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# The Effects of Informal Social Structures: A Cognition–Structure–Action Approach

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**The purpose of this article is to examine the effects of epistemic motives and social structures on individual actions and the implications for organizational outcomes. It has been suggested that the informal social structures that develop within organizations affect the behavior of individuals, perhaps more so than formal structure. If this is true, when studying organizations it may be important to examine the effects of informal social structures on individual actions and organizational outcomes. Drawing on findings from epistemic motive theory and expanding social capital theory, a cognition–structure–action model is introduced as a way to begin systematically examining the informal structure of relations that form within organizations on individual behavior. A multilevel perspective is used to examine the interrelationships between formal organizational structures and epistemic motivation and the formation of informal social structure. This article contributes to network research by examining potential cognitive antecedents to network structure. *Organization Management Journal*, 12: 139–152, 2015. doi: 10.1080/15416518.2015.1015113**

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**Keywords** cognition; network structure; epistemic motives

Organizations are collectives whose participants are pursuing multiple interests, both disparate and common, but who recognize the value of perpetuating the organization as an important resource. The informal structure of relations that develops among participants is more influential in guiding the behavior of participants than is the formal structure. (Scott, 2002, p. 28)

According to Scott (2002), if one really wants to know what is going on in an organization, it is important to examine what is happening in the informal structure of social relationships. If the informal structure of relations in an organization is more influential than formal structure, it would seem important to examine the effects these social structures have on behavior. This article contributes by beginning an examination of the question: What are the effects of informal social structure on behavior? This is an important issue since firms rely on formal organizational structures to focus member actions

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on formulating and implementing strategies. If the informal structure of relations has a greater impact on individual action than formal organizational structure, informal social structures can potentially mitigate or enhance the effectiveness of formal organizational structure. For example, Mouzelis (1967) described four different perspectives of informal organization: (a) a deviation from the formal, (b) irrelevant to organizational goals, (c) unanticipated, and (d) what really goes on in an organization (Mouzelis, 1967). Each perspective can have different implications for organizational effectiveness, since how informal organization is viewed can influence how it is perceived to impact positively or negatively organizational goals. In order to gain insight into the effects of informal social structures on individual actions and organizational outcomes, the potential effects of two epistemic motives on the formation of informal social structures and the effects of these social structures on individual actions are examined. Additionally, a multilevel approach is used to examine the relationship between formal organizational structure and epistemic motivation and their further effects on informal social structures.

The suggestion that social structures can affect organizational performance is intuitive (Scott, 2002). However, there is little research examining the way in which cognition and its effects on social structures affect individual actions in identifiable ways. A cognition–structure–action model is introduced that suggests that epistemic motives affect tie strength and the formation of informal social structures. Furthermore, individuals will engage in actions outside of formal structures in ways that are consistent with the strength of the social ties that make up their personal network. In this way, behavior is influenced not only by formal structures, but also by the informal social structures of the organization.

According to Scott, formal organizational structure makes “explicit and visible the structure of relationships among a set of roles and the principles that govern behavior” (Scott, 2002, p. 35). Within formal structures, rules governing behavior are precisely and explicitly formulated and roles and relations are prescribed “independently of the personal attributes and relationships of individuals occupying positions in the (formal) structure” (Scott, 2002, p. 35). The informal structures of

relations that develop within an organization (informal social structure) are formed as individuals develop social relationships outside the bailiwick of formal organizational structure. As such, informal social structures are not necessarily subject to the boundaries of the formal organization. These structures form at different levels and include both the social ties of members (Coleman, 1988; Granovetter, 1973) and the informal network structure of the organization (Brass, Galaskiewicz, Greve, & Tsai, 2004; Davenport & Prusak, 2000; Leana & Van Buren, 1999). As members engage in social interactions, they form relationships or social ties. The linkage or relationship that establishes a tie between two individuals is sometimes referred to as a dyad. Each member has a social structure in which they are the focal actor, termed an ego. An ego-centered network consists of the focal actor and the individuals who have ties to the ego (Wasserman & Faust, 1994). Each individual is the focal actor of their ego-centered network. To the extent that different individuals have common social ties, their ego-centered networks overlap. The personal networks of individuals consist of their ego-centered network and the ego-centered networks of those with whom they have developed social ties (Burt, 2005). The web of overlapping, personal networks creates the organization's informal social network structure. The informal social structure of the organization consists of social ties, or dyads, ego-centered networks, personal networks, and an informal network structure.

Within an organization there are not always clear boundaries between formal organizational structure and informal social structures. Formal and informal structures can sometimes overlap, since a person's relationship with another individual can have both formal and informal characteristics. For example, a person can have a clearly defined and specific, formal organizational relationship with a co-worker, and at the same time interact with the co-worker within informal social structures that are outside of formally prescribed organizational structures. Because of this overlap, formal organizational and informal social structures are not fully independent. As a result, there can be a relationship between what happens inside formal organizational structures and informal social structures. Scholars have discussed the relationship between formal organizational and informal social structures in different ways. For example, Tichy (1981) examined the relationship from a perspective internal to the organization. He discussed informal social networks as emerging from prescribed formal structures (see also the Burns & Stalker, [1994] discussion on organic and mechanistic modes of organizing). Because of the emergent nature of informal structures, changes in formal structures can alter informal social structures (Tichy, 1981). Blau and Scott (1962) discussed the relationship between formal organization and informal organizations in the context of environment. They suggested that formal organization represents the more immediate environment and informal organizations develop in response to opportunities and problems posed by the environment (Blau & Scott, 1962). Researchers have also

examined the effects of more focused networks that exist for specific purposes. The effects of these networks can span formal and informal structures, as well as crossing organizational boundaries. For example, although friendship networks rest on social relationships and intimacy, researchers have shown that friendship networks can facilitate the effectiveness of formal organizational structures by supporting the development of new professional practices (Gibbons, 2004). The effectiveness of knowledge networks, which can develop formally or informally, improves when individuals within knowledge networks are embedded across informal social and formal organizations structures (Davenport & Prusak, 2000). Similarly, other network types such as communities of practice, which can contain elements of both formal and informal structures and span across organizations, can improve organizational learning and innovation (Brown & Duguid, 1991). Because of the relationship between informal and formal structures, interactions that occur within either informal social structures for formal organizational structures can have an effect on the other, thereby affecting organizational outcomes.

Scholars have discussed different reasons for the emergence of informal structures, including (a) a reaction to the alienating and demotivating nature of bureaucracy (Gouldner, 1964), and (b) the inability of formal structures to anticipate all contingencies (Tichy, 1981) and (c) to satisfy social and motivational needs (Stacey, 1996). When individuals are able to use their social structures to create advantage, social structure becomes a valuable resource (Burt, 1992; Coleman, 1988). Conceptualizing social structure as a valuable resource has given rise to the concept of social capital (Adler & Kwon, 2002; Bourdieu, 1986; Burt, 1992; Coleman, 1988; Granovetter, 1973; Lin, 2001b; Portes, 1998; Putnam, 1993). Social capital captures the idea that "social structure is a kind of capital that can create for certain individuals or groups a competitive advantage when pursuing their ends" (Burt, 2000, p. 347). Because of the value inherent to social capital, individuals may often interact with greater purpose within their personal networks than within the formal structure of the organization. The informal social structures within organizations are important to individuals because they can provide resource access (Bourdieu, 1986), emotional support (Lin, 1999), and psychological fulfillment (Adler & Kwon, 2002) in ways that formal organization structures do not. However, there is a cost. As the number of social ties and variability in the strength of those ties increase, social structures can become increasingly complex. Understanding a complex social environment can require significant cognitive effort (Kruglanski & Webster, 1996). Epistemic motivation is the willingness of individuals to undertake effortful cognitive processing of social information (Bodenhausen, Macrae, & Hugenberg, 2003). Because of the cognitive effort required to manage complex social structures, examining the effects of epistemic motives might provide insight into the formation of personal networks. Little research has focused on the effects of epistemic motivation on the formation of social structures.

Even though informal social structures can be important to individual success, formal organizational structures also provide benefits to individuals as well as organizations. For individuals, success as prescribed by formal structures provides benefits in the form of wages, benefit packages, security, achievement, fulfillment, and so on. For organizations, formal structures prescribe the roles individuals fulfill and the behaviors necessary for the firm to successfully implement its strategies and achieve its goals. As such, informal social and formal organizational structures are both important contextual components that can affect individual and organizational outcomes. One way to discuss the effects of formal structures is through the concepts of exploitation and exploration. Exploitation involves activities focused on efficiency and execution (March, 1991), which typically require refining knowledge acquired in the past (Gupta, Smith, & Shalley, 2006). Exploration, on the other hand, involves activities focused on discovery and experimentation (March, 1991), which typically require the pursuit and acquisition of new knowledge (Gupta et al., 2006). Therefore, exploration capabilities require formal structures and processes quite distinct from exploitation capabilities (Benner & Tushman, 2002; Katila & Ahuja, 2002; McGrath, 2001). As a result, depending on the desired organizational outcomes, different formal structures will be required. Because of cognitive differences, individuals may be more comfortable working in certain types of formal structures over others. Therefore, they may perceive some forms of formal structures to be more beneficial than others (Bodenhausen et al., 2003). One reason that informal social structures may have more influence on the actions of individuals than formal structures is that personal networks can provide benefits not provided by formal structures (Burt, 2005; Lin, 2001b). As individuals rely on informal structures to satisfy certain needs, and organizations use formal structures to achieve certain outcomes, individual benefits and organizational outcomes might be maximized by managing the interplay between formal and informal structures.

This article contributes by addressing the call for a greater understanding of the role social structures play in organization (Burt, 2005; Salancik, 1995). First, by examining the potential effect of epistemic motivation on personal network structure, insight might be gained into the formation of the informal social structures that develop within organizations. While researchers have discussed macro-level cognitive influences on network structure (Pachucki & Breiger, 2010; Vaisey & Lizardo, 2010), this article examines the effects of micro-level cognitive factors. By focusing on individual, micro-level factors that affect social structures, important insights might be gained into personal and organizational network antecedents. This is important since in network theory there has been a “relative dearth of work on network antecedents” (Borgatti & Foster, 2003, p. 999). Furthermore, a multilevel approach is taken to examine the effects of informal social structures on individual and organizational outcomes. At the individual level, this article introduces a social cognitive perspective to the creation and

effects of informal social structures. This is important since personal network structures can affect individual actions in ways consequential to organizational outcomes. At the individual and organizational level, a model is introduced that accounts for the impact that informal social and formal organizational structures have on organizational context and outcomes. This article contributes by suggesting that organizations engaged in exploration and exploitation can benefit when formal organizational structures fit with the informal structures within the organization. In such instances, we suggest that a symbiotic relationship can exist whereby the individual benefits when the formal structures support the epistemic needs of the individual and informal social structures increase the effectiveness of organizations engaged in exploitation or exploration. This is important because it has been suggested that “studies that examine exploration and exploitation at a micro level” and “studies spanning multiple levels of analysis” would make important contributions (Gupta et al., 2006, p. 703). In these ways, this article attempts to answer the call that the individual be brought back into organizational and network research (Krackhardt, 1987; Parkhe, Wasserman, & Ralston, 2006).

There has developed a recognition that structure alone is not enough to explain the effects of social capital (Burt, 2005; Lin, 2001b; Salancik, 1995). Succinctly put, “networks do not act, they are contexts for action” (Burt, 2005, p. 60). The focus on the effects of network topologies has crowded out discussions about the “internal springs of action that give the actor a purpose or direction” (Coleman, 1988, p. S96). In the following section, a cognition–structure–action (CSA) model is introduced, which examines the effects of epistemic motivation on informal social structures and the subsequent effects of social structure on actions.

### COGNITION–STRUCTURE–ACTION MODEL

The CSA model is presented in Figure 1. Epistemic motivation is a fundamental motivation that underlies all social cognition (Bodenhausen et al., 2003). It reflects an individual’s need to engage in cognitive effort. Research has shown that there are identifiable and measurable differences in the strength of epistemic motivation among individuals (Bodenhausen et al., 2003; Cacioppo, Petty, Feinstein, & Jarvis, 1996; Kruglanski & Webster, 1996). The effects of two epistemic motives are

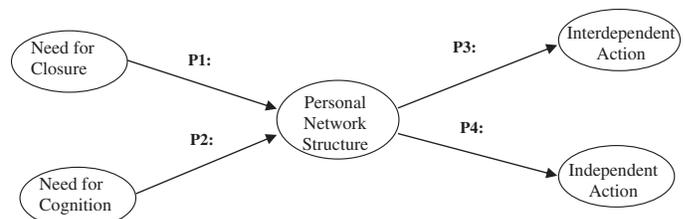


FIG. 1. Cognition–structure–action model.

examined: the need for closure and the need for cognition. Individuals with a strong need for closure desire to “seize” on closure and “freeze” on stability (Kruglanski & Webster, 1996). On the other hand, individuals with a strong need for cognition have desire to get new information and engage in complex and elaborate analysis of that information (Cacioppo et al., 1996).

The central construct in the CSA model is personal network structure. A distinguishing feature of social structures is tie strength (Coleman, 1988; Granovetter, 1973), which is determined by series of social interactions. The ways in which individuals interact are affected by their motivations and social cognition (Markus & Zajonc, 1985). Each personal network reflects the self-construal (Markus & Kitayama, 1991), values (Locke, 1976; Rokeach, 1972), and motivations (Adler & Kwon, 2002; Portes, 1998) of that person. Individuals connected by strong ties have invested time and emotion in specific relationships (Granovetter, 1973). The advantages of strong ties are created by the bonds formed by strong ties in a closed network (these closed/bonding type social structures are referred to as having “strong ties”) (Burt, 2005). Individuals connected by weak ties have not made the same type of social investment. The strength of weak ties (Granovetter, 1973) comes from the advantages that are created by bridges that form between otherwise unconnected individuals and groups (referred to as “weak ties”) (Burt, 2005). In order not to upend their social relationships or potentially mitigate the value of their social capital, individuals engage in actions consistent with the structural benefits inherent to their personal network (Gargiulo & Benassi, 2000; Nebus, 2006).

### EPISTEMIC MOTIVES: EFFECTS ON SOCIAL STRUCTURE

To help comprehend the social impact of their actions, individuals create mental models of their social structures, which include cognitive representations of social ties, personal networks, and the larger network structures in which they are embedded. Cognitive structures are organized mental representations of prior related experiences and applicable knowledge (Bodenhausen et al., 2003). They enable individuals to handle vast amounts of social information (Smith, 1998), which “helps the perceiver achieve some coherence in the environment” (Markus & Zajonc, 1985, p. 143). One popular conceptualization is schemas (Smith, 1998), which are organizations of conceptually related representations of objects, situations, events, and of sequences of events and actions that are derived from past experiences (Markus & Zajonc, 1985). Schematic models assume information is stored as abstract categories.

Another conceptualization of mental representations is exemplars (Smith, 1998). According to exemplar models, individuals store information about specific individuals, objects, and experiences (Smith & Zárate, 1992). When forming mental representations, cognitive processes summarize related exemplars into exemplar-based abstracts for efficient future retrieval and processing of social information (Hamilton & Mackie,

1990). Mental representations of social structure differ across individuals. Social psychological factors such as personality and network location factors such as hierarchical position and location affect mental representations of social structure (Casciaro, 1998; Kenny, 1994). These mental representations of social structures act as cognitive maps of social relationships (Krackhardt, 1987). Researchers have found that individuals use cognitive maps to guide and direct social interactions (Krackhardt & Kilduff, 1999; Kumbasar, Rommey, & Batchelder, 1994). Making sense of social interactions can take a significant amount of cognitive effort to deconstruct and construct exemplar-based mental representations. Epistemic motivation describes the amount of cognitive effort individuals are willing to undertake to cognitively structure relevant social situations in meaningful, integrated ways in order to understand their social world (Bodenhausen et al., 2003). Understanding the myriad of social interactions that take place in a complex social environment can take significant cognitive effort (Cacioppo & Petty, 1982). The following subsections discuss the effects of epistemic motivation on social structure.

### Need for Closure and Personal Networks With Strong Ties

“The need for cognitive closure refers to the individuals’ desire for a firm answer to a question and an aversion toward ambiguity . . . it may prompt activities aimed at the attainment of closure, and bias the individual’s choices and preferences toward closure bound pursuits” (Kruglanski & Webster, 1996, p. 264). There are stable, individual differences in the tendency to engage in cognitive closure. The need for closure varies along a continuum with a high need for closure on one end and a high need to avoid closure at the other end (Kruglanski & Webster, 1996). Individuals with a strong need for closure try to avoid any information that increases ambiguity and uncertainty (Bodenhausen et al., 2003). Individuals with a high need for closure have a tendency to make judgments quickly (Mayseless & Kruglanski, 1987), have a high degree of confidence in quickly made judgments (Kruglanski & Webster, 1991; Kruglanski, Webster, & Klem, 1993), are susceptible to biased judgments and give primacy to information presented early (Freund, Kruglanski, & Shpitzajzen, 1985), are susceptible to anchoring effects (Kruglanski & Freund, 1983) and correspondence bias (Webster, 1993; Webster & Kruglanski, 1994), and tend to rely on stereotypic judgments (Kruglanski & Freund, 1983). In addition, it has been found that individuals who exhibit a high need for closure have a tendency to seek less information and generate fewer hypotheses (Mayseless & Kruglanski, 1987), require fewer details, and rely on prototypical information when making decisions (Trope & Bassok, 1983).

The need for closure can have implications for formation of informal social structures. First, individuals with a high need for closure desire a quick resolution to issues. The “urgency tendency” is an inclination to seize on closure quickly and eliminate ambiguity (Kruglanski & Webster, 1996). Individuals

with need for closure tend to seek immediate and permanent answers (Shah, Kruglanski, & Thompson, 1998). As a result, they may ignore information that threatens quick closure of an issue. "Individuals may generate fewer hypotheses or suppress attention to information inconsistent with their hypotheses" (Kruglanski & Webster, 1996, p. 264). Individuals with a strong need for closure will not tend to go outside existing social structure, since going outside of existing social structure increases the opportunity for encountering new information which might threaten closure. As a result, individuals with a need for closure share information and interact primarily within their social structures. Sharing the same knowledge and information among the same individuals can result in homogeneity in action and thought. Homogeneity increases feelings of trust and familiarity. This causes individuals with a heightened need for closure to value those in their social structure and identify with them (Shah et al., 1998). Feelings of trust lead to more intimate and intense relationships among those in the social structure, which can lead to the formation of strong social ties (Coleman, 1988; Granovetter, 1973).

The second implication that the need for closure has on social structure is related to findings that suggest individuals with a high closure motive have a need for permanency and stability (Kruglanski & Webster, 1996). The "permanence tendency" reflects an inclination to "freeze" on existing social structures in order to maintain stability. Individuals wishing to maintain stability in their social structure do not have a tendency to create relationships outside of their social structures. New relationships may be perceived as risking stability in their social structure. Limiting social interactions to those within their existing social structure increases the frequency of contacts with those in their social structure. Frequent contacts with the same individuals lead to the formation of closed social structures and strong social ties (Lin, 2001b).

The tendency toward urgently seizing on closure and freezing on stability affects the social structure of individuals (Kruglanski & Webster, 1991). In order to satisfy their need for closure, individuals who have a strong need for closure would desire to keep their social structure stable, intact, and free of change. As such, they would be inclined to develop strong ties and closed personal networks in order to maintain stability in their social structure.

**Proposition 1:** The need for closure is positively related to personal networks with closed structures and strong ties.

### **Need for Cognition and Personal Networks With Structural Holes**

Individuals with a high need for cognition "naturally tend to seek, acquire, think about, and reflect back on information to make sense of stimuli relationships, and events in their world" (Cacioppo et al., 1996, p. 198). For example, when individuals

are presented with new information that might lead to uncertainty and ambiguity, they can be faced with their own cognitive limitations (Kahneman & Tversky, 1979). In these situations, individuals with a high need for cognition are more likely to engage in more sustained, effortful, and detail-oriented analysis in order to reduce ambiguity simply because they enjoy the thinking process (Bodenhausen et al., 2003). There is a stable individual difference in individual tendencies to engage in effortful cognitive endeavors. Similar to the need for closure, the need for cognition varies along a continuum (Cacioppo et al., 1996). Individuals who engage in effortful cognitive pursuits are referred to as "chronic cognizers"; those who do not enjoy cognitive endeavors are characterized as "cognitive misers" (Cacioppo & Petty, 1982).

Chronic cognizers have an orientation toward more effortful and detailed analysis of social information (Cacioppo et al., 1996), have a tendency to devote a high level of attention to ongoing cognitive tasks (Osberg, 1987), have a tendency to generate complex attributions (Petty & Jarvis, 1996), have a desire for new experiences that stimulate thinking (Venkatraman, Marlino, Kardes, & Sklar, 1990), have a tendency to seek out and elaborate self-relevant information under problem-solving conditions (Berzonsky & Sullivan, 1992), have high levels of openness and receptivity to new ideas and taking action (Berzonsky & Sullivan, 1992), and have a desire to obtain information regarding many facets of the marketplace (Inman, McAlister, & Hoyer, 1990). Individuals with a high need for cognition enjoy effortful cognitive endeavors (Cacioppo & Petty, 1982).

Chronic cognizers desire a more "elaborate analysis of social information, in part because they simply enjoy figuring things out" (Bodenhausen et al., 2003, p. 273). This may have implications for social structure. "Individuals high in need for cognition are characterized by active exploring minds and, through their senses and intellect, reach and draw out information from their environment" (Cacioppo et al., 1996, p. 199). Because these individuals enjoy effortful cognitive endeavors, they enjoy thinking about ways in which information can be applied in new and novel ways in different contexts, which is different from enjoying thinking about information in a specific area or field (Cacioppo & Petty, 1982). Chronic cognizers enjoy expanding their knowledge outside their existing knowledge domains. This often times requires gathering new information from new sources. Since information inside closed social structures tends to be homogeneous (Granovetter, 1973), chronic cognizers are motivated to go outside existing social relationships to obtain new information. In order to get new information, chronic cognizers are more likely to develop relations with a number of unconnected individuals.

Individuals high in the need for cognition tend to seek out information in more diversified social networks, which can mean that they are more likely to be embedded in social networks with weak ties (Curşeu, 2011). The desire to draw more information out of the environment motivates chronic cognizers

to form personal networks with structural holes and weak ties in order to get access to new information so that they can have new things to “think about.” Furthermore, because information within closed social structures tends to be homogeneous, individuals with a need for cognition will develop new relationships and form personal networks with structural holes in order to gain access to new information and ideas.

**Proposition 2:** The need for cognition is positively related to personal networks with structural holes and weak ties.

According to social capital and network theory, social structure provides the context that enables individuals to use their social relationships for advantage (Bourdieu, 1986; Burt, 2005; Coleman, 1988; Granovetter, 1973). Personal network structure and tie strength provides the social context in which actions take place (Burt, 2005; Lin, 2001b). Thus, while epistemic motivation provides the “internal springs” (Coleman, 1988), personal networks provide the social “context for actions” (Burt, 2005).

### **TIE STRENGTHS: EFFECTS ON INDIVIDUAL ACTIONS**

The stronger the need for closure, the greater is the need for the stability that comes from closed networks and strong ties. According to Lin (1999, 2001b), individuals with closed personal networks and strong ties have a desire to maintain ongoing personal relationships. In order to protect relationships, these individuals work with those in their social structure to conserve and protect existing resources so that resources will be available to others when needed. In these cases, social structures function as a mechanism by which individuals can consolidate resources in order to defend against resource and relationship loss. On the other hand, the stronger the need for cognition, the greater is the desire for new experiences and new information. Since information exchanged inside closed social structures with strong ties tends to be homogeneous (Granovetter, 1973), these individuals need to operate outside closed social structures. Personal networks are a way to gain access to new information, which can be appropriated into gain (Bourdieu, 1986; Burt, 1992; Granovetter, 1973). According to Lin (1999, 2001b), these individuals use social structures as instruments to achieve the wealth, power, and prestige that can come from the acquisition of additional resources.

### **Personal Network Effects on Interdependent Action**

Because of the closeness of their relationships, individuals with personal networks consisting primarily of strong ties will want to maintain those ties. In order to maintain social ties and existing relationships, these individuals will use their social structures to conserve and share existing resources (Lin, 1999, 2001b). In closed personal networks with strong ties, others share these same feelings because of their interconnectedness. This interdependence creates normative obligations to

act in ways that show respect and provide benefits to others individually and collectively (Ostrom, 1994; Portes, 1998; Putnam, 1993). The actions of these individuals are “to a large extent organized by what the actor perceives to be the thoughts, feelings, and actions of others in the relationship” (Markus & Kitayama, 1991, p. 227). Because of this attachment, individuals engage in interdependent actions aimed at maintaining social ties and preserving the stability of their social structure so as to protect resources embedded in their social structure.

Because individuals who engage in interdependent actions (referred to as interdependent individuals) focus on the concerns and needs of others, they will provide help to others within their social structure without any specific expectation. That is, interdependent individuals have a more generalized expectation of reciprocity (Portes, 1998; Portes & Sensenbrenner, 1993). Generalized reciprocity has been described as “I’ll do this for you now, knowing that somewhere down the road you’ll do something for me” (Putnam, 1993, p. 183). It “transforms individuals from self-seeking and egocentric agents with little sense of obligation to others into individuals of community with shared interests, a common identity, and a commitment to common good” (Adler & Kwon, 2002, p. 25). Interdependent individuals are more willing to provide resources to those in their social structure without any specific expectation of return (Adler & Kwon, 2002). A generalized reciprocity binds individuals together (Adler & Kwon, 2002; Putnam, 1993; Woolcock, 1998), allowing individuals to act interdependently, forming trusting relationships (Fukuyama, 1997) and cooperation for mutual benefit (Putnam, 1995).

While the need for closure provides the “internal springs” (Coleman, 1988), strong ties provide the social context necessary for interdependent actions to succeed in protecting relationships (Burt, 2005). Social capital research has suggested that social structures with strong ties (Coleman, 1988) create certain advantages that make it easier for those within the social structure to protect and maintain existing relationships (Lin, 1999). Closed networks with strong ties create trust and encourage interdependent actions by providing a social context in which the returns to interdependent actions are maximized (Burt, 2005; Lin, 2001b). Burt (2005) referred to strong ties as a strong relationship in a closed network forming a bond between people connected. The advantages created by strong social ties comes from the bonds formed in closed networks (Adler & Kwon, 2002). Bonds are valuable for eliminating variation, protecting resources, and protecting individuals connected within the social structure individually and collectively (Adler & Kwon, 2002; Burt, 2005; Gittel & Vidal, 1998; Putnam, 1995). For example, researchers have found that strong ties are useful in resolving collective action problems (Brehm & Rahn, 1997), improving the ability of people to work together through cooperation (Fukuyama, 1995) and coordination (Putnam, 1995), establishing values and norms shared among individuals in the structure (Fukuyama, 1997; Nahapiet & Ghoshal, 1998), and

promoting the development of the social structure as a whole (Thomas, 1996).

Interdependent individuals have a cognitive need to form strong ties in order to maintain stability in their social structure. At the same time, personal networks with strong ties provide the context necessary for maximizing the effectiveness of interdependent actions. In order to satisfy their need for stability and closure, individuals form strong ties, which provide the context important to engaging in interdependent actions focused on the welfare of close others.

Proposition 3: Closed personal networks with strong ties positively affect interdependent action.

### Personal Network Effects on Independent Action

Because of their need to think about new things, individuals with personal networks with structural holes will want to continue to build new relationships with others that can provide new information. These individuals use personal networks as a way to gain access to new information, which can be appropriated into wealth, power, and prestige (Burt, 1992; Lin, 1999, 2001b). The action of these individuals “is organized and made meaningful primarily by reference to one’s own internal repertoire of thoughts, feelings, and actions, rather than by reference to the thoughts, feelings, and actions of others” (Markus & Kitayama, 1991, p. 226). These individuals tend to perceive their social relationships to be instruments for personal achievement, rather than functioning to provide for the collective good (Burt, 1992).

Individuals who engage in actions independent from closed social structures (referred to as independent individuals) tend to focus primarily on their “own thoughts, feelings and actions.” When independent individuals do provide advantage to others there is an expectation that they will receive something specific in return (Adler & Kwon, 2002). That is, independent individuals have a specific expectation of reciprocity. Independent individuals may provide resources to others, but they do so to create obligations and expect full repayment (Lin, 1999). They provide resources as a way to “accumulate social chits” (Portes, 1998). They are creating a specific obligation that they expect will be fully repaid, providing little basis for emotional connectedness and trust building (Portes, 1998).

While the need for cognition provides the “internal springs” (Coleman, 1988), weak ties provide the social context necessary for independent actions to succeed in gaining additional resources (Burt, 2005). Social capital research has suggested that social structures with weak ties (Granovetter, 1973) create certain advantages that make it easier to obtain new resources that may make it easier for individuals to achieve personal gain (Lin, 1999). Personal networks with structural holes and weak ties encourage independent actions by providing the social context in which the returns to independent actions are maximized (Burt, 2005; Lin, 2001b). Structural holes provide individuals with the best opportunities to “acquire valued resources not yet

at the individual’s disposal” (Lin, 2001b, p. 45). Weak social ties create an opportunity to form bridges. A bridge is a relationship that spans a structural hole in which there is no effective indirect connection through third parties (Burt, 2005). Bridges between otherwise unconnected individuals provide opportunities to broker and control the flow of information, which can be a source of power and influence (Burt, 1992). Additionally, personal networks with structural holes and weak ties create advantage by providing access to new and unique information (Adler & Kwon, 2002; Burt, 2000; Granovetter, 1973). While information in closed structures tends to be homogeneous, structural holes provide “access to a wider diversity of information, early access to that information, and control over information diffusion” (Burt, 2005, p. 16).

Independent individuals have a cognitive need to develop weak ties and expand their social structure so that they might gain access to new information and knowledge. At the same time, personal networks with structural holes and weak ties provide the structural context necessary to maximize the effectiveness of independent actions. In order to satisfy their need for cognition, individuals form personal networks with structural holes and weak ties, which provide the context important to engaging in independent actions focused on acquiring and obtaining new information.

Proposition 4: Personal networks with structural holes and weak ties positively affect independent action.

### THE IMPLICATIONS OF INFORMAL SOCIAL STRUCTURE ON ORGANIZATIONAL OUTCOMES

The previous sections have discussed ways in which informal organizational social structures create a context that affects individual actions. However, formal structures also affect the context inside organizations. One way to discuss the effects of formal structures is through the concepts of exploitation and exploration. Exploitation involves activities such as refinement of existing resources, efficiency, implementation, and execution (March, 1991). Many times these activities are focused on refining knowledge acquired in the past (Gupta et al., 2006). Exploration, on the other hand, involves activities such as searching for new knowledge, risk taking, play, discovery, and experimentation (March, 1991). Exploitation is about refining existing knowledge and capabilities, whereas exploration involves activities focused on the pursuit and acquisition of new knowledge (Gupta et al., 2006). The concepts of exploration and exploitation have been used to describe a wide array of firm actions, behaviors, and outcomes. For example, exploration and exploitation are important components to understanding organizational capabilities, such as organizational innovation (Benner & Tushman, 2002), learning (Holmqvist, 2004), and adaptation (Burgelman, 1991). Structural components such as organizational design (Siggelkow & Levinthal, 2003) and formal structure (Perretti & Negro, 2006) affect the exploration

and exploitation activities of the firm. As such, organizational context plays an important role in successful exploration and exploitation activities and the interplay required to achieve organizational goals (Beckman, 2006; Brown & Eisenhardt, 1997; Gibson & Birkinshaw, 2004; Smith & Tushman, 2005). Managers must make decisions regarding how the organization will develop and use exploration and exploitation capabilities. “Existing research suggests an important antecedent to exploration and exploitation: Managers who create the right structures or develop supportive contexts” (Beckman, 2006, p. 741).

While managerial decisions are important to organizational context, employees also play a significantly large role in creating context in organizations by forming informal social structures. The informal structure of relations influences much of the individual behavior in organizations (Scott, 2002). Since informal social structures affect individual actions, these structures should be important contextual components in the organization’s ability to effectively engage in exploration and exploitation. The multilevel relationship between the effects of formal organizational structure and informal social structures is indicated in Figure 2.

**Symbiotic Relationship Between Informal and Formal Structures**

Managers may be able to leverage the intrinsic needs of individuals and improve the probability of strategic success by working to align informal social structures with the formal structures of the organization. It may be that when informal social structures fit with formal organizational structures a symbiotic relationship develops between the formal and informal structures of the organization improving the effectiveness of formal structures and increasing organizational efficiency.

The fit between formal and informal structures could be especially important when the strategies of the firm are focused on exploiting existing resources or exploring for new resources and capabilities (March, 1991).

**Exploitation**

According to March (1991), exploitation is mostly associated with closed systems. Because the structures are closed, “as individuals in the organization becomes more knowledgeable, they also become more homogeneous with respect to knowledge. The equilibrium is stable” (March, 1991, p. 75). This homogeneity leads to the selection and reuse of existing routines (Baum, Li, & Usher, 2000). As a result, any organizational change or learning tends to be limited to the refinement of existing knowledge, competencies, and technologies (March, 1991). Strategies associated with exploitation are focused on using and refining existing knowledge in ways that maximize the efficient use of existing resources and the effective implementation of refined capabilities (Gupta et al., 2006). Individuals with a need for closure whose personal network exhibits closure would seem to fit best in exploitative organizations. For example, individuals with a need for closure desire stable social structures. In order to protect existing relationships, they conserve resources so that those resources are available to be shared with others when needed (Lin, 2001b). As such, individuals that prefer closed social structures are naturally inclined toward stability and tend to be more conservative with resources (Lin, 2001b). This is consistent with March’s (1991) perspective of closed organizational structures. In an organizational setting, these individuals would interact and work most comfortably in formal structures associated with the reuse of existing knowledge and focused on the refinement of existing resources and improving the efficiency of existing capabilities (Lin, 1999, 2001b). This alignment between formal and informal structures can be symbiotic when closed social structures with strong ties provide benefits to individuals with a need for closure as well as organizations relying on the exploitation of existing resources.

Assuming the formal structures of the organization are consistent with closed systems that favor exploitation, the informal social structures of individuals with a need for closure would “fit” with the formal structures of organizations focused on exploiting existing knowledge and resources. In organizations with closed formal structures, employees with a need for closure would not need to go outside formal structures to satisfy their epistemic needs. Nor would they need to rely significantly on informal structure to conserve resources. As discussed earlier, social capital research has shown that closed networks with strong social ties create benefits that are valuable to individuals who desire to foster and maintain existing structures. Additionally, closed structures can provide these employees with other types of external support. Social capital research has also shown that individuals can benefit when the formal structure of the organization and the informal personal networks of individuals exhibit closure. Closed structures aid

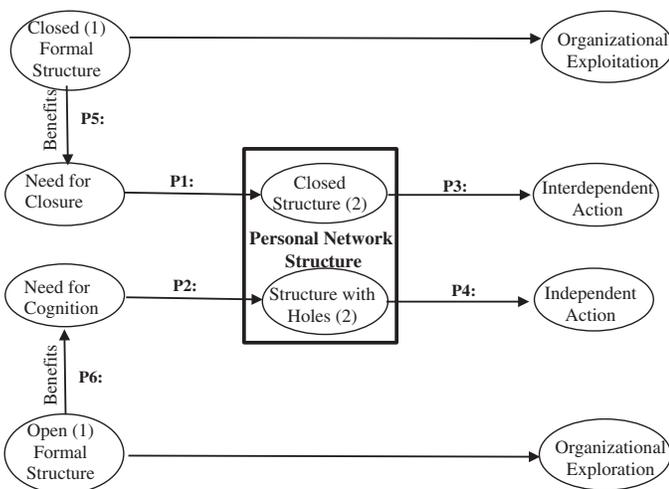


FIG. 2. Formal and informal structural symbiotic relationship. (1) Concepts of closed and open formal organizational structures adapted from March (1991). (2) Conceptualization of closed social structures with strong ties and social structures with holes and weak ties adapted from Burt (2005).

in the development of human capital, which is beneficial to the individual and the organization. For example, closed social structures with strong ties have been found to increase educational achievement (Coleman, 1988). Individuals who are members have access to group resources (Bourdieu, 1986), receive support from the group, and have opportunities to provide support to others in their social structure (Uzzi & Gillespie, 2002; Uzzi & Lancaster, 2004). Additionally, researchers have found that strong social ties lead to improved physical and mental health (Lin, 1990, 1999; Lin & Dumin, 1986), life satisfaction (Lin, 1999; Ostrom, 1994; Putnam, 1993), and improved life chances (Baumeister & Twenge, 2003).

**Proposition 5:** Individuals with a need for closure benefit tangibly and epistemically when interacting within closed formal structures.

### Exploration

According to March (1991), exploration is mostly associated with open systems. Open systems assume individuals with new knowledge are coming into the organization (March, 1991). When new individuals come into the organization, they create bridges (structural holes) between the organizations they are coming to and place from which they came. As a result, open systems can result in the creation of structural holes in informal social structures, which improves the flow of new knowledge into the organization. As a result of this new knowledge, formal structures that take advantage of structural holes provide opportunities that enhance the firm's ability to discover or create new resources, capabilities, products, and services. Strategies associated with the exploration focus on finding and creating new knowledge (Gupta et al., 2006) that can move an organization to a different technological trajectory (Benner & Tushman, 2002). Through discovery and experimentation, this new knowledge can be used to obtain new resources and capabilities or to create new products and services. Individuals with a need for cognition and personal network with holes would seem to fit best with organizations that engage in exploration-oriented strategies. For example, individuals with a need for cognition are intrinsically motivated to seek out and apply new knowledge. In order to find and create new knowledge, they develop new relationships focused on gaining new knowledge and engage in actions that take advantage of that new knowledge (Lin, 1999, 2001b). Acquiring knowledge from new sources, especially sources outside the organization, can be beneficial to organizations focused on exploration. This is consistent with March's (1991) perspective of open organizational structures. In an organizational setting, these individuals would interact and work most comfortably in formal structures associated with discovering and creating new knowledge for the development of new resources and capabilities. The alignment between formal structure and informal social structure is symbiotic to the extent that social structures consisting of weak

ties provide benefits to individuals with a need for cognition as well as exploratory organizations.

Assuming the formal structures of the organization are consistent with open systems that encourage exploration, the informal social structures of individuals with a need for cognition would "fit" with the formal structures of organizations searching for new knowledge and developing new resources and capabilities. In organizations with open formal structures, employees with a need for cognition would not need to go outside of formal structures to satisfy their psychological and epistemic needs, nor would they have to significantly rely on informal structures to satisfy their need for new knowledge. As discussed earlier, social capital research has shown that social structures with holes and weak social ties provide a competitive advantage to individuals who desire discovering and utilizing new information. Structures with holes can also provide these employees with other types of external support. For example, personal networks with structural holes can provide individuals with a source of new knowledge and information that they can use to find and create new opportunities. These rewards encourage individuals to continue looking for new information, which can be a source of further opportunities for an individual and organization focused on finding new knowledge. Researchers have shown that structural holes enable white-collar workers to find better jobs, faster (Granovetter, 1995), and enable individuals to find more desirable jobs (Lin, 2001a; Lin & Dumin, 1986; Lin, Ensel, & Vaughn, 1981). Networks rich in structural holes lead to better opportunities within the organization and workplace performance. For example, research and development scientists whose networks are rich in spanning structural holes have a higher expectation of promotion (Gabbay & Zuckerman, 1998), and senior managers in electronic organizations are more likely to get promoted early and more frequently (Podolny & Baron, 1997). Similar research has corroborated findings that weak ties lead to more frequent promotions (Gabbay, 1997; Useem & Karabel, 1986), higher job performance ratings (Cross & Cummings, 2004), and greater career advancement (De Graaf & Flap, 1988). Individuals with personal networks with structural holes tend to achieve higher status (Campbell, Marsden, & Hurlbert, 1986), have higher incomes (Belliveau, O'Reilly, & Wade, 1996; Burt, 1997; Meverson, 1994), and are more likely to survive competitive rivalries (Pennings, Lee, & Van Witteloostuijn, 1998).

**Proposition 6:** Individuals with a need for cognition benefit tangibly and epistemically when interacting within open formal structures.

### IMPLICATIONS FOR FUTURE RESEARCH

The conceptual framework developed here has implications for strategy research and organizational research. Additionally, one of the central ideas of the CSA model is that epistemic

motives affect social structures. As such, the framework may also have implications for social capital research.

### Implications for Strategy and Organizational Research

In an *Academy of Management Journal* (AMJ) special issue on exploration and adaptation, Gupta et al. (2006) suggest that future research might take a micro-level approach to the study of organizational exploration and exploitation. One of the difficulties with multilevel research is significantly covering the aspects of a topic for each level of analysis in a single paper. As a result, multilevel research has to balance the need to address multiple levels of analysis with the need to achieve the level of depth required by traditional single level research. While this balancing act has been attempted in this article, future research may want to use the topics covered in this article as a springboard toward more in-depth analysis of related areas. For example, future research might examine the potential organizational linkages between individual thoughts and actions and the organization's ability to engage in exploitation and exploration. One area of research might focus on the effects of informal social structures on organizational exploration and exploitation. Particular attention might focus on gaining a better understanding the potential mediating effects of informal social structures on the relationship between formal structures and organizational outcomes. For example, social capital research has found that closed social structures provide advantages that would be valuable to exploitative organizations. Organizations favoring exploitation would benefit from the increased trust and efficiency that would come from informal social structures with strong ties. For example, the efficient use of resources requires trust that others will do their jobs without extra resources being spent on monitoring. Researchers have found that closed networks increase trust. For example, closed networks reduce the likelihood of commercial transaction agreements being broken and improve the flow of information about the trustworthiness of individuals (Putnam, 1993, 1995). Additionally, exploitation focuses on efficiency. Researchers have found that embedded relationships in closed structures lowers coordination costs, resulting in lower interest rates on bank loans (Uzzi, 1999; Uzzi & Gillespie, 2002) and lower rates for legal advice from partners in law firms (Uzzi & Lancaster, 2004). This research suggests that organizations focused on exploitation might be more effective when informal social structures within the organization exhibit closure with strong ties.

Similarly, social capital research has found that structures with holes provide advantages that would be valuable to exploratory organizations. Organizations favoring exploration would benefit from the new knowledge that is available from informal social structures that bridge otherwise unconnected groups. For example, creating new products and technologies requires innovative individuals adept at bringing together knowledge from different places. Researchers have found not only that structural holes create the context necessary for

discovery and development of new knowledge, but also that individuals adept at creating and finding structural holes have other valuable characteristics important to an exploratory organization. Researchers have found that individuals whose networks span structural holes are seen as more innovative and creative (Burt, 2004; Perry-Smith, 2006; Rodan & Galunic, 2004). Furthermore, researchers have found that loan officers in a large commercial bank whose approval network spans structural holes have an advantage when closing deals (Mizruchi & Sterns, 2001). This research suggests that organizations focused on exploration might be more effective when informal social structures within the organization have structural holes with weak ties.

Future research may want to examine the effects that formal organizational structures have on other personality traits relevant to social cognition, beyond epistemic motivation, and the potential implications those effects have for individuals, informal social structures, and organizational outcomes. The effects of the interplay among formal structures, the individual, and informal structures may go beyond the importance of creating symbiotic relationships between the formal organizational structures and informal social structures. The idea of finding fit between informal and formal structures could have implications for many areas of strategic research. For example, the effects of board interlocks may differ depending on whether the interlocks are embedded across organizations in formal structures, whether the connections are mostly social and informal, or whether the interconnects are embedded in both formal and informal structures. Another example might involve the creation of intellectual capital. The exchange of tacit knowledge may be more effective in informal social structures where the knowledge can be more readily transferred, especially in closed social structures where individuals "know what others are thinking" due to the close relations. Explicit knowledge may be more readily transferred in formal structures because the "roles and principles that govern" the transfer of information can be, or have been previously, prescribed. As such, the creation of intellectual capital may be affected by the nature of the knowledge (tacit vs. explicit), as well as by the characteristics of the formal organizational and the structure of informal social networks (open vs. closed). These examples suggest that because informal and formal structures have different characteristics and different organizational effects, potential boundary conditions may exist around many current research findings.

Another interesting area of research might revolve around the role that teams and team composition play in the formation of informal social structures (Perretti & Negro, 2006). Researchers have shown that the need for cognition has important effects on team effectiveness especially in cases in which team members come from diverse backgrounds (Kearney, Gebert, & Voelpel, 2009). Although this article has focused on the effects of the need for cognition on independent actions, in a team environment individuals high in cognition might play an integrative role in team formation. Researchers have suggested that individuals

high in cognition are less susceptible to stereotypes and prejudices (Cacioppo et al., 1996). In cases where teams are made up of diverse individuals, individuals with a high need for cognition might act as team facilitators. The motivation for individuals high in the need for cognition to form networks with structural holes, and act independently, but at the same time facilitate integration in a team environment could have interesting implications for the formation of informal social structures in organizations. It also might provide insight into the mechanisms behind the formation of structural holes in the social structures of chronic cognizers. Future research might examine the effects of epistemic motives on team structure and composition in relation to the role teams play in the formation of informal social structures as compared to formal organization structures.

### Implications for Social Capital Research

The implications for social capital research can be discussed around three important issues identified in the literature. The first issue deals with a current gap in the literature regarding the lack of research examining antecedents to the formation of social structures. Borgatti and Foster (2003) discussed this gap in the literature, saying, "There has been a relative dearth of work on network antecedents" (Borgatti & Foster, 2003, p. 999). This article has attempted to begin filling this gap by focusing on the role epistemic motives play as potential antecedents to the strength of the social ties of individual social structures.

Another important implication for social capital research is related to a question raised by Lin: "The more intriguing question is why given the same level of accessible embedded resources, some individuals mobilize better resources than others in action?" (Lin, 1999, p. 42). According to the CSA model, the proper question might be, "Why do some individuals mobilize resources differently, rather than others, in action?" Traditionally, social capital research has focused on the effects of social structure on outcomes rather than actions. While social structure provides context, the CSA model shifts the focus from outcomes and resources to the actions of individuals, which is more important when determining the effects of social structure on behavior. This article focused on how social structure affects interdependent and independent actions, rather than how social structure affects outcome. This moves the emphasis from the resources themselves to what individuals do with those resources, which is more consequential to managers. Future research may want to focus on how social structures affect other types of actions.

Another gap in the literature addressed is somewhat related to the first two. In his paper on the future network theory, Salancik (1995) asks the question, "Why does a structural hole exist?" (Salancik, 1995, p. 349). He suggested focusing research on "what causes the appearance and disappearance of structural holes" (Salancik, 1995, p. 345). Ten years later, Burt (2005) asked a similar question, "where do the holes come from?" (Burt, 2005, p. 10). Burt (1992, 2005) suggested that structural holes occur when individuals perceive the existence of the hole.

This implies that some individuals are motivated to look outside their existing social structure. According to the CSA model, these would be individuals with a high need for cognition. When individuals interact outside their existing social structures with others not otherwise connected, the potential for the formation of structural holes exists. Structural holes appear when individuals with a need for cognition form personal networks with weak ties searching for new things and acting independently to acquire new resources. Future research may want to focus on other cognitive factors that may affect tie strength.

### Implications for Managers

By understanding epistemic motivation and the effects on the social structures of individuals, insights might be gained into how informal social structures are affecting the actions of employees. In order to improve individual effectiveness and organizational efficiency, it would be beneficial to examine the fit between the informal social structures of the organization and the formal structures and strategies of the organization.

Epistemic motivation is identified as an individual difference variable that affects tie strength, the formation of personal networks, and the informal network structure of the organization. As such, managers who desire to affect strategic change may want to consider focusing their efforts on those individuals with a high need for closure or a high need for cognition. Depending on the strategy and type of desired structural change, managers will want to direct their focus toward individuals high on a specific epistemic motivation. For example, if managers are implementing exploitation strategies in which the strategic actions of the firm are directed toward exploiting existing resources and capabilities (March, 1991; Nelson & Winter, 1982), managers will want to encourage employees high in the need for closure. On the other hand if managers are implementing exploration strategies in which the strategic actions of the firm are directed toward exploring for new resources and capabilities (Davenport & Prusak, 2000; March, 1991), managers will want to encourage employees high in the need for cognition. Additionally, managers should work to create an organizational fit between informal social and formal organizational structures. Developing a symbiotic relationship between the cognitive and social needs of individuals provided by informal social structures and the formal organizational structures needed to achieve organizational goals can improve the effectiveness of human capital and improve the organization's probability of achieving strategic success.

Furthermore, evidence suggests that in some cases, ambidextrous organizations might provide the most opportunities for success (Gupta et al., 2006). These organizations include aspects of exploitation and exploration. Ambidexterity would offer greater flexibility when attempting to develop a symbiotic relationship between informal social structures to formal organizational structures. Rather than trying to fit a square peg into a round hole, organizations could focus individuals with a need for closure and a closed personal network with

strong ties to the more exploitative parts of the organization while focusing individuals with a need for cognition and personal networks with structural holes and weak ties to the more exploratory parts of the organization. When organizations can do this, ambidexterity provides the greatest opportunities for matching the formal structures of the organization to the informal personal networks of the individual employee. Creating symbiotic congruity between the informal and formal provides the greatest probability for ambidextrous successes.

Finally, because epistemic motives, and the concomitant formation of informal personal networks, represent intrinsic, natural inclinations (Bodenhausen et al., 2003), the influence of these factors on individual behavior is somewhat separate and distinct from the external influences of formal structures. When formal structures are inconsistent with employees' intrinsic needs and desires, employees may rely on their personal networks to meet those needs not being met within formal structures. Differences between informal social structures and formal organizational structures might indicate a mismatch between intrinsic individual needs and desires and organizational goals. The greater the mismatch between formal structure and the intrinsic needs of individuals, the more individuals will work outside of formal structures and within informal social structures. As a result, the effects of informal social structures have the potential to negatively impact firm strategies if they are causing individuals to act in ways inconsistent with and outside of formal structures. This could lead to the inefficient use of resources and human capital as individuals spend time engaging in activities outside of formal organization structures in order to satisfy intrinsic needs not being met within formal organizational structures. Assuming managers have implemented formal structures that are consistent with the strategies of the firm, individual activities outside of formal structures may result in suboptimal organizational outcomes if these external activities create organizational slack and inefficiencies.

## CONCLUSION

This article began with the concept that the informal structure of relations in an organization affects the behavior of participants more than the formal structure of relations. If this is true, informal social structures can have important implications for the organizing process of the firm and the ability of the firm to carry out its strategies. The effects of informal social structures on the actions of individuals were also discussed. Specifically, the effects of tie strength on interdependent and independent actions were examined. If social structure is important to actions, it is also important to understand what influences the formation of individual social structure. This article also examined the effects of epistemic motivation on the tie strength of individual social structures. Additionally, the importance of symbiotic relationships, and finding fit, between informal social and formal organizational structures was examined. The implications for the implementation of strategy, organization research, and social capital research were also discussed.

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