CONTINGENCY EFFECTS OF NATIONAL CULTURE AND INSTITUTIONS ON HOW SOCIAL NETWORKS INFLUENCE INDIVIDUAL CREATIVE PERFORMANCE

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* This paper is dedicated to co-author YunYun Chen who tragically died at the age of 27 on June 13, 2009. She is deeply missed.

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ABSTRACT

We examine how the local national cultural and institutional context impacts the relationship between an individual’s social network (ties and position) and creative performance in a multinational. Hypotheses are tested using hierarchical level modeling to investigate sociocentric data from one entire multinational of 1639 individuals in 28 subsidiaries around the world. Results suggest that national culture (uncertainty avoidance and individualism) and institutional context (regulative institutions) significantly impact this relationship. For example, we find that being in a weak regulative institutional country facilitates creative performance for individuals who bridge structural holes in the multinational. Our findings call into question the ability to generalize social network theories across different macro-contexts.
INTRODUCTION

Given the ever quicker pace of change in our modern world and the fact that it is easier to gain competitive advantage by doing something different rather than doing something better (Markides, 1997), firms are increasingly striving to be innovative and creative. As a result, why some individuals are more creative than others is an enduring question that continues to concern management researchers and managers alike. This is to be expected given the demonstrated importance of creativity for firm performance (e.g., Amabile, 1996; DeVanna & Tichy, 1990; Kanter, 1988; Nystrom, 1990; Woodman, Sawyer & Griffin, 1993; Van Gundy, 1987). While individual traits and formal organizational systems have been extensively examined as important factors impacting creativity (see Shalley, Zhou, & Oldham, 2004, for review), there is a growing body of theoretical and empirical research that takes as its fundamental argument that individuals are embedded in networks of interconnected relationships (e.g., Burt, 1992; Fleming & Marx, 2006; Granovetter, 1973; Perry-Smith, 2008) and that individual performance (such as creativity) should be analyzed in the context of these relationships and not in isolation (e.g., Borgatti & Foster, 2003; Brass, Galaskiewicz, Greve & Tsai, 2004; Perry-Smith, 2006; Perry-Smith & Shalley, 2003). For example, Simonton posits, “A successful ‘social psychology of creativity’ demands that the creative individual be placed within a network of interpersonal relationships” (1984:1273). Recent research in this area has revealed some promising insights into the ways in which an individual’s social network affects his or her creative performance. For example, previous studies have found that the strength and number of an individual’s intra-organizational ties, the position of the individual in the intra-organizational network, and even the number of the individual’s external ties impact an individual’s creative performance (Fleming & Marx, 2006; Perry-Smith, 2006, Perry-Smith, 2008; Perry-Smith & Shalley, 2003; Tortoriello, 2006; Zhou, 2003). Having said the above however, like Xiao and Tsui (2007), we find that the majority of empirical studies examining the social context of individual creativity, and for that matter examining individual performance in general, take an implicit universalist (often US-focused) perspective with regard to how culture effects the functioning of social networks. This is a practical approach and may not be surprising due to the relative difficulty of collecting the required social
network data even in one country much less multiple countries. Studies tend to be within one national context – either of one organizational unit or several units within the same country, or in the rare cases including several countries, the required degree of variance does not exist in the dataset to systematically take the local context into account (or researchers have chosen not to focus on this aspect). This does not mean, however, that this area should go unexplored. In fact, we argue that the need to understand the local context in which an individual is embedded is especially and increasingly relevant for multinational organizations. At the macro-structural level, research on multinational corporations (MNCs) suggests that each multinational subsidiary and its practices are influenced by the local environment in which it is embedded including national culture and institutional factors. Dimensions of national culture, such as uncertainty avoidance and individualism, are argued to affect human behavior and practices differently across countries (Hofstede, 1980). For example, one study found significant cultural differences in innovation championing strategies (Shane, S., Venkataraman, S., & MacMilan, I. 1995). In addition to national culture, institutions are thought to affect cross-unit knowledge exchange (Kostova & Rother, 2002). Indeed, institutional theory suggests that institutions help determine legitimate behavior (DiMaggio & Powel, 1983). Further, Scott (1995) has suggested that three ‘pillars’ of institutional processes exist: 1) regulatory, where a powerful constituency (e.g., the government) imposes certain patterns on the organization; 2) cognitive, where organizations in situations of uncertainty adopt the pattern exhibited by organizations in their environment that are viewed as successful; and 3) normative, where professional organizations act as the disseminators of appropriate organizational patterns that are then adopted by organizations under the influence of professional organizations. Xu & Shenkar (2002) theorized that the institutions where the firm operates effects a firm’s strategy and structure and they indicate that this situation is particularly complex for a multinational firm. Firms with units spread across a variety of countries face multiple and possibly conflicting demands (Kostova & Rother, 2002; Westney, 1993) – “one for isomorphism with local firms in the host country, the other for isomorphism with other units within the MNE or in the home country” (Xu et al., 2004: 287). Research to date in general suggests that the local environment exerts a stronger influence on a multinational’s subsidiaries than the internal environment of the multinational as subsidiaries may value local legitimacy over internal
consistency (Rosenzweig & Nohria, 1994; Zaheer, 1995; Davis et al., 2000; Lu, 2002; Xu et al., 2004) in order to be competitive. Despite this, as mentioned above, most social network studies have ignored the role that national context plays in determining the conditions that influence creativity. Based on the above, we would expect that national cultural and institutional dimensions would influence the social context within which individuals are embedded across the multinational (in different countries). Thus, this paper’s aim is to examine how the local national cultural and institutional context impacts the relationship between the characteristics of an individual’s intra-organizational social network and his or her creative performance. To fulfill this aim, we use a social network lens combined with national cultural and institutional lenses to develop a set of hypotheses for the relationships between an individual’s intra-organizational social context, the local national cultural and institutional context, and individual creative performance. As Monge & Contractor (2003) note, to understand one network level, the other related network levels need to be understood, and networks need to be examined simultaneously through multiple lenses. To investigate our hypotheses, we conducted a multivariate analysis using hierarchical level modeling of survey and social network data collected through a web-based questionnaire of 1436 employees from 28 subsidiaries in 17 countries (85% response rate) in one multinational high technology consulting firm. This dataset is quite unique in that not only does it capture the comprehensive set of knowledge flows at the individual level throughout the entire multinational, but it also includes a high number of countries that differ on the local context dimensions.

Such inquiry makes several important contributions. First, this research empirically examines the influence of host country national culture and local institutions on the way the characteristics of social networks effects individuals’ creative performance in multinationals. Second, this research investigates the importance of social networks not only inside the focal subsidiary but also with other parts of the MNC for creative performance. Finally, this research makes possible more precise models of how multinationals may design their organizations and their knowledge management activities to support knowledge integration and the creation of new knowledge to enhance individual creative performance.
CREATIVITY IN THE CONTEXT OF MULTINATIONAL CORPORATIONS

Scholars now widely agree that an important source of competitive advantage for a multinational is the ability to access and exploit the existing knowledge found in its global network of subsidiaries as well as to combine this knowledge to explore new issues (Ghoshal & Bartlett, 1990, Birkinshaw & Hood, 1998, Frost, 2001, Björkman et al., 2004). In addition, multinationals must ensure they tap into external knowledge sources across the globe to update and renew their existing knowledge bases (Birkinshaw, 2001). Due to shrinking product lifecycles, the need for integration across diverse technologies in products and services, and higher levels of competition from new competitors crossing geographical and industrial boundaries (Boland & Tenkasi, 1995, Purser, Pasmore, & Tenkasi, 1992), the ability to continuously create, transfer, and exploit knowledge that is ever more dispersed throughout their global operations is becoming increasingly important and difficult (Bartlett & Ghoshal, 1989, Hedlund & Nonaka, 1993, Doz & Hamel, 1997).

At the core of these challenging knowledge processes are individuals spread across the multinational’s subsidiaries who interact with one another to perform their work. As Nonaka (1994:17) states, “At a fundamental level, knowledge is created by individuals. An organization cannot create knowledge without individuals. The organization supports creative individuals or provides a context for such individuals to create knowledge.” However, researchers have paid little disciplined attention to the micro-foundations of knowledge processes in multinationals (Foss & Pedersen, 2004), and as a result, we have a limited understanding of how individuals interact with others inside the multinational, much less outside the multinational, and the impact of this interaction on individual creativity.

INTERNAL SOCIAL CONTEXT AND CREATIVE PERFORMANCE

To some degree, the performance of individuals working in knowledge-intensive organizations is based on an individual’s ability to access the right knowledge to solve novel, challenging problems (Cross & Cummings, 2004). An individual’s access to knowledge sources has been found to be strongly related to how individuals are positioned within the
organization’s knowledge flows as a result of his or her individual knowledge activities being embedded in a network of interconnected relationships (Cross & Cummings, 2004). Similarly, research focusing on individual creativity, or an individual’s ability to generate novel and appropriate ideas, products, processes, or solutions (Amabile, 1983; Shalley, 1995), has found a relationship between the individual’s social network in which he or she is embedded and his or her creativity (e.g., Perry-Smith & Shalley, 2003, Perry-Smith, 2006). In the context of a multinational, individuals make their own discretionary choices about where to access the required knowledge for their tasks when solving their everyday work problems. Individuals often have the possibility to search for the best knowledge source wherever they want, such as others working in subsidiaries across the many multinational locations. However, they often turn to knowledge sources that are the most easily accessed, such as colleagues located nearby rather than those who have the best knowledge, when stuck in conducting a work-related task (Gerstberger & Allen, 1968, O’Reilly, 1982).

Individuals who turn to their co-located colleagues to a high degree for knowledge on task-related matters are likely to become highly embedded in the local network as they are continuously interacting and exchanging knowledge with others in their local setting. Accessing knowledge from co-located colleagues who share the same coding scheme and language is highly efficient (Tushman & Katz, 1980). This economizing on the amount and intensity of communication is needed to achieve knowledge integration. However, prior research argues that co-located individuals tend to have strong ties, which have been defined as emotionally intense, frequent, and involving multiple types of relationships, e.g., friends, advisors, and colleagues (Granovetter, 1973; Krackhardt & Stern, 1988). The result is that the knowledge held by the members of strong tie networks tends to be common knowledge, providing little new or diverse sources of information over what an individual may already know (Burt, 1992; Granovetter, 1973, 1983; Ibarra, 1992). Thus, the knowledge available through co-located colleagues is likely to be largely redundant and to not facilitate the ability to develop new and creative ideas. Individuals accessing non-co-located colleagues are more likely to gain access to non-redundant information, thus increasing the variety of their knowledge base, the ability to validate potential responses against implemented solutions, and the facilitation of recombinations and unusual connections, thus sparking new ideas and
Recent advances in communication technologies have facilitated the conduct of broad searches across the multinational to identify and seek out others working on similar tasks yet who are physically dispersed across the globe. A study of best practice transfers in multinationals found that a firm’s best practices often flowed through existing lines of communication, and individuals in these networks exchanged knowledge freely with one another (Arvidsson, 1999). Knowledge readily flows along the lines of practice due to a shared language and common norms among practice members, enabling access to new ideas and innovations with relative efficiency (Brown & Duguid, 2000). The ability to access this knowledge through weak tie networks is likely to result in the development of new and creative ideas.

The above leads us to our first hypothesis:

**Hypothesis 1.** The degree to which an individual has ties with people outside his or her subsidiary but within the multinational corporation as opposed to from within his/her subsidiary (i.e., inter-subsidiary or E-I Index⁠¹) is positively related to the individual’s creative performance.

In this paper we will explore how utilizing diverse knowledge sources impact individual creative performance. Specifically, we will look at the role that having an appropriate balance of obtaining knowledge both from the focal subsidiary and from diverse subsidiaries (E-I Index) plays as well as the role that obtaining knowledge from otherwise unconnected groups inside the MNC plays (structural holes). Thus, we now turn to the latter of these relationships.

In addition to an individual’s direct relationships to colleagues either within the local subsidiary or to other multinational subsidiaries, individuals are embedded in the overall network of direct and indirect relationships of the entire set of individuals working across the multinational organization. Research within the social network field has found that an individual’s position within an overall network is also important for outcomes (e.g., Brass, 1984, 1992; Burt, 2004; Cross & Cummings, 2004; Ibarra, 1992; Sparrowe et al., 2001), and individuals working in complex jobs who have central positions generally outperform those who are less central (Mehra et al. 2001, Cross & Cummings, 2004). Research on individual creativity in organizations has suggested that individuals with a highly central position are

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⁠¹ E-I stands for External-Internal
more likely to take informed risks as long, as their centrality is not so high that it is constraining, as well as to be exposed to various disparate social circles in the network, both of which would positively impact creativity (Perry-Smith & Shalley 2003, Perry-Smith, 2006).

Additionally, one of the more highly debated and discussed areas within the social network field is structural holes theory (Burt, 1992, 1997, 2000). A structural hole is the absence of a link between two individuals connected by an actor, and this theory posits that an individual who connects two or more otherwise disconnected individuals gains information and control benefits through this “brokering” position, thereby positively impacting his or her social capital and thus individual performance (Burt, 1992). Within the context of a multinational, previous research by Hansen (1996) provides evidence that a central position within a multinational facilitates the search for knowledge, thus we would expect that individuals who connect disparate groups across the multinational would gain access to a wide variety of ideas, enabling them to take informed risks, thus positively impacting their creativity. Thus we hypothesize:

**Hypothesis 2.** An individual’s structural holes within the multinational corporation is positively related to the individual’s creative performance.

**INTERACTION OF LOCAL NATIONAL CULTURAL CONTEXT AND INTERNAL SOCIAL CONTEXT**

As noted above, multinational organizations are argued to exist due to their superior ability to create and transfer knowledge across their network of geographically dispersed subsidiaries (Kogut & Zander, 1993). At the basic level of these knowledge processes are individuals who actively source knowledge from colleagues within their local subsidiaries as well as in networks that span the multinational’s intra-organizational boundaries and even in networks external to the organization. As such, it is important to understand what practices work best in different countries. In recent years, the importance of networks for individual and organizational performance has been an increasingly important idea in the literature. However, despite the growing popularity of networks, most studies have been conducted in the United States or have ignored the role that host country national differences may play in determining which types of networks are most effective. This assumption of universalism is surprising
since many scholars have highlighted the need to question the applicability of management theories in different geographical contexts without modification (Adler, 1991; Boyacigiller & Adler, 1991; Boyacigiller et al., 2003; Hofstede, 1980a; 1991). However, as Boyacigiller et al. (2003: 17) concluded in a review, “We are still grappling with the more macro-questions posted by Lammers and Hickson in Organizations Alike and Unalike (1979): ‘Is organization science, as it is currently conceived, applicable across countries?’ and ‘To what extent must organizational theorizing be modified due to national differences?’ ” Given the above, this study uses several measures of national culture and national institutions to investigate how country differences effect what types of networks are most effective in enhancing creativity.

National culture is defined as the set of collective beliefs and values distinguishing people of one nationality from those of another (Hofstede, 1991; Shane et al, 1995). For several decades, dimensions of national culture have been found to affect human behavior and practices differently across countries (e.g., Hofstede, 1980; Boyacigiller et al., 2003). For example, differences in national culture have been found to explain the adoption of practices and technologies, e.g., email (Straub, 1994), preferences for leadership styles (Zander, 1997), motivation (Erez, 1997), organizational practices (Kogut & Singh, 1988), as well as different values among individuals in the same profession, e.g., IS developers (Kankanhalli et al., 2003).

There are several different studies that measure national culture and each has its strengths and weaknesses. In addition, of course, measuring national culture with several dimensions to begin with is challenging, but we believe it is a worthwhile endeavor as it helps to be able to compare differences across countries. We have chosen to use two of Hofstede (1980)’s dimensions of national culture, uncertainty avoidance and individualism, in this study for several reasons. First, reflecting previous research on the relationship between national culture and innovation (Shane, Venkataraman, & MacMillan, 1995), these dimensions seem to be of greatest theoretical relevance for determining what network characteristics would best enhance creativity in different countries—the subject of our study. Second, they have been the most widely used in the literature, and the validity and reliability of these measures have been shown repeatedly (Hofstede, 1980; Hofstede & Bond, 1984; The Chinese Culture Connection, 1987; Hoppe, 1990; Shane et al. 1995). Finally, Hofstede’s study is the only study that includes
all of the countries in our study. Below we discuss uncertainty avoidance and individualism in turn and their implications for individual creativity in multinationals.

**Uncertainty Avoidance**

Uncertainty avoidance deals with tolerance for uncertainty and ambiguity, and it indicates to what extent individuals feel comfortable in unstructured and unknown situations. Individuals in uncertainty accepting cultures are argued to be more tolerant of opinions different from what they are used to and are more open-minded in searching for information and in the choice of new innovations (Hofstede, 1980). In addition, individuals in lower uncertainty avoidance cultures tend to be more open-minded to using technology and innovative means of communication.

Within the context of social networks, previous research on multi-unit organizations has found that individuals within subunits particularly defined by geography are more likely to develop group solidarities and inward connectedness (Miller, 1958), and that individuals who interact with others outside of these tightly knit social structures have a lower degree of shared identity, common language and norms as well as a lower level of trust, obligation, and social controls with these outsiders (Brown & Duguid, 1998; Krackhardt & Stern, 1988; Wenger, 1998). The latter are characteristics of a more highly unstructured situation. Thus, while weak ties with individuals from across the multinational are a source of creativity, these ties are more likely to be characterized by relationships with lower levels of trust. Ties with others outside of one’s location may be considered riskier in that they can be inefficient and prone to distortion (Roberts & O’Reilly, Bretton, & Porter, 1974; Tushman, 1977). Individuals may be less open to differences of opinion and the range of ideas provided through these ties and even unsure of the reliability of information that is received through these interactions with people in different locations. Additionally, individuals in lower uncertainty avoidance cultures are more accepting of new approaches to problem-solving (Philips & Wright, 1977; Yates, Zhu, Wang, Shinotsuka & Toda, 1989; Wright, Phillips, Whalley, Choo, Ng, Ian & Wisudha, 1978), and people are more open to violating organizational rules, norms, and procedures to overcome organizational inertia when championing new ideas (Shane et al., 1995). This above reasoning suggests that
individuals from lower uncertainty avoidance cultures would be more open to accepting and implementing ideas coming from outside their subsidiary than people in higher uncertainty avoidance cultures. They are also likely to be more open to violating organizational rules, norms, and procedures when promoting their new ideas. Thus, people in low uncertainty avoidance cultures are likely to be more creative than people in higher uncertainty avoidance countries. However, already being quite open to new knowledge, people in low uncertainty avoidance cultures may not get as much of an increase in creativity when structural holes increases as those from higher uncertainty avoidance cultures. Those from lower uncertainty avoidance cultures may be overwhelmed with new knowledge and accept it without enough questioning. People from high, uncertainty avoidance cultures, in contract will question new knowledge more and thus be less likely to use new low-quality knowledge. As a result, such people will get a bigger increase in creative performance.

Thus, we would expect uncertainty avoidance and the proportion of inter-subsidiary ties (E-I index) to interact in such a way that lower uncertainty avoidance will facilitate creativity especially when uncertainty avoidance is high.

Similar reasoning to that outlined above is relevant for the case of structural holes. A person with a higher degree of structural holes has the potential to serve as a broker of knowledge or the only path between two otherwise unconnected groups of people (Burt, 1992). However, while there are potentially higher benefits for creativity from obtaining diverse knowledge from different groups of people, there are also some additional risks associated with this since it is harder to understand the knowledge and the quality of the knowledge and each group has some of its own norms, which can make interaction more difficult. As such, it may be that people in higher uncertainty avoidance countries do not take advantage of these potential opportunities to utilize knowledge from diverse groups and thus do not benefit as much as they potentially could from the brokering position a structural hole creates. However, one can become flooded with knowledge coming from different sources and thus some sort of filter is useful. Being in a high uncertainty avoidance culture serves as such a filter. Thus, increasing the structural hole will increase creativity more for high uncertainty avoidance cultures than for low uncertainty avoidance cultures. Thus, we arrive at our next two hypotheses:
**Hypothesis 3a.** The degree to which an individual has ties with people outside his or her subsidiary but within the multinational corporation as opposed to within the subsidiary (i.e., inter-subsidiary or E-I Index) will be more positively related to the individual’s creative performance for individuals in high uncertainty avoidance countries than for individuals in low uncertainty avoidance countries.

**Hypothesis 3b.** Structural holes will have a larger positive effect on creative performance in high uncertainty avoidance countries than in low uncertainty avoidance countries.

**Individualism**

Turning to the second national cultural dimension, individualism “pertains to societies in which the ties between the individuals are loose: everyone is expected to look after himself or herself and his or her immediate family. Collectivism as its opposite pertains to societies in which people from birth onwards are integrated into strong, cohesive ingroups, which throughout people's lifetime continue to protect them in exchange for unquestioning loyalty” (Hofstede, 1991, p. 51). Individuals with a more collectivistic inclination are less likely to take a personal perspective in their actions and decisions than those with a more individualistic inclination (Hofstede, 1991; Krankanhalli et al., 2004). For example, more collectivistic IS developers were found to have weaker economic, technical, and socio-political values than more individualistic developers – tending to value the collective welfare of everyone in the project and thus taking a team perspective in their actions and decisions (Krankahali et al., 2004). When promoting the development of an innovation in an organization, researchers found that people in more collectivistic societies tended to prefer those who appealed for cross-functional support for the innovation (Shane et al., 1995).

Within the social network context, scholars have noted that the theory of structural holes was developed within a Western context. Based on the individualism-collectivism definition (Triandis, 1995), Xiao & Tsui (2007:3) point out that “it is not difficult to see that brokering around structural holes is individualistic to the extent that (1) it starts from the premise of an independent self, (2) it puts priority on individual goals rather than the collective’s goals, (3) it focuses on fulfilling self-interest rather than accommodating social norms and obligations, and (4) it prioritizes task achievement above harmonious relationships.” These authors further note that this individualistic undertone becomes particularly evident in Burt’s description of the control function of the broker, who “plays conflicting demands and preferences against one another and builds value from their disunion” and “broker[s] communication while displaying
different beliefs and identities to each contact” (Burt, 2000: 354). As a result, it is argued that an individualistic culture actually encourages people to act as brokers, which contrasts with more collectivistic cultures in which actors are transformed into “members of a community with shared interests, a common identity, and a commitment to the common good” due to norms of reciprocity (Adler & Kwon, 2002: 25; Xiao & Tsui, 2007). A study of four Chinese IT firms found that structural holes were actually detrimental to an employee’s career performance (Xiao & Tsui, 2007) – a result that contrasted strongly with the consistently positive relationship found between structural holes and employee rank (Burt, 1992, 1997), bonus (Burt, 1997), and salary (Burt et al., 2000). Xiao and Tsui (2007) suggested that their results stemmed from the collectivistic nature of Chinese culture. However, they only had data from China and thus they could only infer, and not empirically test, individualism’s effect on structural holes. We are fortunate to have a unique data set with network data from a variety of countries around the world are thus able to explore more systematically individualism’s moderating effect on a similar relationship.

In the context of knowledge processes within a multinational, we would expect then that individuals in more collectivistic societies would put the collective, be it the individual’s team, function, or subsidiary, over his or her own welfare. Thus, while individuals may reach out to others external to his or her subsidiary, the purpose might very well be either to access knowledge for use by others or to gain support for new ideas developed by others as opposed to accessing knowledge for one’s own personal gain. Moreover, if an individual comes across an interesting idea from outside the subsidiary, he or she might be more willing to pass this idea on to someone else in the collective as opposed to personally benefitting from it. Furthermore, in subsidiaries in more collectivistic societies, individuals playing a brokering role may be considered to be less trustworthy and thus may not be part of the ingroup of trust and reciprocity. As a result, while individuals may have access to external knowledge, they may not have access to local knowledge, thus hindering the ability to integrate these two sets of knowledge for creative performance. Moreover, as creativity involves risk taking, individuals outside the ingroup may not have the confidence required for calculated risk taking (Perry-Smith, 2006), thus impeding their creative performance. Thus, we would expect individualism and the proportion of ties external to the subsidiary to interact in such a way that
higher individualism will facilitate creative performance for individuals who access knowledge from others outside the subsidiary.

If individuals have a high degree of structural holes, then they have the potential to be knowledge brokers and connect two otherwise unconnected groups of people (Burt, 1992). However, people in collectivist countries may be somewhat reluctant to use knowledge not from their in-group and they may be shunned by co-workers if they do use such knowledge and thus unable to effectively use knowledge from their ingroup, which is certainly also important. Thus, people in more collectivistic countries are unlikely to gain as high benefits from having structural holes as people from more individualistic countries who are more willing to go outside ingroup boundaries and more able to do this without incurring negative effects in their ability to source knowledge from their ingroup. Thus, a higher degree of structural holes will better facilitate creativity for individuals who are in a more individualistic country. This leads to our next two hypotheses:

**Hypothesis 4a.** The degree to which an individual has ties with people outside his or her subsidiary but within the multinational corporation as opposed to within the subsidiary (i.e., inter-subsidiary or E-I Index) is more positively related to the individual's creative performance for individuals in highly individualistic countries than for individuals in collectivistic countries.

**Hypothesis 4b.** An individual’s structural holes within the multinational corporation is more positively related to the individual’s creative performance for individuals in high individualistic countries than for individuals in collectivist countries.

**INTERACTION OF LOCAL INSTITUTIONAL CONTEXT AND SOCIAL CONTEXT**

In addition to individuals being embedded within the local national cultural context, subsidiaries are also embedded within a local institutional context. Differences in institutional profiles have been found to result in the adoption of different organizational and administrative practices (Kostova & Roth, 2002; Busenitz et al., 2000), and it has been suggested that a subsidiary's response to the multinational headquarters’ initiative is influenced by its interpretations and perceptions of the practice, which are shaped by the external institutional context and the internal relational context in the organization.
Institutional prescriptions play an important role in influencing economic activity (DiMaggio & Powell, 1983; North, 1990) and motivating and regulating the behavior of actors in a given environment (Scott, 1995). Institutional theory suggests that firms experience pressures to conform to the environment’s norms to gain and maintain legitimacy in relation to the environment (e.g., Powell & DiMaggio, 1991), thus different institutions (present in different countries) are likely to produce different pressures. The way foreign and local businesses need to manage their operations to be effective depends on the constraints imposed by the powerful institutions present in the country where the firm is operating. These institutions include both formal organizations - social, economic and political bodies, and the social norms and rules that those organizations articulate (North, 1990). Taken together, they represent established institutions and ideological frameworks that govern the way individuals and firms behave. At the societal level, institutions may create opportunities for specialization around diverse economic "logics" and thereby yield comparative institutional advantages for different business systems (Whitley, 1999). Taking this argument a step further, we argue that networks with certain characteristics may create a larger advantage, or put differently, are more important for enhancing performance - in particular institutional contexts/countries.

To be more specific, a subsidiary is located within the regulatory environment of its local country, i.e., the rules and laws ensuring stability and order in society through the promotion of certain types of behaviors and restriction of others. Countries differ significantly in the extent that regulative institutions are present (Xu, Pan, and Beamish, 2004). Previous research on the diffusion of a multinational’s organizational practices across subsidiaries found a negative relationship between the strength of the local regulatory context and internalization by subsidiary employees of the practices transferred into the subsidiary (Kostova & Roth, 2002). This suggests that individuals in strong regulatory environments may be less receptive to ideas and knowledge from outside their local environment.

In addition, in countries with a strong regulatory infrastructure, there is a high degree of transparency with a clear set of laws and regulations, and, as a result, normally information is easily available to all. Thus, individuals know where to go for information and how things “work around here”. However, in countries with a weak regulatory infrastructure with no clear laws, regulations, etc., there is a higher degree of ambiguity relating to practices. Individuals
would need to talk to more people outside the multinational in the local environment to find out how to accomplish their tasks. Moreover, in weak regulatory environments, it is more likely that there is no one right way of doing things, thus individuals may be more likely to obtain a higher variety of ideas.

This reasoning suggests then that individuals from subsidiaries located in weak regulatory environments would come across a wider variety of ideas in the local environment and would be more flexible in trying new ideas at work and thus higher creative performance. People with high structural holes are also more likely to come across diverse knowledge and be more creative. However, such people can get overwhelmed with this diverse knowledge and thus some sort of filter is needed. Being in a highly regulative environment makes people less open to diverse knowledge serving as such a filter. As a result, that diverse knowledge which does get thorough is often especially useful and results in a larger increase in creative performance in high regulative environments than in lower regulatory environments. Similar reasoning as described above can be applied to structural holes. This leads to our final two hypotheses:

**Hypothesis 5a.** The degree to which an individual has ties with people outside his or her subsidiary but within the multinational corporation as opposed to within his or her subsidiary (i.e., inter-subsidiary or E-I Index) is more positively related to the individual’s creative performance for individuals within strong regulative institutional countries than for individuals within strong regulative institutional countries.

**Hypothesis 5b.** An individual’s structural holes within the multinational corporation is more positively related to the individual’s creative performance for individuals within strong regulative institutional countries than for individuals within strong regulative institutional countries.

**METHODS**

**Research Setting and Data Collection**

We conducted this research in a single firm, Icon Medialab (Icon), an internet consulting firm established in 1996. Icon was chosen for this study as it was ranked among the world’s best 300 small companies in 1998 by Forbes (Forbes, 1998), and it is one of the few internet consulting firms established under the IT boom that is still in existence today (under the name
of LBI). The investigation of only one site is common in network studies due to the requirements of a closed network when studying individual relationships in social network analysis (see Hansen, 1999; Marsden, 1990). The choice of Icon was motivated primarily on the basis that it was a medium-sized multinational - 1698 employees working in 28 subsidiaries located in 17 countries across Asia, North America, and Europe, such as Hong Kong, Singapore, New York, St. Louis, Milan, London, and Stockholm. These 1698 employees were working in a wide variety of functional competences – making Icon unique in its representation of a mixture of competencies under the same organizational umbrella. These disciplines included technology, design, usability engineering, statistics and analysis, media and entertainment, and business strategy, representing the six sides of the “Icon Cube”. As a result, Icon brought together art directors, behavioral scientists, copywriters, journalists, scriptwriters, animators, TV-producers, software programmers, management consultants and web designers, with accounting, personnel, and administration completing the organization. Icon was structured as a matrix organization (geography and function) with each office responsible for its own customer base with local project managers staffing projects with cross-disciplinary teams.

At the time of this study, Icon was a high growth quintessential “IT-intensive” firm in which a large proportion of the employees were working on a day-to-day basis with the latest internet technology. A strategy of rapid global growth was developed by Icon’s founders at the company’s inception. To facilitate this growth, Icon’s management invested heavily in building its structural capital and knowledge management systems. For example, a chief knowledge officer function and supporting positions were established, knowledge communities based on function and industry were developed across the firm, extensive resources were put into developing an intranet, and targets for knowledge reuse and transfer were set, i.e., more than 50% of all projects should include already proven successful products or services. Additionally, two reasons for choosing Icon were that 1) its employees in all functions were not only extremely adept at using new internet-based communication media such as bulletin boards, chat-rooms, email, etc. but they also used these to a high degree in their everyday work, and 2) individual creativity was seen as a highly attractive competence and was encouraged within the firm.
Because our research required a complete network map of the entire multinational organization, we had to specify a boundary around organizational membership. Using the membership criterion (Marsden, 1990), we included those individuals who were formally part of the organization and removed individuals who were on leave of absence, working only part-time, or were independent consultants working for the company – less than 5% of the total workforce. To collect the data, we administered a web-based questionnaire through the company’s intranet to all employees. To administer the survey, several mailings were sent out by email to each individual, including 1) an initial request for participation from the CEO of each subsidiary office, 2) a request from the researcher with a link to the survey, 3) a follow-up two weeks after the first mailing, 4) and if necessary, a second follow-up three weeks after the first mailing. Throughout data collection, individuals were assured that their responses would be kept confidential on a secure server at the company’s third party intranet host and that results would only be presented in aggregate form.

We received 1436 completed surveys from the total 1698 potential respondents for a response rate of 84.6%, a level considered to be high enough to perform sociometric network analyses. Of the respondents, 39.6% were female, the average age was 30.5 years (s.d., 5.82) with an average of 590 days (s.d., 409) employed at Icon. Individuals had worked an average 3.03 years (s.d., 1.02) in their competence and 73.5% had the equivalent of a university degree or higher.

Measures

While the recall of brief, episodic interactions is highly inaccurate (Bernard, Killworth, Kronenfeld, & Sailer, 1984), people are remarkably able to accurately remember typical interactions and long-term relationships with other individuals (Freeman, Romney, & Freeman, 1987), which are important for our study. To capture each individual’s advice contacts in Icon, we asked respondents: 1) “In general, which persons inside Icon do you contact for help or advice when you are not sure what to do with your work, i.e., for help or advice related to your tasks and not your administrative activities?” and 2) “In general, who contacts you in the same way?”

As mentioned above, we needed to measure the entire advice network of the multinational. Consequently, 1698 potential respondents were involved in this network survey.
To enhance recall and improve accuracy and reliability (Labianca, Brass, & Gray, 1998; Marsden, 1990), we took several measures. After several iterations and pilot testing, we decided to create one web page for each individual office that listed the names of all the individuals within each office. Thus, we placed a drop-down menu with an alphabetical listing of all the offices within the organization at the top of the online survey screen. In addition, we placed buttons with “Next Office” and “Previous Office” at the top and bottom of the screen. In this manner, respondents could easily move between offices, locating others with whom they had relationships outside of their own office. In order to ensure that people listed others outside of their own location, we wrote the following, “Please think of people in ALL ICON OFFICES, not just those in your own Icon office. To go to another office, click on Next Office or choose another office from the drop-down menu.” Within each office page, individuals were listed alphabetically by first name and not last name since pilot testing revealed that individuals could recall first names and office to a much better degree than last names. Next to each individual’s name and function were eight radio buttons: four indicating the degree with which the respondent contacted the individual listed and four indicating the degree to which the individual contacted the respondent (1=daily, 2=weekly, 3=monthly, 4=less than monthly).

**E-I Index.** E-I Index compares the number of ties a person has with people outside of the subsidiary but within the multinational to the number of ties he or she has within the subsidiary where he or she works. The E-I index is calculated by taking the number of ties external to the identified group (i.e., external to the subsidiary) minus the number of ties that are internal to the group (i.e., inside the subsidiary) divided by the total number of external ties plus internal ties, i.e., (External – Internal) / (External + Internal) (Krackhardt & Stern 1988). We have chosen this measure as it is a measure of dominance of external over internal links, not simply a measure of external links. In other words, the index not only decreases as the external links decreases but also if the internal ties increase. Similar to the rationale in previous work for using this measure (Krackhardt & Stern 1988), we are interested in this dominance for several reasons. First, relationships require effort to maintain, and this in turn implies a tradeoff between the number of links maintained externally and the number of links maintained internally. Thus internal links represent an opportunity cost to the individual in terms of the ability to access diverse knowledge through external links. Second, this measure is not so
sensitive to measurement error since variance in the estimation by a respondent of his or her ties will be accounted for, i.e., overestimates of externals would be balanced by overestimates of internals (Krackardt & Stern 1988). To calculate the E-I Index, we used the dichotomized pooled advice network with UCINET 6.207 (Borgatti et al., 2002). This value can range from 1 to -1, but for a given network density and group sizes its range may be restricted and so it can be rescaled.

**Structural Holes.** In this study, we used Burt’s (1992) constraint ($c$) to measure structural holes, which is widely used in previous studies (e.g., Burt, 2007; Hom & Xiao, 2006; Xiao & Tsui, 2007). In the entire network, network constraint measures the extent to which a network does not span structural holes, i.e., the lack of brokerage opportunities (Burt, 2007). Network constraint is a function of the network’s size, density, and hierarchy. A person with high constraint has few contacts (a small network) and his/her contacts are strongly connected to one another, either directly (a dense network) or through a central, mutual contact (a hierarchical network). Network constraint is calculated by a summary index as follows:

$$\sum_j c_{ij}, \text{ while } c_{ij} = (p_{ij} + \sum_q p_{iq}p_{qj})^2$$

for $q \neq ij$,

where $p_{ij}$ is the proportion of $i$’s network time and energy invested in contact $j$ and $\sum_q p_{iq}p_{qj}$ is the portion of $i$’s network time and energy invested in contact $q$ who is in turn invested in contact $j$. The actor’s higher constraint score means fewer structural holes exist in his or her network. The number of structural holes is measured with $1 - constraint$, ranging from 0 to 1.

Prior to calculating structural holes, we took several steps. Since we are interested in the individual’s general embeddedness in the firm’s advice network and not the direction of his or her relationships (i.e., whether the individual goes to another or vice versa), we used data from both the advice network questions (contact me and contact you). First, we transposed the second matrix that asked “In general, who contacts you in the same way?” in order to make the two advice matrices equal in terms of direction between the individual respondents. We then pooled the two matrices using the average method. Our next step was to dichotomize the data by converting all values to either a “1” or “0” with a cutoff point at all values greater than 0.5 in the pooled matrix. In this manner, we removed all values that had an original input as “4”
(less than monthly contact recoded as 1 in the network matrix) in the “I contact” section that was not reciprocated by the alter respondent in the “Contacts me” section, i.e., \((0+1)/2 = 0.5\). Finally, using UCINET 6.207 (Borgatti, Everett, and Freeman, 2002), we calculated the structural holes measure using this dichotomized pooled advice network.

**Individualism-Collectivism and Uncertainty Avoidance.** As presented above, we use two national cultural dimensions in this study: uncertainty avoidance and individualism-collectivism, and we used the numerical values calculated by Hofstede (1980) as our measures for these. Although these measures of national culture are somewhat dated, Hofstede notes that national cultures change very slowly and when “cultures shift, … they shift together, so that the differences between them remain intact” (1991: 77). Furthermore, Hofstede’s individualism-collectivism and uncertainty avoidance indices have been replicated extensively (Hoppe, 1990) and been the subject of more checks of reliability, internal validity, and external validity, than other measures used in cross-cultural studies (Hambrick & Brandon, 1988; Kogut & Singh, 1988; Shane et al., 1995). Further, Hofstede’s dimensions of national culture are the most widely used measures of national culture and the only major national culture measures including values for all countries in our study.

**Regulative Institution.** We adopted Xu, Pan, & Beamish’s (2004) measurement for the regulative dimension of a country’s institutions, which was based on the Global Competitiveness Report published annually by the Geneva-based World Economic Forum. Moreover, this data source has been used in an increasing number of studies (e.g., Delios & Beamish, 1999; Wan & Hoskisson, 2003; Xu et al., 2004). Based on Scott’s conception of regulative processes (1995: 35), Xu et al. (2004) selected six items that describe the legal and regulatory aspects of a country’s environment. The six items have a Cronbach’s alpha of .93, and the simple numerical average of these six items was taken as the country’s score on its regulative dimension.

**Individual Creative Performance.** Individual performance is one of the most central and fundamental constructs of organizational behavior; however, measuring it has proven to be a difficult task. While there exist several different approaches, for example subjective measures (e.g., self, peer, and supervisor ratings) and objective measures based on direct measures of countable behaviors or outcomes (e.g., total sales volumes or sales commissions
for salespeople), the correlations between the various measures tend to be less than “perfect” (see Bommer et al., (1995) and Harris & Schaubroeck (1988) for a discussion). Researchers have also come to some agreement that perfectly reliable and valid third party performance ratings are unattainable since they are subject to a variety of biases, such as external conditions, the experience of the rater with the job being evaluated, or the ability of the rater to observe the ratee (Borman, 1978; Weekley & Gier, 1989). Thus, there exists no one “best” measure of individual performance.

In our discussions with management regarding to what extent performance measures were possible to collect, it became apparent that supervisor ratings, peer ratings, or other performance measures such as salary would be difficult to obtain due to issues such as employee confidentiality. Accordingly, we opted to measure individual performance via self-reporting measures. Previous research at Icon supports this choice of self-reported measures since we found that that supervisors and individuals at Icon were in considerable agreement over the degree of individual performance (Teigland, 2000).

Thus, for the purposes of this study, we are interested in particular in individual creative performance; however, we see creative performance as manifested as the ability to both develop and implement new ideas, processes, and routines. As a result, for our individual creative performance measure, the items emphasize not only the development of new ideas, routines, and processes but also the implementation of these. We used four items taken from a larger individual performance measure used to assess innovative performance (Welbourne, Johnson & Erez, 1998) to measure creativity performance: 1) I come up with new ideas, 2) I work to implement new ideas, 3) I find improved ways to do things, and 4) I create better processes and routines. The Cronbach’s alpha of the 4-item scale is .83.

**Control Variables.** The control variables include age, gender, education, and job experience. Age (years), gender (1=male, 2=female), education, and job experience were assessed through the survey. For education, respondents were asked to indicate their highest obtained educational degree (1=high school, 2=technical certificate, 3=bachelor, 4=master, 5=Ph.D). Job experience in the organization was assessed by asking respondents to indicate “How many years have you worked in your competence area or a similar one at other company?” with five different lengths of time being possible answers to choose.
RESULTS

Correlations and Descriptive Statistics

Table 1 displays the means, standard deviations, and correlations for all variables in this study. We use two predictors at the individual level: structural hole and E-I Index. From the correlation table we find that E-I Index was significantly and positively correlated to individual creative performance ($\gamma = .16$, $p < .01$), whereas structural holes was not. In addition, we use three moderators at the subsidiary level: uncertainty avoidance, individualism-collectivism, and regulative institutions. Since we did the correlation analysis at two separate levels, we cannot see the correlation between moderators at the subsidiary level and individual level. Among the control variables, age, gender, education and experience were significantly related to individual creative performance ($p < .01$).

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Insert Table 1 about here
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HLM Results for Hypotheses Testing

In our study we have chosen to use hierarchical linear modeling (HLM) due to the nature of our research question and the nested nature of our data. Extensive theoretical and empirical research on organizations has identified relationships between variables at different organizational levels, e.g., environment and organization, organizational subunits/groups and individuals, and environment and individuals (see Hofmann, 1997 for a discussion). HLM has been specifically designed to enable researchers to investigate the extent to which higher level variables influence lower level outcomes while maintaining the appropriate level of analysis, i.e., they allow the simultaneous investigation of “relationships within a particular hierarchical level, - as well as relationships between or across hierarchical levels” (Hofmann, 1997:726). In our study, we have two levels, level-1=individual and level-2=subsidiary, since individuals are located within their subsidiary where they work and this subsidiary is then located within a local national context.

Null model. If there is limited level 2 variance, one cannot use HLM. Thus, our first step was to run the null model for individual creative performance, the individual dependent
variable of interest, in order to test whether there is enough between-subsidiary variance in individual creative performance such that we can analyze the hypotheses using HLM. In the null model, no predictors are specified for either the level-1 (individual) or level-2 (subsidiary) function. Only the individual level dependent variables are included in the level-1 function. We estimated the null model using HLM and results showed a significant level-2 residual variance for the intercept (\( \hat{\sigma}_{00} = .05, p < .001 \)). The intra-class correlation coefficient (ICC1) was .074, indicating 7.4% of the variance in individual creative performance resided between subsidiaries, and 92.6% of the variance resided within subsidiaries. Accordingly, we could use HLM to test our hypotheses.

**Level-1 model: Individual-level.** Hypotheses 1 and 2 predict that the E-I Index and structural holes respectively will be associated with individual creative performance. After controlling for the effects of the four demographic variables on individual creative performance, we estimated a level-1 model with these two individual level predictors. As a block, these two predictors explained 7% of the within-subsidiary variance. Specifically, the E-I Index (\( \gamma = .21, p < .01 \)) had a significant positive relationship with individual creative performance. Therefore, hypotheses 1 was supported. However, the main effect of structural holes on individual creative performance (hypothesis 2) was not supported in this individual level (level-1) model. However, given the presence of interaction effects, it is really the interaction hypotheses which are more relevant to consider. In addition, we did a further deviance test (Brennan, 2008) in HLM to examine whether our two individual predictors improve the level-1 model fit significantly, and the result of the deviance test showed that adding these two predictors significantly improved the level-1 model (\( \chi^2 = 9.55, p < .01 \)).

**Level-2 model: Cross-level interactions (Subsidiary-Individual).** Hypotheses 3a, 3b, 4a, 4b, 5a, and 5b investigate the moderating effects of uncertainty avoidance, individualism, and regulative institution on the relationships between the two individual network variables and individual creative performance. To test the hypotheses, we added the three level-2 moderators (uncertainty avoidance, individualism, and regulative institution) to the previous model. We group-mean-centered the level-1 predictors (Hofmann & Gavin, 1998) to avoid potential confounds when testing for cross-level moderation. The results of the full model show that
both uncertainty avoidance and regulative institution significantly moderated the relationship between structural holes and individual creative performance ($\gamma = .05, p<.01; \gamma = 5.25, p<.001$), while individualism did not (cf., Xiao & Tsui (2007). Figures 2 and 3 illustrate the significant interactions. As anticipated, the interaction plots revealed that people with a high degree of structural holes can perform highly creatively in a context with low uncertainty avoidance and low regulative institutions. Thus, hypotheses 3b and 5b were supported, but hypothesis 4b was not. Interestingly, individualism significantly moderated the relationship between E-I Index and individual creative performance ($\gamma = -.01, p< .01$), while uncertainty avoidance and regulative institution did not. Figure 4 illustrates the significant interaction. As anticipated, the interaction plot revealed that the positive relationship between E-I Index and individual creative performance was stronger in the low individualism context. Therefore, hypothesis 4a was supported, but hypotheses 3a and 5a were not. As a block, these cross-level interaction effects explain 12% of the between-subsidiary variance. Finally, we did a further deviance test (Brennan, 2008) in HLM to examine whether these moderation effects improved the cross-level model’s fit significantly. The result of the deviance test showed that these moderation effects significantly improved the cross-level model’s explanatory power ($\chi^2 = 15.19, p < .05$).

Table 2 summarizes the results of HLM analyses testing hypotheses and table 3 presents a summary of hypotheses and our findings.

DISCUSSION AND CONCLUSIONS

Through our investigation of 1436 individuals in 28 subsidiaries in 17 countries within one multinational corporation, we have shed some light on the influence that a subsidiary’s host country national culture and local institutions have on the relationship between an individual’s knowledge integration activities and his or her creative performance. While our findings provide further support for the theoretical foundations that an individual’s creative performance is related to his or her network of interpersonal relationships (Simonton, 1984)
and that an individual’s network extending beyond the organization’s legal boundaries plays an important role in this relationship (Perry-Smith, 2006), our results go further by demonstrating the need for a more contextualized view of these relationships.

First, in terms of national culture we find support for two of our four predicted relationships. Diverse knowledge are useful for creativity and can be obtained when a person bridges unconnected groups within a multinational (high structural holes), one can get flooded with such knowledge and have difficulty deciding what is useful and what is not useful. In a low uncertainty avoidance culture when one readily accepts this knowledge creative performance can decrease some as structural holes increase. In contrast, in high uncertainty avoidance cultures people question/filter knowledge they are exposed to more extensively and only using the pieces which are most useful. With this filter in place, higher structural holes produce increased creative performance. However, we did not find any support for uncertainty avoidance moderating the relationship between an individual’s interaction with others within the MNC but outside the focal subsidiary over those within his or her subsidiary (E-I Index) and creative performance. One explanation for this lack of support may be that individuals within all national cultures may regard knowledge coming from others within the multinational as relatively trustworthy since they all belong to the same organization.

Turning to individualism, we found support for one of our two hypotheses. At lower levels of the extent that individuals interact highly with others from outside his or her subsidiary but within the multinational (E-I Index), creative performance is enhanced in more individualistic countries. Such people readily accept diverse knowledge they are more likely to be exposed to as they interact with more people from outside their subsidiary. However, at some point one starts to get flooded by all of the knowledge one comes into contact with and thus one needs some sort of filter. People who are collectivist (low on individualism) are more suspect to knowledge coming from outside their group which serves as a filter to let only the more useful knowledge through. As a result at higher levels of E-I index people who are collectivist have greater creative performance than those who are more individualistic. However, we did not find support for the moderating effect of individualism on the relationship between an individual’s structural holes and creative performance. Previous research has found that structural holes in career networks are detrimental to career
development (Xiao & Tsui, 2007); however, our study did not confirm this finding. There is a difference between this previous study and ours as not only does the dependent variable differ, but the former study collected ego-network data from individuals in four different firms all within China while ours was based on socio-network data within one firm across 17 different countries. As Xiao & Tsui (2007:24) note, while collectivism in the abstract is the same, the unit of collectivity often differs. In a multinational subsidiary, individuals belong to the collective of the organizational subsidiary as well as to collectives of the nation. Thus, in more collectivistic countries, individuals may choose not to pass the knowledge on to the collective of the subsidiary but instead to use it personally for the benefit of the collective to which he or she belongs in the country, e.g., professional network.

Similar to the findings for uncertainty avoidance we find support for one of our two hypotheses related to regulative institutions. While the relationship between the number of ties outside the subsidiary but within the multinational relative to ties within the subsidiary (E-I Index) and creative performance is not influenced, the relationship between an individual’s position (structural holes) and creative performance is influenced by the regulative institutional setting. In weak regulatory environments where there is ambiguity in laws and regulations, individuals may be more likely to develop a higher brokering skill as defined by Burt (1992:354): “plays conflicting demands and preferences against one another and builds value from their disunion” and “broker[s] communication while displaying different beliefs and identities to each contact”. This then facilitates their ability to play a brokering role within the multinational, thus affording them access and a favorable position between disparate social circles as well as an increased level of confidence and personal discretion to take calculated risks necessary for creativity (Perry-Smith, 2006). In terms of practical implications, these results have further enriched our view of a multinational’s knowledge processes and provided insight into how firms may create structures that encourage creative outcomes among individuals. We find that individuals are embedded in networks extending across the multinational and that these networks are instrumental to an individual’s creative performance. While managers clearly understand the importance of facilitating knowledge flows across the multinational, our results suggest that the local context influences the impact that an individual’s social network has on his or her creative performance. Thus, using a “one-size fits
all” knowledge management solution across countries for a multinational may not prove successful.

**Limitations**

Despite the strengths of this study involving a large, all-inclusive multinational organization and paying systematic attention to the role of local context, we should also note its limitations. First, this study only examines creative performance, leaving us with little understanding of the local context’s influence on efficient performance. Second, we investigated individuals within one company within one industry, thus limiting the generalizability of our findings. Further research should examine the influence of national cultural and institutional context on individual activities and their relationship with creative performance across multiple organizations. Third, data were collected at one point in time. Another limitation is our use of self-reported survey measures for only creative performance. Thus, future research should include objective data sources in addition to survey data as well the collection of data over time to further establish the relationship to creative performance in different national settings.

Another extension is to look at the strength of the relationships between individuals in the advice networks. Previous research suggests that the relationship between performance and centrality is dependent on the type of knowledge being transferred as well as the tie strength (Hansen, 1996; Perry-Smith, 2006). Thus, future research should incorporate these different dimensions. Additionally, this study did not examine the extent to which individual activities are more focused towards exploiting existing channels of communication or discovering new channels of communication (Birkinshaw, 2001; Ghoshal et al., 1994). Examining how individuals choose among the different sources of knowledge for the purposes of discovering new knowledge and making new interpersonal connections is an important area for future research.

In summary, our findings bring into question the ability to generalize social network theories across different macro contexts. While an individual’s position and external ties in a network bring creative performance benefits, the local national cultural and institutional context do significantly influence this relationship. This finding clearly implies that researchers and practitioners alike need to further investigate the impact that the local context has on the
knowledge integration activities in multinational corporations as well as competitive advantage and multinational performance.

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a Individual level n =1436; Subsidiary level n = 28.

b Coded as male, 0; Female, 1.

* p < .05; ** p < .01; *** p < .001, (2-tailed).
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<td>.204**</td>
<td>.068</td>
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<td><strong>Level 2—Subsidiary level</strong></td>
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<td>Uncertainty Avoidance (UA)</td>
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<td>Individualism &amp; Collectivism (IC)</td>
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<td>Regulative Institution</td>
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<td><strong>Cross-Level Interactions</strong></td>
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<tr>
<td>Structural Hole * UA</td>
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<td>$R^2$ within-subsidiary</td>
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<td>$R^2$ between-subsidiary</td>
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* p < .05; ** p < .01; *** p < .001, (1-tailed).
### TABLE 3
Summary of Hypotheses and Findings

<table>
<thead>
<tr>
<th>Individual Level Predictors</th>
<th>Level-1 Model: Individual</th>
<th>Level-2 Model: Cross-level Interactions (Subsidiary-Individual)</th>
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<tbody>
<tr>
<td>E-I Index</td>
<td>Hypothesis 1. The degree to which an individual has ties with people outside his or her subsidiary but within the multinational corporation as opposed to from within his/her subsidiary (i.e., inter-subsidiary or E-I Index) is positively related to the individual’s creative performance.</td>
<td>Hypothesis 3a. More positive relationship…</td>
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<td>Hypothesis 4a. More positive relationship…</td>
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<td>Supported.</td>
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<tr>
<td>Structural Holes</td>
<td>Hypothesis 2. An individual’s structural holes within the multinational corporation is positively related to the individual’s creative performance.</td>
<td>Hypothesis 3b. More positive relationship…</td>
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<td>Hypothesis 4b. More positive relationship…</td>
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<td>Hypothesis 5b. More positive relationship…</td>
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</table>

#### Notes:

2 Shading indicates a supported relationship

3 E-I stands for External-Internal
FIGURE 1
Research Framework: The effect of Individual Network Characteristics on Individual Creative Performance

Cultural and Institutional Context
→ Individualism & Collectivism
→ Uncertainty Avoidance
→ Regulative Institution

Subsidiary Level

Individual Level

E-I Index

Individual Creative Performance

Structural Holes
FIGURE 2
Interaction Effect of Structural Hole and Uncertainty Avoidance on Individual Creativity

FIGURE 3
Interaction Effect of Structural Hole and Regulative Institutions on Individual Creativity
FIGURE 4
Interaction Effect of EI-Index and Individualism & Collectivism on individual creativity

![Graph showing the interaction effect of EI-Index and Individualism & Collectivism on individual creativity. The x-axis represents the E-I Index ranging from Low to High, and the y-axis represents Creative Performance also ranging from Low to High. The graph has two lines: one for Low Individualism and another for High Individualism. The lines show an upward trend as the E-I Index increases.]