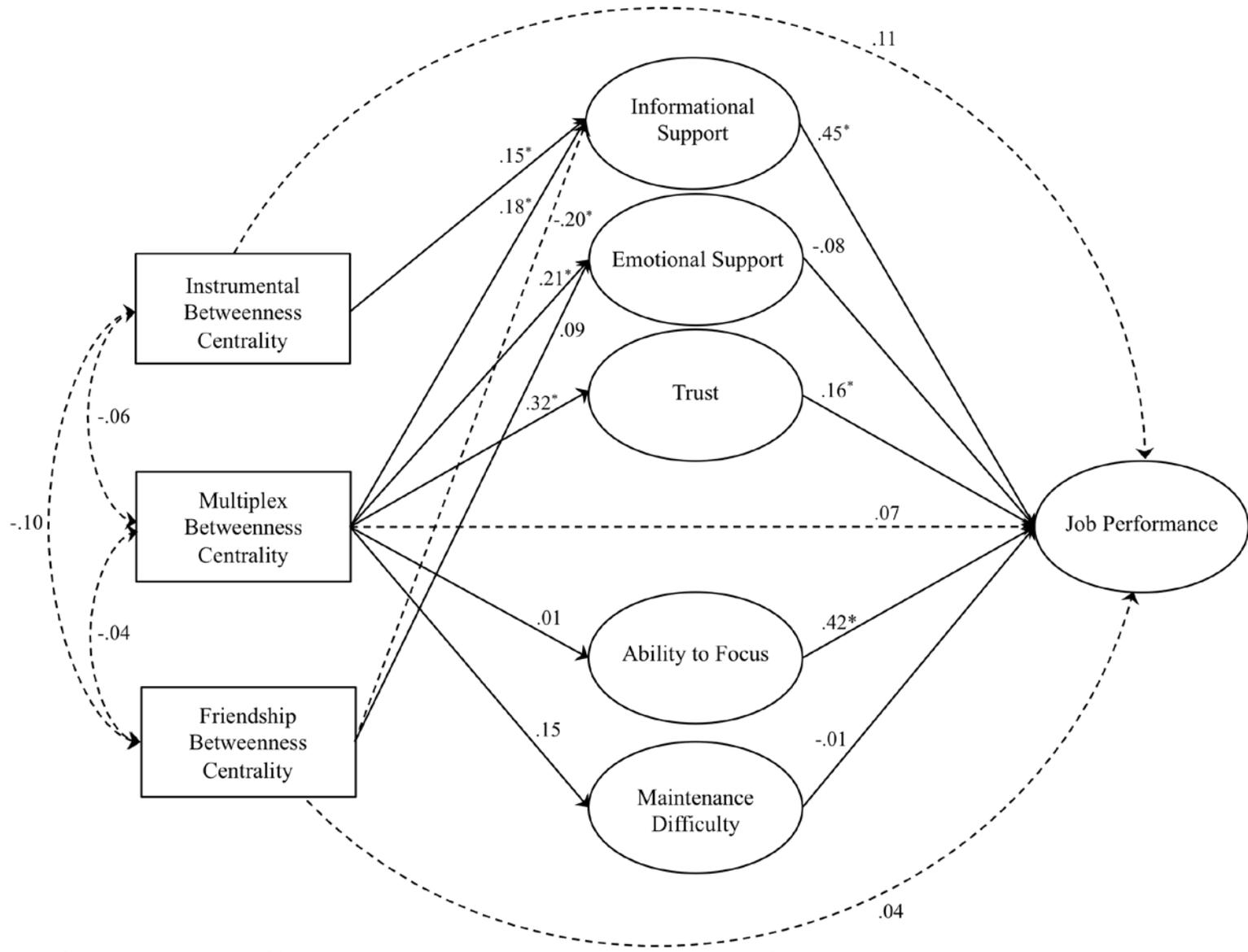


Figure 5-2. Structural model. C) Betweenness centrality on performance. Only the structural model is reported. All paths are standardized. Dashed lines indicate paths not hypothesized in Figure 3-1.

## CHAPTER 6 DISCUSSION

The social network relationships employees have with their coworkers are particularly relevant to job performance because they help individuals cope with work demands. Although prior research has focused on the role of instrumental and friendship ties in trying to understand how employees' social networks influence their performance, a more comprehensive understanding necessitates consideration of multiplexity. Therefore, the present study sought to isolate the unique effects of network ties that serve exclusively instrumental or friendship functions from those ties that are multiplex in nature to determine how they impact performance. The results of this study show that it is especially important to account for those relationships that comprise both instrumentality and friendship simultaneously because they represent a unique type of relationship that can be leveraged to cope with various demands. This study is the first to (a) ascertain a linkage between multiplexity to job performance and, just as important, (b) identify mechanisms that explain this relationship.

Altogether, there is evidence that multiplexity functions as a unique relationship when influencing work performance. Specifically, whereas participation in the instrumental and friendship networks provided access to a basic level of work-related information that facilitated work performance, across all three types of centrality, multiplexity facilitated receipt of informational support over and above the other network relationships, and was, notably, the only relation that elicited feelings of trust in one's coworkers. Further, for two of the three types of centrality, multiplexity provided access to emotional support, over and above the emotional support provided by relationships that are friendship-only. From these results, we might also conclude that the number of

multiplex relationships is more highly associated with job performance than whether one is located centrally between others.

## **Theoretical Contributions**

### **Distinctiveness of Multiplexity**

One of the most important contributions of this research is that it clarified how multiplex relationships are distinct from relationships that are exclusively instrumental or friendship. I theorized that multiplex ties reflect a stronger, more intimate interpersonal relationship, and that this type of relationship cannot be conceptually or operationally regarded as a composite of its instrumental and friendship components because it predicts performance through a unique set of pathways. The results of this study were very supportive in showing that multiplexity has functionally distinct relationships with informational support, emotional support, trust, ability to focus, maintenance difficulty and, ultimately (and most importantly), job performance.

Beyond establishing multiplexity as a distinct and unique concept, my research has important implications in regards to how previous research on unitary ties is interpreted with respect to supporting its underlying theory. For example, Jehn and Shah (1997) concluded that friendship ties contribute to commitment and cooperation, which in turn, translates to higher levels of performance. However, while their study did account for ties where participants were close friends, it neglected to consider that the friends performed an interdependent task in which they shared work-related information. Because these relationships included instrumental content, they were multiplex rather than purely expressive, and thus the conclusions drawn regarding the performance effects of friendship ties may be misleading. Although previous research on unitary ties

has been invaluable in increasing our understanding of social networks, future theory and research on social networks should be refined to explicitly account for multiplexity.

### **The Role of Multiplexity in Relationships with Performance**

Another important contribution is that I refine existing theory on network relationships to explain how multiplexity is linked to job performance. On one hand, I argue that the coexistence of instrumental and friendship content within a single relationship produces a synergistic pool of resources that are richer and of greater utility than those resources provided by ties that are instrumental-only or friendship-only. Because individuals in multiplex relationships communicate more intimately by providing more detailed and accurate information, multiplexity reflects a richer mechanism to cope with work demands. Multiplexity provides access to a pool of resources that has greater depth and utility because the intimate, secure nature of the relationship facilitates more probing, follow-ups and, ultimately, a better understanding of how problems can be dealt with. To this end, my results showed that multiplex relationships provide access to a wider range of support resources, more specifically, both informational and emotional support. Interestingly, though, whereas the increased informational support provided by instrumental relations was, as expected, beneficial for work performance, the emotional support provided by these relationships unexpectedly resulted in lower ratings of performance. Further, the characteristics of multiplex relationships satisfy needs to feel secure and, as a consequence, participants in these relationships experience higher levels of trust that, in turn, translates to higher job performance. On the other hand, there is a dark side to multiplex relationships that should be accounted for. Multiplex relationships may distract employees and minimize their ability to focus on their work, and this preoccupation with extraneous information translated into lower ratings of

performance. Furthermore, multiplex relationships also require the maintenance of roles that may be incongruous; managing multiplex relationships is difficult because the informal behavior associated with friendship may, at times, present a contradiction to behaviors that are appropriate for a work role. However, the difficulty in managing these relationships was not associated with higher or lower levels of performance.

The results largely supported this dual pathway model in that multiplexity had a positive indirect relationship with job performance through informational support and trust, and a negative indirect relationship through emotional support and ability to focus. Although prior research has emphasized the positive attributes of social networks, these findings suggest that more complete explanations of social networks should also consider potential costs of these relationships as well.

### **Improved understanding of unitary networks and their implications for coping theory**

Very little research has examined instrumental and friendship ties in a way that isolates their content. In other words, extant research examining the effects of these network ties tends to identify the existence of a single type of content in a relationship, for example, friendship, and ignores whether instrumental content is also present. This study helped to determine the independent effects of instrumental and friendship ties on performance by teasing apart the network ties that were identified as instrumental from those that were identified as friendship.

With respect to instrumental-only networks, I found that, in accordance with previous research and my expectations, employees who were highly central in an instrumental network (in terms of the number of coworkers who nominate them as instrumental, the number of instrumental coworkers the employee reports having, and

being located on the shortest path between instrumental coworkers who are not connected to each other), reported receiving higher levels of informational support than their less central counterparts and, consequently, received higher ratings of performance from their supervisors. The explanation for this relationship is that the work individuals perform as part of their job is enhanced by task-related information from others. Thus, the informational support accessed through instrumental ties facilitates problem solving about task-related problems and potential solutions (Balwin et al., 1997; Sparrowe et al., 2001). Interestingly, an un-proposed relationship surfaced between instrumental network centrality and ability to focus, but the direction of the relationship was dependent on the type of centrality being considered. Specifically, employees who were nominated by a significant number of their coworkers as being instrumental (in-degree centrality, or information-giving) reported an increased ability to focus on their work tasks and ultimately had higher performance, whereas employees who indicated they had a large number of instrumental coworkers (out-degree centrality, or information-receiving) indicated a lower ability to focus which translated into lower performance. These findings suggest, albeit somewhat counterintuitively, that employees who receive unsolicited requests for information from their coworkers were more able to focus on their work, whereas employees who initiated the information exchange reported a lower ability to focus. This may be explained, however, by research on the beneficial aspects of interruptions. In particular, O'Conaill and Frohlich (1995) found that 43.2 percent of interruptions that occur on a daily basis ultimately benefit both the initiator and the receiver, and 20.8 percent benefit the recipient only;

therefore, in 64 percent of interruptions, the recipient received some benefit from the interaction.

With respect to friendship network participation, in support of my expectation, higher centrality in a friendship network elicited reports of more emotional support from coworkers. Unexpectedly, though, the relationship between emotional support and job performance was negative, suggesting that having coworkers who provide sympathy and who attempt to raise one's spirits detracts from job performance. This is an important finding, not only because there is very little research addressing the link between friendships in the workplace and job performance, but also because the research that does address friendship is largely inconsistent. Although prior research shows that friendship may be beneficial in terms of engendering a sense of belonging (Kahn, 1998; Kram & Isabella, 1983; Mossholder et al., 2005; Oh et al., 2004), these results suggest that friendships provide a social outlet for employees to avoid work tasks. An additional un-proposed relationship appeared, as well; namely, that friendship network centrality was associated with receipt of informational support. This finding, in conjunction with the links between both instrumental network centrality and multiplex network centrality and informational support, suggests that work-related information is necessarily the most foundational resource provided by work relationships. Thus, even though the primary purpose of friendship may not be to provide work-related information, it is still an outlet for its diffusion. This finding is consistent with literature on peer mentoring in that although interpersonal relationships exist on a continuum from weak to strong, each relationship is comprised of some level of information exchange (Kram & Isabella, 1985).

Interestingly, although the results for friendship ties to performance are contrary to what previous theory may have suggested, when taking them in conjunction with the findings for instrumental ties, they do highlight my earlier argument that network relationships reflect forms of coping. The results suggest that instrumental network ties may inherently reflect a relational form of problem-focused coping by allowing employees to utilize work relations productively and directly address work demands. In other words, it appears that these ties reflect a form of problem-focused coping because they characterize constructive relations that directly assist in the achievement of work-related goals. Since problem-focused coping, in the form of instrumental ties, facilitates direct management of work demands by analyzing a problem, formulating alternatives, and identifying a solution, this strategy is likely to enhance performance (Endler & Parker, 1990; Lazarus & Folkman, 1984).

Conversely, friendship ties may reflect emotion-focused coping, which is less suited to job performance because friendships provide employees with an outlet to avoid work demands (Endler & Parker, 1990; Lazarus & Folkman, 1984). Emotion-focused coping includes cognitive processes directed at lessening the emotional distress and includes behaviors such as avoidance, minimizing, and distancing. Because friendship ties are comprised of people to whom individuals go for non-work related help, such as empathy, benevolence, and consideration (Ibarra, 1993), the underlying function of friendship ties is to afford a mechanism to avoid work tasks and minimize distress by escaping difficulties. More specifically, friendship is understood as a form of support that is not related to work tasks themselves; rather, it is a “backstage resource” that allows employees to cope with demands by creating distance between

them and their work roles (Lazega & Pattison, 1999). Thus, these results underscore that not only multiplex relationships reflect a unique coping mechanism, but ties that are instrumental-only or friendship-only may have different underlying functions, as well.

### **Implications for social capital theory**

Finally, this study takes a more nuanced approach to relational social capital theory (Nahapiet & Ghoshal, 1998) by considering the potential associated costs of developing multiplex ties at work. Although research drawing from social capital theory predominantly focuses on the resources that are gained from network relationships (Adler & Kwon, 2002; Leana & Van Buren, 1999; Oh et al., 2004; Seibert et al., 2001), this theory also hints that the social capital derived from network ties can also be costly to the focal individual. For instance, Leana and Van Buren (1999) propose that the costs of social capital include the difficulty in maintaining ongoing relationships and norms. As an example, these researchers suggest that it is necessary to socialize new organizational members and form a collective identity, which “can be costly in terms of time, resources, and even opportunity costs” (Leana & Van Buren, 1999, p. 550). Similarly, Adler and Kwon (2002) argue that social capital has risks associated with both information and embeddedness. In terms of information risks, establishing and maintaining social capital requires a high degree of investment, and the difficulty in maintaining these relationships may outweigh their potential information benefits (cf. Hansen, 1998). Additionally, establishing strong network relationships increases solidarity, thereby intensifying individuals’ feelings of embeddedness in their network and, ultimately, reducing the introduction of new ideas into the network. This study intended to examine two potential costs of social capital: ability to focus and maintenance difficulty. By identifying the link between multiplexity and these concepts, I

was able to take a step toward understanding how the social capital inherent in network relationships can also deplete individuals' resources, rather than solely providing access to them.

### **Practical Implications**

The importance of informal networks has been based on observations that a great deal of work occurs outside formal organizational networks (e.g., Krackhardt & Hanson, 1993). My findings take this conclusion one step further. That is, we learned that it is not just the existence of the informal network that matters, but that the benefits of the informal friendship network occur when it overlaps with the formal network. Employees appreciate the opportunity to interact informally with their coworkers (MacMillan, 2007), and when coworkers become friends, a greater sense of social integration and embeddedness is possible (Mitchell et al., 2001; Oh et al., 2004). From a practical standpoint, this suggests that organizations should not simply focus on practices that spur informal friendship relationships at work per se, but rather practices that promote friendship among coworkers who can interact for work-related purposes. Examples might include the relaxed break rooms, promoting "dress-down" Fridays, and organizing social events to foster more informal connections (MacMillan, 2007).

However, there may be negative unintended consequences of practices that promote informal work relationships. Again, my results show that friendship at work is most beneficial to performance when the friendship is with someone who is the source of instrumental work-related resources. In promoting workplace friendships, organizations may inadvertently promote friendship among employees who may not always work in the same department or unit, or who may not be able to share work-related information for some other reason. Although it may be difficult (and perhaps

unethical) to take steps that prevent the formation of ties that are friendship-only, my results suggest that practices that promote friendship may have highest payoff in circumstances where there are good reasons to believe that the ties may also serve instrumental purposes as well.

Of course, multiplexity in and of itself has costs that need to be considered. Although the use of practices that cultivate friendship among coworkers may appear to be advantageous, managers may be asking employees to integrate roles that may be incompatible. Specifically, the behavior that is appropriate for friendships may contradict the behavior that is appropriate for business interactions, making it difficult to employ both relationships at the same time which, in turn, causes strain and related costs to personal well being (Bridge & Baxter, 1992; Halpern, 1996).

Finally, this research also has implications for organizations' use of employee referral methods. Referral methods are an excellent way for companies to attract the best people at the lowest cost (Lachnit, 2001). Referrals tend to result in high-quality hires because employees are unlikely to recommend people they think are unqualified or unreliable, and there is strong evidence that employees hired through referrals have a higher retention rate than others. Clearly, though, referral methods involve the process of current employees encouraging their personal contacts to apply to work at the company, and contacts may include people with whom the employee is already a friend. Thus, if the individual who is referred to the company ultimately accepts the job, then it may be necessary for companies to manage and identify how hiring a referral may impact the current employee and his performance.

## Limitations

Of course, before these results are used to guide managerial practice, several limitations should be considered. First, the sample is comprised of employees who are restricted to the service industry. Thus, the degree to which the findings will generalize to other samples and settings needs to be assessed. Second, I did not examine organizational factors that might influence the effect of the network variables. For example, having a lot of friends in an organization that does not support informal interactions or promote norms of openness and friendliness may be particularly stressful because the relationships need be kept secret. Thus, perhaps perceptions that there is a positive climate for friendship would moderate the detrimental pathway between multiplexity and job performance through ability to focus, such that employees would be less concerned with how their informal relationships were perceived by management (Berman, West, & Richter, 2002). Although understanding the boundary conditions for my findings is important, the issue is beyond the scope of the current research. Finally, although coping theory implies that network structure precedes individual performance, it is possible that there is a non-recursive relationship between network structure and job performance (Sparrowe et al., 2001). For instance, it is possible that employees seek out coworkers who are high performers, contributing to the size of the high performer's instrumental network. I made an effort to address this possibility by collecting performance evaluations from supervisors at a later time period, but future research should investigate the underlying temporal nature of network relationships and performance.

## Future Research

Although future research could address the limitations I mention above, this research illuminates several interesting conceptual questions that scholars could address to move our knowledge even further forward. For example, I examined the effects of network relationships from the perspective of “getting” resources, such that the existence of a network tie meant that the focal individual perceived that he received resources such as informational or emotional support from a particular person. However, there are also implications for my research from the perspective of “giving” resources. In other words, rather than looking at these relationships from the perspective of the person receiving the resources, I could, alternatively, examine the implications for the person providing those resources. Although this question is addressed somewhat by the incorporation of the concept of in-degree centrality, a more refined examination from this perspective is warranted. Inherently, willingness to provide resources is a form of organizational citizenship behavior in that the person is helping another coworker. More specifically, individuals are engaging in interpersonal citizenship behaviors, including altruism (Moorman, 1993) and helping (LePine & Van Dyne, 2001), when they assist their coworkers “beyond their job requirements in such a way that results, either directly or indirectly, in enhanced individual job performance” (Bowler & Brass, 2006, p. 70). Research shows that employees consider who the target of their behavior is when deciding to perform citizenship behaviors (Settoon & Mossholder, 2002; Williams & Anderson, 1991). Thus, it is necessary to consider the type of network relationship individuals have with their coworkers when determining whether they will offer useful resources. For instance, individuals may prefer to help those coworkers with whom they are also friends in order to manage others’

impressions of them (Bowler & Brass, 2006). Indeed, Bowler and Brass (2006) examined the role of social network ties in the performance of interpersonal citizenship behavior, and found that being friends with coworkers predicted the performance of this behavior. Their research reinforces the importance of understanding the role of multiplexity not only from a “receipt of resources” standpoint, but also in terms of a “provision of resources” perspective.

Interestingly, it has also been suggested that individuals may provide help to coworkers whom they dislike in order to manage their image, as well. Thus, future research should also investigate the role of “negative” work relationships among coworkers, as there is some evidence that antagonistic relationships are also particularly salient in organizations. In terms of this study, I focused on relationships that are positively valenced, such that coworkers commonly interact politely with acquaintances to gain access to work-related information, and friends interact with each other to gain access to emotional support. Interestingly, there is preliminary research suggesting that there are negatively valenced parallels to instrumental and friendship ties. More specifically, negative exchange relationships can be reflected in task-related behaviors such as interference, threats, sabotage, and rejection (Sahlins, 1972), as well as in affective-related behaviors such as annoyance, emotional upset, and anger (Pagel, Erdly, & Becker, 1987; Sparrowe et al., 2001). Negative task-related ties have been examined in the form of *hindrance* ties, and negative affective ties have been examined in the form of *adversarial* ties. Thus, whereas instrumental ties involve the exchange of work-related information, hindrance ties refer to relationships with coworkers who make it difficult to complete work by withholding valuable information,

resources, and opportunities (Sparrowe et al., 2001). Similarly, whereas friendship ties involve the exchange of affect and compassion, adversarial ties refer to interpersonally difficult relationships with coworkers that are characterized by having one's privacy invaded, being taken advantage of, having promises of help broken, and constantly provoking conflicts (Baldwin et al., 1997; Rook, 1984).

In light of the occurrence of negative relationships in the workplace, employees frequently have to interact with coworkers who they may dislike, but that they have to work with to get the job done (Wellman, 1988). Similarly, individuals may have friends in their organization that withhold valuable work-related information from them. Therefore, whereby in this study I only considered multiplex relationships that comprise overlapping positive content, it is also possible that there are multiplex relationships that comprise both positive and negative contents. Accordingly, future research should investigate the effects of different types of multiplexity, including multiplex instrumental-adversarial networks, as well as multiplex friendship-hindrances networks, on employee attitudes and behaviors.

Finally, future research on social network interactions could benefit from integrating theory on job embeddedness. Mitchell and colleagues (Mitchell et al., 2001; Lee, Mitchell, Sablinski, Burton, & Holtom, 2004) have theorized about the factors that prevent individuals from voluntarily leaving their organization. One of these factors is the notion of "links," or the number and type of network ties that contribute to the feeling of being "stuck" in an organization. My research on the various types of interpersonal workplace relationships would contribute to this line of research by clarifying how the

relationships (both positive and negative) employees have with their coworkers can facilitate (or hinder) decisions to voluntarily remain in an organization.

## **Conclusion**

This study is the first in the organizational literature to examine the relationship between multiplex instrumental and friendship network ties and individual level job performance. Although multiplex relationships are comprised of instrumental and friendship ties, the present study provides evidence that they are more than the sum of their parts. I found that multiplexity has a positive indirect relationship with job performance because it affords a richer mechanism to cope with workplace demands and increases feelings of trust in a relationship. Further, multiplexity negatively impacts performance through the inability to focus on work task. Taken together, these results show that, in general, having friends who are available to provide help with work-related tasks is largely advantageous for job performance.

## APPENDIX A EMPLOYEE SURVEY

1. In this section, we are interested in the different interactions you might have with your coworkers. **First**, please review the list of names provided on this page. Each of these names refers to one of your coworkers. **Second**, for each name, please indicate whether you know the person. By "**know**" we mean you have met this person and can put a face to the name. If you *do* know the person, write the word "yes" in the box under the column heading "I know this person." If you *do not* know the person, write the word "no." **You may leave the row with your name blank.** **Third**, for each person that you know, indicate, by using the rating scales provided below, the extent to which the person falls into each category (I. through V., described below). For the people you do not know, please leave the boxes blank.

For example, if you *infrequently* go to the particular person for help or assistance with work-related issues, enter a "2" in the box under the column heading "I. INFO." As another example, if you consider the particular person to be a very close friend of yours, enter a "4" in the box under the column heading "V. FRIEND."

**Note: It is okay to enter a number in more than one category for a particular coworker**, for example if you go to this person for work-related help *and* you also consider them a friend. **If a particular coworker does not fall into the category, enter a zero (0).**

- I. INFO: Do you go to this person for professional advice, help, assistance, or information regarding work-related issues, such as what ingredients are in a menu item, or how to use restaurant equipment?
- II. PREVENT: Does this person make it difficult for you to carry out your job responsibilities, for example, by withholding pertinent work-related information from you?
- III. CONFLICT: Do you have a difficult relationship with this person; for example, do you tend to disagree or argue about work and/or non-work related issues?
- IV. INFORMAL: Do you talk with this person about issues at work that may not be directly related to getting your work done, such as politics in the organization, gossip, and other informal communication?
- V. FRIEND: Are you friends with this person, including seeing them socially outside of work, joking around with them during the workday, and confiding in them about personal matters?

	Do you know this person?	I. Info	II. Prevent	III. Conflict	IV. Informal	V. Friend
	If yes: write "yes" If no: write "no"		① = Not At All ② = Very Infrequently ③ = Infrequently ④ = Sometimes ⑤ = Often ⑥ = Very Often			① = Not A Friend ② = Acquaintance ③ = Friend ④ = Close Friend ⑤ = Very Close Friend ⑥ = Best Friend
Example Name 1	no					
Example Name 2	yes	2	0	0	0	4
Employee name						
Employee name						
Employee name						

2. Below are a number of characteristics that may or may not apply to you. Using the rating scale below, indicate your agreement or disagreement with each statement. I...

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
• Sympathize with others' feelings	<input type="checkbox"/>				
• Am not interested in other people's problems	<input type="checkbox"/>				
• Feel others' emotions	<input type="checkbox"/>				
• Am not really interested in others	<input type="checkbox"/>				
• Am the life of the party	<input type="checkbox"/>				
• Don't talk a lot	<input type="checkbox"/>				
• Talk to a lot of different people at parties	<input type="checkbox"/>				
• Keep in the background	<input type="checkbox"/>				
• Get tasks done right away	<input type="checkbox"/>				
• Often forget to put things back in their proper place	<input type="checkbox"/>				
• Like order	<input type="checkbox"/>				
• Make a mess of things	<input type="checkbox"/>				
• Have frequent mood swings	<input type="checkbox"/>				
• Am relaxed most of the time	<input type="checkbox"/>				
• Get upset easily	<input type="checkbox"/>				
• Seldom feel blue	<input type="checkbox"/>				

3. The following are ways of reacting to various difficult, stressful, or upsetting situations. Using the rating scale provided below, please indicate how much you engage in these types of activities when you encounter a difficult, stressful, or upsetting situation.

	Not at all	Rarely	Occasionally	Often	Very Often
• Outline my priorities	<input type="checkbox"/>				
• Work to understand the situation	<input type="checkbox"/>				
• Think about the event and learn from my mistakes	<input type="checkbox"/>				
• Analyze the problem before reacting	<input type="checkbox"/>				
• Adjust my priorities	<input type="checkbox"/>				

	Not at all	Rarely	Occasionally	Often	Very Often
• Blame myself for procrastinating	<input type="checkbox"/>				
• Become very tense	<input type="checkbox"/>				
• Blame myself for being too emotional about the situation	<input type="checkbox"/>				
• Daydream about a better time or place	<input type="checkbox"/>				
• Fantasize about how things might turn out	<input type="checkbox"/>				
• Treat myself to a favorite food or snack	<input type="checkbox"/>				
• Visit a friend	<input type="checkbox"/>				
• Spend time with a special person	<input type="checkbox"/>				
• See a movie	<input type="checkbox"/>				
• Take time to get away from the situation	<input type="checkbox"/>				

4. The following questions refer to whether your organization emphasizes meeting customer needs and expectations for service quality. Please use the response scale below to rate your organization according to each question.

	Terrible	Not Very Good	Good	Excellent	Outstanding
• How would you rate efforts to measure and track the quality of the work and customer service in your organization?	<input type="checkbox"/>				
• How would you rate the recognition and rewards employees receive for the delivery of superior work and customer service?	<input type="checkbox"/>				
• How would you rate the overall quality of customer service provided by your organization?	<input type="checkbox"/>				
• How would you rate the leadership shown by management in your organization in supporting the customer service quality effort?	<input type="checkbox"/>				

5. Listed below are a series of statements that represent feelings that you might have about individuals you currently work with. With respect to your own feelings about your coworkers, please use the response scale below to indicate the extent of your agreement or disagreement with each statement.

Strongly Disagree  
Disagree  
Neutral  
Agree  
Strongly Agree

- |   |                          |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| • My coworkers give me information, suggestions and guidance that I find helpful                    | <input type="checkbox"/> |
| • My coworkers are willing to extend themselves in order to help me perform my job                  | <input type="checkbox"/> |
| • I receive work-related information from my coworkers.   | <input type="checkbox"/> |
| • My coworkers provide me with advice that is relevant to performing my job                         | <input type="checkbox"/> |
| • My coworkers are helpful in providing me with work-related information                            | <input type="checkbox"/> |
| • My coworkers share related personal experiences as an alternative perspective to my problems      | <input type="checkbox"/> |
| • My coworkers provide encouragement and emotional support  | <input type="checkbox"/> |
| • My coworkers boost my spirits when I feel low   | <input type="checkbox"/> |
| • My coworkers listen to me when I'm frustrated about something and need to vent                    | <input type="checkbox"/> |
| • My coworkers empathize with my concerns and feelings  | <input type="checkbox"/> |
| • I often feel preoccupied thinking about how much I owe my coworkers for their help                | <input type="checkbox"/> |
| • I spend a lot of time considering how I will repay my coworkers after they help me                | <input type="checkbox"/> |
| • Much of my attention while I am at work is spent thinking about something a coworker did for me   | <input type="checkbox"/> |
| • I dedicate a significant amount of my energy to thinking about obligations I have to my coworkers | <input type="checkbox"/> |

6. Listed below are several statements that reflect possible perceptions you have of your organization and your coworkers. Using the response scale provided, indicate the extent to which you agree or disagree with each statement.

Strongly Disagree  
Disagree  
Neutral  
Agree  
Strongly Agree

- |   |                          |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| • The work climate here allows me to focus on doing my job  | <input type="checkbox"/> |
| • In this company, you need to make sure you "cover your backside"  | <input type="checkbox"/> |
| • There are issues in this company that take my attention away from doing my job  | <input type="checkbox"/> |
| • I need to spend a fair amount of my time getting information to protect myself  | <input type="checkbox"/> |
| • If you don't watch out for yourself around here, you won't get what's coming to you   | <input type="checkbox"/> |
| • I don't feel like I need to worry about the politics in this company  | <input type="checkbox"/> |
| • If I had my way, I wouldn't let my coworkers have any influence over issues that are important to me                            | <input type="checkbox"/> |
| • I would be willing to let my coworkers have complete control over my future in this company                                     | <input type="checkbox"/> |
| • I really wish I had a good way to keep an eye on my coworkers   | <input type="checkbox"/> |
| • I would be comfortable giving my coworkers a task or problem that was critical to me, even if I could not monitor their actions | <input type="checkbox"/> |
| • I would tell my coworkers about mistakes I've made on the job, even if they could damage my reputation                          | <input type="checkbox"/> |
| • I am afraid of what my coworkers might do to me at work   | <input type="checkbox"/> |
| • If my coworkers asked why a problem happened, I would speak freely even if I were partly to blame                               | <input type="checkbox"/> |

7. The following questions refer to the degree to which your organization promotes informal interactions among coworkers. Please use the response scale below to rate your organization according to each question.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
• My organization promotes a climate of openness and friendship among staff	<input type="checkbox"/>				
• My managers encourage employees to seek each other out for support	<input type="checkbox"/>				
• I have the opportunity to get to know my coworkers	<input type="checkbox"/>				
• I am able to work with my coworkers to collectively solve problems	<input type="checkbox"/>				
• In my organization, I have the chance to talk informally and visit with others	<input type="checkbox"/>				
• Communication among employees is encouraged by my organization	<input type="checkbox"/>				
• I have the opportunity to develop close friendships at my workplace	<input type="checkbox"/>				
• Informal talk is tolerated by my organization as long as the work is completed	<input type="checkbox"/>				

8. Following are a number of statements regarding perceptions you might have of your organization. Using the response scale provided below, indicate your agreement or disagreement with each statement.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
• All in all, I am satisfied with my job	<input type="checkbox"/>				
• In general, I don't like my job	<input type="checkbox"/>				
• In general, I like working here	<input type="checkbox"/>				

9. Listed below are a number of statements regarding the amount of information you receive from your coworkers. Please use the response scale provided below to indicate your agreement or disagreement with each statement.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
• I receive too much information from my coworkers to effectively perform my job	<input type="checkbox"/>				
• Because I receive so much information from my coworkers, it is often difficult for me to tell which information is accurate or relevant	<input type="checkbox"/>				
• I feel that I get too much information to get my job done	<input type="checkbox"/>				
• Generally, I feel that I receive more information than I can efficiently use	<input type="checkbox"/>				
• My coworkers sometimes give me more information than I can make sense of	<input type="checkbox"/>				
• I sometimes find that I am less effective because I am overwhelmed by information from my coworkers	<input type="checkbox"/>				

10. Following are a number of statements regarding your engagement in the work you do. Using the response scale provided below, indicate your agreement or disagreement with each statement.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
• When I am working, I often lose track of time	<input type="checkbox"/>				
• I often get carried away by what I am working on	<input type="checkbox"/>				
• When I am working, I am completely engrossed in my work	<input type="checkbox"/>				
• When I am working, I am totally absorbed by it	<input type="checkbox"/>				
• Nothing can distract me when I am working	<input type="checkbox"/>				

11. Following are a number of statements regarding your perceptions of your employment opportunities. Using the response scale provided, please indicate the extent to which you agree or disagree with each statement.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
• I am planning to leave my job for another in the near future	<input type="checkbox"/>				
• I often think of quitting this job and finding another	<input type="checkbox"/>				
• I would like to quit this job and find another in the near future	<input type="checkbox"/>				
• It would be easy for me to find a job with another employer that is comparable to this one	<input type="checkbox"/>				
• There are a large number of jobs available for someone with my qualifications	<input type="checkbox"/>				
• If I left my present job, I would have no difficulty finding another one just as good	<input type="checkbox"/>				
• Given my age, education, occupation, and the general economic condition, I have a good chance of finding a suitable job in another organization.	<input type="checkbox"/>				

12. Following are a list of statements that may reflect your opinions about your relationships with your coworkers. Using the response scale provided below, please indicate the extent to which you agree or disagree with each statement.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
• I sometimes find it difficult to behave in a way that is appropriate for my job, but that pleases the friends that I work with	<input type="checkbox"/>				
• It is difficult to maintain friendships with my coworkers	<input type="checkbox"/>				
• I have to do things to please my friends at work but that should be done differently	<input type="checkbox"/>				
• Working with friends makes me feel like there are incompatible expectations of me	<input type="checkbox"/>				
• I sometimes have to break a rule in order to make a friend at work happy	<input type="checkbox"/>				
• I do things that are apt to be accepted by one person at work and not accepted by others	<input type="checkbox"/>				

13. Using the response scale below, indicate the degree to which you feel a mix of positive and negative emotions when thinking about work.

Not at all	Slightly	Somewhat	Moderately	Extremely
<input type="checkbox"/>				

Please complete the following information by filling in either a bubble or blank space.

14. What is your age?

\_\_\_\_\_

15. What is your gender?

- Female
- Male

16. What is your educational background?

- Less than 8<sup>th</sup> Grade
- 8<sup>th</sup> to 12<sup>th</sup> Grade
- High School Graduate or G.E.D
- Some College
- Associates Degree
- 4 year College Degree
- Graduate Degree

17. How would you describe your ethnic/racial background?

- White (Not of Hispanic Origin)
- African American
- Hispanic or Spanish-American
- Native American Indian
- Asian or Asian-American
- Mixed ethnic/racial background
- Other; specify: \_\_\_\_\_

18. What is your marital status?

- Single
- Married
- Living with romantic partner
- Divorced
- Widowed

19. How long have you worked in the restaurant industry?

\_\_\_\_\_ months

20. How long have you worked for Italian Gator?

\_\_\_\_\_ months

21. How many hours do you work at Italian Gator per week?

\_\_\_\_\_ hours

22. What is your job title?

\_\_\_\_\_

23. How many coworkers do you interact with regularly, in or out of work?

\_\_\_\_\_

24. How many coworkers are highly dependent on you?

\_\_\_\_\_

25. Approximately how many close friends, not including any of the people you work with, do you have? By close friends, we mean people you often see socially, or who you talk to on a regular basis.

\_\_\_\_\_

Thank you for your participation in this survey. We appreciate your honesty.  
Please return the completed survey to the contact person. Thanks again!

## APPENDIX B SUPERVISOR SURVEY

**INSTRUCTIONS:** On the following page is a series of statements that may be used to describe the behavior of the employees who report to you. Read each statement carefully. Then indicate whether you: (1) Strongly Disagree, (2) Moderately Disagree, (3) Slightly Disagree, (4) Neither Agree nor Disagree, (5) Slightly Agree, (6) Moderately Agree, or (7) Strongly Agree with the statement by filling in the appropriate number for the employee. Please rate employees on their behaviors over the *previous one month period* you have observed them.

Use the example provided below as a guideline.

**Step 1:** Read the names of the people that report directly to you on the top of the rating form.

**Step 2:** Read each statement carefully.

**Step 3:** Please indicate how accurately you think each statement describes the person you are rating by placing the appropriate scale number under their name. Remember, the scale to be used is: (1) Strongly Disagree, (2) Moderately Disagree, (3) Slightly Disagree, (4) Neither Agree nor Disagree, (5) Slightly Agree, (6) Moderately Agree, or (7) Strongly Agree.

**Remember** to rate each employee in reference to the behaviors they exhibited during the previous *one month (4 weeks)* period.

**Step 4:** Place rating sheet in envelope provided, seal it, and return it the *Human Resources office* or the *black box located at the front desk of the Nationwide office*. Thank you – your time and effort are greatly appreciated.

Example:

<b>2. Read Statements</b>	<b>1. Read Employees' Names</b>			
<b>THIS EMPLOYEE:</b>	Johnson, Robert	Robertson, Tamara	Bommer, Nancy	Williams, Bart
1. Fulfills responsibilities specified in his/her job description.	7	2	3	5
2. Helps others who have heavy workloads.	6	4	5	3
3. Speaks up with ideas for new projects or changes in procedures.	5	3	6	4
4. Acts rudely toward someone at work.	2	4	5	6

<b>SCALE:</b> <b>(1) Strongly Disagree</b> <b>(2) Moderately Disagree</b> <b>(3) Slightly Disagree</b> <b>(4) Neither Agree nor Disagree</b> <b>(5) Slightly Agree</b> <b>(6) Moderately Agree</b> <b>(7) Strongly Agree</b>							
1. Adequately completes assigned duties.							
2. Fulfills responsibilities specified in his/her job description.							
3. Performs tasks that are expected of him/her.							
4. Meets formal performance requirements of the job.							
5. Engages in activities that will directly affect his/her performance evaluations.							
6. Neglects aspects of the job that he/she is obligated to perform.							
7. Fails to perform essential duties.							
8. Helps others who have been absent.							
9. Helps others who have heavy workloads.							
10. Assists supervisor with his/her work (when not asked).							
11. Takes time to listen to coworkers' problems and worries.							
12. Goes out of the way to help new employees.							
13. Takes a personal interest in other employees.							
14. Passes along information to coworkers.							
15. Develops and makes recommendations concerning issues that affect the							
16. Speaks up and encourages others to get involved in issues that affect the							
17. Communicates his/her opinions about work issues to others in the organization.							
18. Keeps well informed about issues where his/her opinion might be useful.							
19. Speaks up with ideas for new projects or changes in procedures.							
20. Makes fun of someone at work.							
21. Says something hurtful to someone at work.							
22. Curses at someone at work.							
23. Acts rudely toward someone at work.							
24. Played a mean prank on someone at work.							
25. Publicly embarrassed someone at work.							

Thank you for your participation and support of this project. Your assistance is much appreciated!

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