

WHO HAS CONFLICT WITH WHOM? A SOCIAL CAPITAL APPROACH TO CONFLICT
AND CREATIVITY IN TEAMS

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ABSTRACT

Extant team conflict research treats conflict as a shared perceptual team property whereby it is assumed that all of a team's members experience equivalent amounts of conflict. This traditional approach is silent concerning whether team members vary according to how much conflict each team member experiences with each of their team members. This customary treatment of team conflict as a shared perceptual property of the team has led to inconsistent findings in the empirical record concerning the predictive power of the team conflict construct for predicting a team's creativity. In an effort to provide conceptual and empirical clarity to this issue, the present dissertation utilized social capital theory and analysis to examine the relationship between team conflict and team creativity. With its explicit focus on dyadic interactions, social capital is argued to be a more appropriate lens than the conventional paradigm for understanding how and why conflicts between team members influence team members' ability to be creative. It is argued that a social capital approach provides a more rigorous and appropriate test of the theoretical and empirical justifications for the team conflict—team creativity relationship.

The dissertation attempted to replicate and extend the findings of previous studies of team conflict and team creativity by utilizing measures of conflict derived using both sociometric and psychometric methods. Results from a lagged study of 132 teams engaged in a complex, 10-week business game simulation revealed that team conflict was predictive of team creativity using the traditional, yet less precise, psychometric method, but was not predictive of team

creativity using the sociometric method. The study's inability to replicate previous research findings using the social capital approach calls into question the validity of traditional team conflict approaches for predicting team creativity. Further, the discrepant findings open a new line of inquiry addressing when and under what conditions the social capital approach to conflict predicts team creativity.

LIST OF ABBREVIATIONS AND SYMBOLS

α	Cronbach's Index of Internal Consistency
N	Sample Size
df	Degrees of freedom: Number of values free to vary after certain restrictions have been placed on the data
r	Pearson product-moment correlation
β	Beta coefficient
p	Significance Level
VIF	Variance Inflation Factor
T	Tolerance Level
CFA	Confirmatory Factor Analysis
TMS	Transactive Memory Systems
r_{wg}	Interrater Reliability Coefficient
ICC	Intraclass Correlation Coefficient
TC	Task Conflict
RC	Relationship Conflict

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CONTENTS

ABSTRACT.....	ii
LIST OF ABBREVIATIONS AND SYMBOLS	iv
ACKNOWLEDGMENTS	v
LIST OF TABLES	ix
LIST OF FIGURES	x
1. INTRODUCTION	1
2. LITERATURE REVIEW AND HYPOTHESES	11
3. METHOD	62
4. RESULTS	70
5. DISCUSSION	76
REFERENCES	107
APPENDIX.....	118

LIST OF TABLES

1. EFA of Six Items Assessing Team Creativity	68
2. Means, Standard Deviations and Correlations.....	71
3. Hierarchical Regression Results	73

LIST OF FIGURES

1. Social Capital Model of Conflict-Team Creativity.....	7, 47
2. Locus of Creativity—Individual	89
3. Locus of Creativity—Team	90

CHAPTER 1

INTRODUCTION

To remain competitive, organizations are focusing increasing time, talent, and resources on activities designed to foster creativity (Farh, Lee, & Farh, 2010). Creativity, the generation of novel ideas, strategies, or solutions, involves gathering and exchanging information from various sources, identifying disconnects between elements of problems, and combining these in novel ways (Amabile, 1983). Much of the research on creativity focuses on the factors that facilitate access to and exchange of diverse information. However, little research addresses the factors that hinder efforts between members of teams or other collectives to exchange and integrate diverse perspectives. Previous research has suggested team conflict as an important constraint on a team's ability to be creative. Hülsheger and his colleagues' recent meta-analysis of the team-level antecedents of creativity evaluated 104 studies conducted over the past 30 years (Hülsheger, Anderson, & Salgado, 2009). Results from the study revealed several significant gaps in our understanding of the drivers of creativity. Of particular importance was the *non-significant* finding for relationships between two forms of team conflict—task and relationship—and team creativity. This meta-analytic non-finding is perhaps an artifact of the inconsistent and mixed results, generally observed in the empirical record pertaining to intragroup conflict and organizational outcomes (De Dreu & Weingart, 2003).

Conflict refers to the awareness of interpersonal incompatibility attributed to either task or relationship issues (Jehn, 1995; Jehn & Mannix, 2001). Task conflicts involve disagreements

concerning methods, strategies, or ideas. Relationship conflicts involve emotionally-laden disagreements based on interpersonal incompatibilities and dislike. Although researchers generally agree that relationship conflict will always tend to have detrimental consequences for team outcomes such as creativity, there is substantially less certainty regarding whether task conflict ultimately is functional or dysfunctional for team creativity (Amason 1996; De Dreu, 2008; De Dreu & Weingart, 2003) or whether its effects may be *curvilinear* in nature (Farh et al., 2010; Shaw, Zhu, Duffy, Scott, Shih, & Susanto, 2010). At best, task conflict may, in some form, and at moderate levels, provide some advantages to teams and other collectives. The current empirical (and emerging conceptual) ambiguity concerning the consequences of task conflict has prompted researchers to call for alternative perspectives and approaches for the examination of task conflict's effects on team outcomes (De Dreu & Weingart, 2003; Jehn, Rispens, & Thatcher, 2010; Korsgaard, Soyoung Jeong, Mahony, & Pitariu, 2008). In an effort to address these issues, the present study explores the relationship between team conflict and team creativity using the social capital architecture advanced by Nahapiet and Ghoshal (1998).

Social Capital Theory

Researchers have offered many definitional and theoretical perspectives of the social capital concept. Generally, social capital is thought of as a resource that provides benefit to an actor or actors as a result of the relationships in the actor's social network (Adler & Kwon, 1992). An actor is 'representative' of the particular entity under consideration, which can include individuals, teams, divisions, or organizations. A social network refers to a collection of relationships and the actors connected by them (Brass, Galaskiewicz, Greve, & Tsai, 2004). The varying perspectives of social capital are often differentiated by a focus on the relationships external or internal to an actor and whether the actor under consideration is an individual or

group of individuals such as a team (Payne, Moore, Griffis, & Autry, 2011). The bonding view of social capital, which traces back to the work of Coleman (1988), focuses on the internal relationships connecting the members of a collective as providing mutual benefit to the collective and its members. Bonding social capital benefits the collective by facilitating the achievement of group goals which would be difficult or impossible to achieve by the members working in isolation. The bridging view of social capital has been mostly informed by the work of Burt (1992) and positions social capital as the benefit an actor derives from the pattern of relationships external to the actor. According to the bridging view of social capital, an actor's external relationships have the potential to provide the actor with differential and timely access to information and support that provides the actor advantage over others (Burt 1992). Recent social capital research at the group level has begun to incorporate both the bonding and bridging views of social capital by arguing that both a group's internal *and* external relationships are needed to access and utilize resources to achieve maximum levels of group effectiveness (Oh, Chung, & Labianca, 2004; Oh, Labianca, & Chung, 2006).

Nahapiet and Ghoshal (1998) advanced a theory of social capital that focuses less on bonding versus bridging forms of social capital, but rather on the potential of relationships to produce collective advantage in the form of intellectual capital. The present study adopts the social capital framework advanced by Nahapiet and Ghoshal (1998) for its potential to help explain how relationships, in this study conflict relationships, influence the generation of intellectual forms of capital such as creativity. Consistent with this intellectual capital view of social capital theory, the present study explores the nuances of relationships at the dyadic level of analysis, yet aggregated to the team level, in order to better understand creativity at the team level. With its focus on inter-actor relationships, the dyad is the fundamental building block of

social capital theory and is used to explain variance in outcomes at multiple levels of analysis (Payne et al, 2011). The multilevel nature of social capital theory makes it a powerful tool for testing the theoretical conjectures supporting the team conflict—team creativity relationship which assert that interactions between team members influence the team’s ability to be creative by exhausting and generating resources.

Social capital represents the actual and potential resources present within the relationships composing a social network (Nahapiet & Ghoshal, 1998). Social capital theory provides a framework to understand the processes through which social network ties, or relationships, influence collective action as well as outcomes for network actors. Three dimensions of social capital potentially play a role in this process. The structural dimension of social capital refers to the overall configuration, or structure of ties, within a social network (Coleman, 1988). Density, for example, is a structural measure capturing the extent that actors in a network share ties with one another (Balkundi & Harrison, 2006). In the case of instrumental relationships such as information sharing, this level of connectedness among the actors in a network reflects the range of information and knowledge resources available to the network (Nahapiet & Ghoshal, 1998).

The relational dimension refers to the strength of the ties that connect actors, and is based on the frequency of interactions between parties (Granovetter, 1973). For example, family and friends often are considered ‘strong ties,’ whereas work colleagues and business associates tend to be considered ‘weak ties.’ Due to similarity in values and attitudes among strong tie contacts, strong ties also tend to share the same ties with one another (i.e., a friend of my friend is my friend). Because of the frequently overlapping, or redundant, connections between strong ties, social capital theory maintains that network members with strong ties are more likely to assume

their network contacts receive new information when they receive it (i.e., my brother, sister, and first cousin all must know that aunt Shirley and uncle Bob are getting a divorce) and thus are less likely to communicate new information in a timely fashion (Granovetter, 1973). Conversely, weak tie contacts are less likely to share common ties. Weak tie contacts also are less likely to assume their contacts possess similar information (Brass, 1995), and thus also are more likely to quickly provide their contacts with non-redundant information (Burt, 2004). Research suggests that weak ties may, often, be more beneficial for individual level creativity than strong ties (Perry-Smith, 2006; Zhou, Shin, Brass, Choi, & Zhang, 2009).

Finally, the cognitive dimension refers to shared perceptions between actors that facilitate collective action. When network members have similar perceptions concerning, for example, the frequency or quality of their interactions, or other network members' motives, they can avoid misunderstandings that potentially inhibit the free exchange and combination of resources (Tsai & Ghoshal, 1998). Cognitive social capital helps in the development of shared goals and recognition of the value in exchanging and combining resources (Tsai & Ghoshal, 1998).

Although social capital theory shares strong conceptual overlaps with the mechanisms thought to enhance creativity, the conceptual architecture of the theory remains relatively untapped in efforts to understand the drivers of creativity, particularly within the context of teams. Thus, theorizing various forms of interpersonal conflict in terms of its structural, relational and cognitive dimensions may offer a more fine-grained understanding of this phenomenon than traditional approaches to understanding how task and relationship conflict relate to the exchange and combination of resources between team members; and thereby affecting teams' creativity. Through the application of a social capital framework to the task and relationship conflict taxonomy, the present study explores two neglected types of social

networks— what the present dissertation refers to as the task conflict network and the relationship conflict network. In this team-based study, a team’s task conflict network is inclusive of each of the team’s members and the set of task conflict ties, or lack of task conflict ties, between them. Team members share a task conflict tie if either of the parties within an information-sharing dyad perceives task-focused disagreement with the other party. A dyad refers to any pair of actors in a social network (Scott, 2000). This same convention holds for teams’ relationship conflict networks and ties. Although previous team studies have revealed task and relationship conflict to be strongly correlated, the present study does not assume that dyads experiencing task conflict will necessarily experience relationship conflict as well and vice versa.

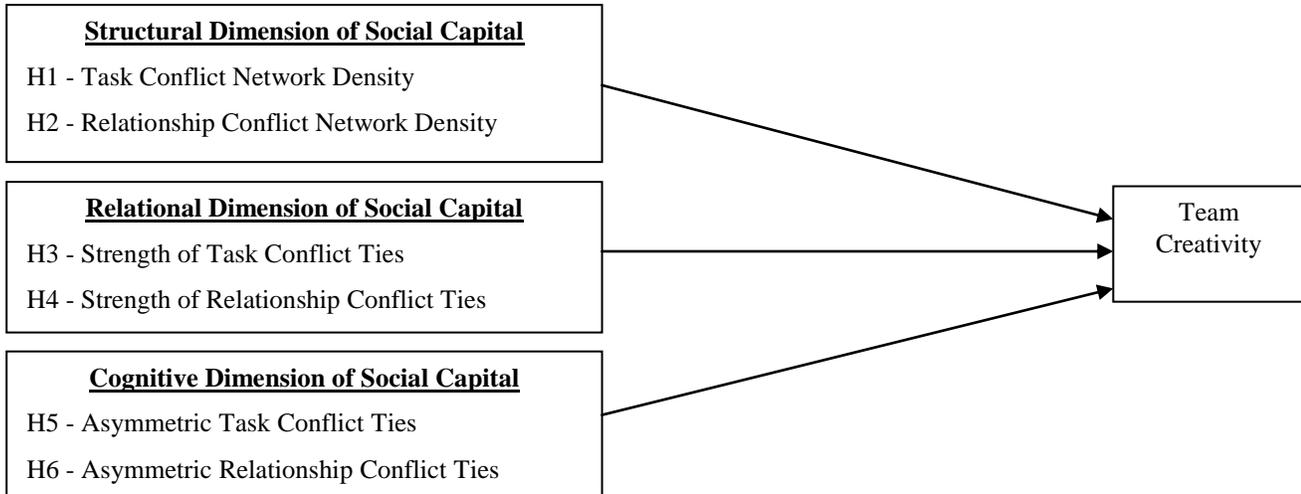
Model Walkthrough

Figure 1 illustrates the social capital model of conflict and creativity proposed and tested in the current dissertation. Specifically, arguments are presented that high and low levels of structural social capital—density—in the task conflict network hinder teams’ ability to be creative. High levels of task conflict network density create resource burdens by exhausting large amounts of time, attention, and cognitive resources that ultimately reduce opportunities for information exchange and combination. Teams with low levels of task conflict network density fail to stimulate exchange and combination processes and thus hinder creativity. Moderate levels of task conflict network density allow teams to reap the benefits and avoid the costs of divergent information exchange.

Structural social capital resulting from the relationship conflict network is argued to be negatively related to team creativity. As more team members engage in disagreements based on dislike and antagonism, opportunities for exchange and combination will be reduced. The

discomfort and isolation produced by increasing density in the relationship conflict network reduces timely access to information held by other team members and lowers motivation to engage in coordinated actions.

FIGURE 1
Social Capital Model of Team Conflict and Team Creativity



The relational dimension of task-based social capital reframes task conflict in terms of strong and weak task conflict ties. The number of strong task conflict ties possessed by teams is argued to hinder team creativity. Similar to the rationale given for high levels of task conflict network density, strong task conflict ties between team members reduce access to team member knowledge and lower motivation to engage in information exchange and combination. Strong task conflict ties are more likely to be misinterpreted as personal attacks and thus may inadvertently trigger dysfunctional relationship conflict. Conversely, weak task conflict ties may allow team members to debate the merits of alternative solutions without the emotional intensity associated with stronger forms of disagreement. Weak task conflict ties may allow teams to reap the benefits of divergent thinking and dissent while minimizing the costs associated with strong

task conflict ties. Thus, the number of weak task conflict ties possessed by teams is argued to increase team creativity.

In general, relationship conflict is detrimental to team creativity because it reduces team members' access to information and willingness to engage in collective action. However, the number of weak relationship conflict ties possessed by teams is argued to be potentially *beneficial* for team creativity. Teams with internal networks lacking relationship conflict ties may be reflective of team norms favoring consensus-seeking and discouraging disagreement. The presence of weak relationship conflict ties may combat these norms and reduce the tendency of teams to prematurely move towards consensus on decisions and solutions requiring higher levels of creative thinking. Strong relationship conflict ties reduce team member's willingness to work collaboratively to generate novel ideas and strategies. Thus, strong relationship conflict ties are argued to be detrimental to team creativity, whereas weak relationship conflict ties are argued to be beneficial.

Cognitive social capital in this study refers to the presence or absence of asymmetric perceptions of conflict between team members. Conflict asymmetry reflects variance in conflict perceptions between team members (Jehn et al., 2010). Building on the conflict asymmetry approach advanced by Jehn and colleagues (2010), the present study considers an asymmetric task conflict tie to exist between two team members if they perceive different degrees of task conflict between them. This same convention holds for relationship conflict. When team members disagree on the degree of task or relationship conflict that exists between them, they may be less likely to develop the mutual understanding and shared vision that facilitates the exchange and combination of information that leads to creativity. Arguments are presented to

suggest that teams with a larger degree of asymmetry in the task and relationship conflict networks will have lower levels of creativity than teams with less asymmetry.

Summary

Although the social capital view of team conflict proposed in this dissertation represents a relatively novel addition to the conflict, social capital, and creativity literatures, this approach is not without precedent. Researchers have recently begun to apply social capital logic to the study of conflict-based exchange relationships (Bachrach, Hood, Noble, & Lee, 2011; Marineau & Labianca, 2010). For example, Marineau and Labianca (2010) reported that employees with task conflict ties also were likely to share advice ties. In a study of the internal network structures of student teams, Bachrach and colleagues (2011) reported that task conflict network density was negatively related to team performance. Among the most provocative findings of the Bachrach et al. study was that task conflict network density explained significant incremental variance in team performance above and beyond the traditional measure of task conflict (e.g. Jehn, 1995). These studies reveal the potential theoretical and empirical value of integrating the social capital architecture and conflict perspectives this dissertation proposes.

Contributions and Implications

In contrast to the traditional psychometric approach to team conflict, the sociometric approach the present dissertation adopts provides an explicit understanding of ‘who has conflicts with whom’ within a team’s internal social network. Moreover, a social capital view of conflict illuminates several previously unstudied social capital manifestations of conflict—structural, relational, and cognitive—that may both help and hinder creativity within teams (Tsai & Ghoshal, 1998); thereby addressing several gaps in the social capital, conflict, and creativity

literatures. This dissertation not only addresses two key forms of conflict in teams, task and relationship conflicts, but also investigates three important dimensions of team conflict—conflict network density, conflict tie strength, and dyadic conflict asymmetry. Further, this study helps to balance research in the creativity domain that has neglected impediments to creativity by explicating the interpersonal dynamics that impede, as well as foster, team creativity. The dissertation seeks to integrate two distinct, yet complimentary concepts, social capital and team conflict. The integration of these concepts is used to firmly ground the dissertation's hypothesized relationships. Finally, by mapping how different social capital expressions of task and relationship conflict relate to team creativity, this dissertation provides additional conceptual and empirical clarity to help understand observed inconsistencies in the empirical record pertaining to team conflict and creativity.

CHAPTER 2

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The related, yet distinct concepts of creativity and innovation have seen increased attention from managers as well as academics. Creativity has been defined as the generation of novel ideas, outcomes, or solutions that have potential usefulness or relevance to the unit of adoption (Amabile, 1983, 1988). Creativity often involves gathering and exchanging diverse information from various sources, identifying disconnections between complementary elements of problems or situations, and combining them to form a useful and relevant product (Amabile, 1983; Van de Ven, 1986). Innovation has been defined as the introduction and application of ideas, methods, or strategies that are new to the relevant unit of adoption and designed to provide significant benefit (West & Farr, 1990). For example, a group of management executives tasked with determining the following year's strategy for their organization may offer various viewpoints and debate their merits. Through the exchange of diverse perspectives between executives the group may generate several strategies that previously have not been pursued in the past. The generation of the new strategies would be considered a creative outcome of the strategic decision making process. Further, when the group selects the strategy with the highest potential to benefit the organization and implements the strategy, this is referred to as innovation. Thus, in this example, organizational innovation is the result of the creative process carried out by the executive team.

The distinctions between creativity and innovation often are related to the level of analysis. Individuals are encouraged to be creative and to generate novel perspectives and viewpoints. However, individuals are rarely able to implement their creative ideas without the assistance or acceptance of their ideas from others. Thus, there has been an increased

acknowledgement by managers and researchers that the creation and implementation of novel ideas is more effectively and efficiently accomplished by teams rather than individuals alone. The increased focus by organizations on improved creative and innovative performance has spurred similar theoretical and empirical attention from organizational scholars (De Dreu, 2006, Obstfeld, 2005). This increase in creativity and innovation research may be due in part to their identification as key sources of value creation (Tsai & Ghoshal, 1998), new product development (Leenders, van Engelen, & Kratzer, 2003), and new knowledge creation (Nahapiet & Ghoshal, 1998) in organizations.

Although much of the extant research on creativity and innovation has generally used the concepts interchangeably, some of the more recent research has drawn distinctions between the concepts (De Dreu, 2006; Hülshager et al., 2009). Researchers have suggested that innovation differs from creativity in two ways. The first perspective suggests that creativity refers to the *generation* of novel ideas whereas innovation refers to the actual *implementation* of novel ideas. This perspective considers creativity to be a necessary precursor of innovation (Amabile, Conti, Coon, Lazenby, & Herron, 1996; De Dreu, 2006). Other researchers have suggested a second perspective that treats innovation as a two-stage process encompassing both the creation *and* implementation of new ideas; thus, making creativity the first of two sub-processes of innovation (Hülshager et al., 2009). Consistent with this logic, a third perspective could be advanced that considers creativity to be a two-stage process consisting of the generation and implementation of novel ideas. This perspective would then consider innovation to be a sub-process of creativity, consisting of the implementation of creative ideas. As a result of the subtle distinctions between the two concepts, the general convention in the creativity and innovation literature has been a collective treatment of the concepts (Woodman, Sawyer, & Griffin, 1993). This tradition of

treating the concepts collectively allows researchers to draw upon both creativity and innovation focused research and allows for brevity in hypothesis development and testing. The present study is concerned with the factors that influence both the generation *and* implementation of novel information/solutions within the context of teams. Therefore, in keeping with this convention, the present study also draws upon both creativity and innovation research and uses the concepts of creativity and innovation interchangeably.

Creativity and Innovation

The Exchange Process

Research has suggested that creativity is a social process that functions based on the exchange and combination of diverse information between individuals (Hansen, 1999; Nahapiet & Ghoshal, 1998). The information required for novel combinations and innovations is often unconnected and in the possession of different individuals (Nahapiet & Ghoshal, 1998; Schumpeter, 1934). This fragmentation and distribution of information highlights the importance of the exchange process in studies of creativity and innovation. Moreover, the exchange process of creativity is thought to be positively related to the level of communication between individuals (Amabile, 1988, 1996; Kanter, 1988; Woodman et al., 1993). In a study of innovation across five different firms, group communication was shown to positively influence the creation of innovative ideas (Monge, Cozzens, & Contractor, 1992). In a study of new product development in a large electronics company, weak ties were found to be beneficial in searching for knowledge between company subunits, but impeded the actual transfer of knowledge between subunits (Hansen, 1999). Hansen reasoned that knowledge transfer requires stronger ties between parties, particularly when the knowledge to be transferred is highly complex.

The Combination Process

Conceptually, the combination process of creativity has not been sufficiently differentiated from the exchange process. Indeed, the processes of exchange and combination are often treated collectively (Tsai & Ghoshal, 1998). This collective treatment of exchange and combination masks some important nuances associated with creativity. For instance, it is possible for information to be exchanged between team members without the subsequent combination and synthesis of the exchanged information with other information previously held by the team. Information must be exchanged in order to be combined and information must be combined in order for novel combinations to be produced (Nahapiet & Ghoshal, 1998). For example, a team member may share information with fellow team members concerning an alternative strategy used by another team in a different context. However, if this information is not integrated with additional information held by the team, then a new information combination (suggestive of a new strategy) may not be produced. Thus, exchange is a necessary but insufficient precursor to combination and creativity (Amabile, 1983; Nahapiet & Ghoshal, 1998).

Extant research generally associates information exchange and combination with positive relationship ties such as communication and advice sharing (Obstfeld, 2005; Perry-Smith, 2006; Zhou et al., 2009). However, positive ties are likely to be associated with convergent thinking whereas negative ties are more likely to induce divergent thinking. Convergent thinking refers to the act of bringing together readily available information to make decisions and to solve problems (Nemeth & Kwan, 1987). Convergent thinking often does not require complex cognitive processing because the focus is on readily available information. In contrast, divergent thinking refers to the act of making sense of unconnected and conflicting fragments of information (Nemeth & Kwan, 1987). Divergent thinking may require additional information gathering and cognitive processing. Moreover, divergent thinking stimulates deep and

deliberative processing of information and often results in higher quality decisions and novel solutions to complex problems (De Dreu & West, 2001). As a result, divergent thinking has been more closely related to creative thought than convergent thinking (Nemeth & Kwan, 1987; Nemeth, Personnaz, Personnaz, & Goncalo, 2004).

For example, research from the intragroup conflict literature suggests that teams engage in higher levels of creative problem solving and complex cognitive thinking when they actively debate the merits of differing points of view and opinions as opposed to when the focus is on achieving consensus (Amason, 1996; Jehn, 1995). Conflicts over contradictory, task-relevant information stimulates higher levels of divergent thinking than mere agreeable forms of communication (Nemeth et al., 2004). Agreeable forms of communication such as advice sharing and information seeking have been closely associated with the exchange process in extant creativity research (Perry-Smith, 2006; Zhou et al., 2009). However, disagreeable forms of communication, such as various forms of conflict, do not appear to be as explicitly linked in extant research to the combination process. It is the position of the present dissertation that group conflict more closely captures both the exchange and combination processes of creativity than previously researched forms of communication. This argument will continue to be developed throughout the course of this chapter.

Diverse Information

In addition to the processes of exchange and combination, the extent of information diversity also has been identified as a significant catalyst of the creative process (Amabile, 1983; Woodman et al., 1993). Levels of information diversity are thought to be enhanced by the interaction of individuals who are dissimilar from one another. In this vein, team diversity is a variable that has often been linked to increased creativity (Andrews, 1979; Payne, 1990; Visart,

1979). Individuals who differ from each other based on education or expertise are more likely to hold disparate bits of information that, when exchanged and combined, may produce useful and novel information combinations (Amabile, 1983; Perry-Smith & Shalley, 2003; Woodman et al., 1993). In the social networks literature, weak ties based on relationships such as advice sharing and friendship have been consistently associated with creativity due to the association between these types of relationships and exposure to non-redundant information (Burt, 2004; Granovetter, 1973; Perry-Smith, 2006). The assumption is that weak ties connect individuals to diverse associates who are more likely to provide the individual with novel, non-redundant bits of information (Burt, 1992; Granovetter, 1973; Perry-Smith & Shalley, 2003).

A recent meta-analysis of the team-level antecedents of creativity evaluated 104 studies conducted over the past 30 years (Hülshager et al., 2009). The study provides a comprehensive summary of what is, and what is not, known in the creativity domain, and offers an agenda for future research. The study's quantitative analysis of the empirical record and qualitative summary of the literature revealed several significant gaps in our understanding of creativity in organizations. In an effort to advance research in this critical domain, the present study attempts to address some of these gaps and to add to our collective knowledge of the field. I begin with an overview of the gaps identified by this meta-analytic review which provide the impetus of this dissertation.

Gap 1—Creativity at the team level

First, despite substantial attention to the topic of creativity at the individual level of analysis, far less is understood about the interpersonal dynamics in small groups that relates to the emergence of creativity at the level of the team (Shalley, Zhou, & Oldham, 2004). Much of the research on creativity has been focused on personal characteristics such as personality and

cognitions that enhance creative ability (Scratchley & Hakstian, 2001). However, research has suggested that creativity is a social process that occurs based on the *exchange* and *combination* of *diverse* information between individuals in a social context (Amabile, 1983; Hansen, 1999; Nahapiet & Ghoshal, 1998 Woodman et al., 1993). For example, Perry-Smith (2006) reported that employees with larger numbers of weak ties—relationships with others characterized by relatively low levels of communication, duration, or emotional closeness—were exposed to more diverse information and thus were more creative. Zhou and colleagues (2009) found an inverted U-shaped relationship between an employee’s number of weak ties and their level of creativity. They argued that high and low levels of interaction with weak tie contacts interfered with effective information processing and lowered creative performance. These studies reveal that both the number and strength of communication relationships individuals possess are influential in determining creativity and highlight the power of a social capital approach to studying creativity.

These studies are consistent with the seminal works on creativity by Amabile (1983) and Woodman et al., (1993) which assert that social interaction and communication with others are significant determinants of creative behavior. However, more research is needed to show how creativity develops in the context of small, formalized groups. The increasing reliance by organizations on team-based work formats (Nemeth et al., 2004) and the recognition of the social nature of creativity (Perry-Smith & Shalley, 2003) suggests that a lack of understanding concerning creativity at the team level of analysis represents a significant challenge and opportunity for creativity research.

Gap 2—Factors that inhibit creativity

Much of the extant research on the antecedents of creativity has been concentrated on the factors that positively influence creativity—particularly individual creativity (Shalley et al., 2004). This overemphasis has resulted in numerous studies recommending that managers encourage certain positive factors such as team heterogeneity (Shalley & Gilson, 2004; West, 2002), communication (Van de Ven, 1986), and trust (Amabile et al., 1996) as a means of stimulating organizational creativity, while providing little guidance on the negative factors to avoid (Hülshager et al., 2009). Although it can be inferred that an absence of the positive factors that stimulate team creativity may hinder creative efforts, few studies have been explicit in exploring the negative factors that hinder creativity in teams. Moreover, fewer of these studies have found support for hypothesized barriers to creativity and innovation. For example, of the 15 team-level variables identified in the meta-analysis on team creativity and innovation by Hülshager and colleagues (2009), only three—relationship conflict, team longevity, and background diversity—were hypothesized to hinder creativity. None of these factors, however, were meta-analytically found to be significantly related to innovation (Hülshager et al., 2009).

As these results illustrate, the overemphasis on the positive factors that influence team creativity comes at the expense of our understanding the negative influences on team creativity and innovation. As suggested by the notion that creativity is the result of a social process (Amabile, 1983; Brass, 1995; Woodman et al., 1993), research from the social capital domain, with its explicit focus on the characteristics of interpersonal relationships which provide opportunities and constraints for collective action, may prove beneficial in bridging this gap.

Gap 3—Social capital approaches to creativity, particularly team creativity

Social capital has been argued to represent the actual and potential resources possessed by actors and the relationships between actors in a social network (Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998). In social network parlance, the term “actor” refers to the particular type of entity under consideration that may include individuals, teams, communities, or organizations. A social network is defined by the presence or absence of ties that connect a set of actors in a social context. A tie refers to a particular type of relation that connects two actors. For instance, individuals who exchange advice with each other are considered to share an advice tie. Furthermore, a researcher who examines who shares and does not share advice with others in a department is considered to be examining the department’s advice network. Advice, in this example, would be the social capital resource possessed and transmitted by the actors in the network. An activated or present tie refers to the *existence* of a particular relation connecting two actors in a social network. In contrast, an absent tie refers to the *lack* of a particular type of relation between two actors. To illustrate, two actors may share an advice tie by exchanging advice with each other; however the advice sharing partners may not necessarily consider one another friends. Thus, as it relates to the advice network, the presence of an advice sharing relationship between the actors indicates that they have an activated advice tie; concerning the friendship network however, the lack of friendship between the actors indicates an absent friendship tie.

In social network research, a grouping of actors and any type of relation that connects the actors may be considered a social network. In other words, social network type is defined by the particular type of actor-connecting tie currently under examination by the researcher (Oh et al., 2004). Thus, the study of certain types of social networks is limited only by the interests and

curiosity of the researcher concerning particular types of relationships and the actors connected by the relationships. For example, in a study of the social networks of MBA student teams, Baldwin, Bedell, and Johnson, (1997) examined the friendship, adversarial, and communication ties between and among team members. The friendship network was defined by who had friendships with whom, the communication network was defined by who gave advice to whom, and the adversarial network was defined by who had antagonistic or difficult relationships with whom (Baldwin et al., 1997). The focus of the present study is on the perceptions of task and relationship conflict between and among the members of teams. Specifically, the ties under consideration in the present study are based on which team members perceive task conflicts with which other team members, or a task conflict tie; and which team members perceive relationship conflicts with which other team members, or a relationship conflict tie. Task conflicts refer to disagreements between team members over ideas, viewpoints, and perspectives related to team task work (Jehn, 1994, 1995). Relationship conflicts are affectively-fused disagreements based on dislike, negative feelings, and personal incompatibilities between team members (Jehn, 1994, 1995). The adversarial relations in the Baldwin et al. (1997) study made no distinctions between conflicts based on task-related and person-related disagreements. A more detailed discussion of task and relationship conflict networks is provided later in the chapter.

Social Capital as a Resource

In addition to its focus on the ties that connect actors in a network, social capital theory is also concerned with the resources associated with social networks. Early studies used the term social capital in relation to the rich interpersonal relationships between neighbors, families, merchants, and other stakeholders in a community (Jacobs, 1965). The set of social ties that bonded community stakeholders provided the basis for trust, cooperation, and collective action

and thus were considered a valuable resource belonging to the community and its members (Jacobs, 1965; Nahapiet & Ghoshal, 1998). The notion of social capital as a resource that facilitates collective action is a key idea in social capital theorizing (Adler & Kwon, 2002).

As it regards the emergence of creativity and innovation, intellectual capital has been identified as a key resource in social capital theorizing (Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998). Nahapiet and Ghoshal describe intellectual capital as the “knowledge and knowing capacity” of a social collectivity (1998: 245). Intellectual capital, as knowledge and knowing capacity, refers to the processes and activities that facilitate the creation and application of new knowledge (Kogut & Zander, 1992; Spender, 1996). Such knowledge processes and activities may include divergent thinking (Zhou et al., 2009), creative problem solving (Perry-Smith & Shalley, 2003), decision making (Kogut & Zander, 1992), and innovative ways to achieve performance advantages (Nahapiet & Ghoshal, 1998; Spender, 1996). Theorizing from the domain of absorptive capacity suggests that groups learn from past knowledge activities and this learning becomes part of the learning and knowing capacity of the group (Cohen & Levinthal, 1990). Absorptive capacity refers to an organization’s ability to assess, incorporate, and utilize knowledge to achieve its objectives (Cohen & Levinthal, 1990). Past decisions, ideas, and solutions, and the processes that generated them, become part of a group’s collective knowledge stocks and increases its capacity for new knowledge creation and use (Cohen & Levinthal, 1990). Thus, the knowing and knowing capacity gained from groups’ knowledge activities such as decision making, creative problem solving, and strategic planning become vital resources for groups as a form and source of intellectual capital (Nahapiet & Ghoshal, 1998).

A key strength of social capital theory lies in its potential to provide an explanatory framework for understanding the processes through which network ties influence collective action such as the exchange and combination of resources. The social capital framework advanced by Nahapiet and Ghoshal (1998) identifies three dimensions of social capital that are thought to influence collective action and knowledge creation in organizations; structural, relational, and cognitive.

Structural Dimension of Social Capital

The structural dimension of social capital refers to the overall configuration of ties among the actors in a social network (Coleman, 1988). Network density is the term given to describe the configuration (pattern or structure) of ties in a network. Density is a measure of structural social capital which reflects the relative level of connectivity between the actors in a social network (Balkundi & Harrison, 2006). Network ties are conduits that provide members of a network with access to resources held by other network members (Borgatti & Foster, 2003). Because density is a measure of the level of connectedness among the members of a network, density also reflects the range of resources that may be accessed and made available to the network as a whole (Nahapiet & Ghoshal, 1998). For example, in a team with a dense communication network, in which a significant majority of team members communicate with each other, ample information from various parts of the network can be accessed and evaluated in an effort to create optimal solutions to team problems.

In contrast to high density networks, sparse or low density networks contain fewer activated ties among the members of the network. Because resources are transmitted via ties, sparse networks may make resource exchange and combination more difficult (Coleman, 1988). For example, the relative lack of communication ties in a team with a sparse communication

network may make it difficult for members to access and synthesize information held by knowledgeable team members in order to make appropriate team decisions. Differential access to knowledgeable others may generate differential opportunities for exchange and combination (Nahapiet & Ghoshal, 1998).

Another aspect of structural social capital is network monitoring. Network monitoring has been identified as both a benefit and constraint provided by varying levels of network density (Coleman, 1988; Granovetter, 1992). Network monitoring refers to the capacity to gain information concerning the location and attributes of others in the network as well as the nature of the resources that they possess (Brass, Butterfield, & Skaggs, 1998). When individuals share ties with one another, particularly ties based on the exchange of some sort of resource, the parties to the exchange develop an increased awareness of each other's abilities, expertise, and resource stocks (Nahapiet & Ghoshal, 1998). Thus, monitoring and surveillance is facilitated by the level of connectedness, or density, of a network. As network density increases, members are potentially able to make more accurate judgments concerning the amounts, value, and reliability of the resources held by other network members (Uzzi 1996; 1997). The access that dense networks facilitate between team members allows members to monitor each other's actions and resources more effectively and efficiently than can the members in sparse networks (Brass et al., 1998; Nahapiet & Ghoshal, 1998). Increased access and monitoring in high density networks is thought to benefit coordination between network members, thereby increasing the networks' capacity for collective actions such as resource exchange and combination (Uzzi, 1996; 1997).

As a constraint, increased monitoring caused by high network density also may make deviant behavior more readily visible to other network members than in low density networks (Brass et al., 1998). Deviant behavior includes any behavior that violates group norms (Brass et

al., 1998). Because dense networks contain more conduits for information exchange and surveillance, information on deviant behavior travels more rapidly in dense networks than in sparse networks (Granovetter, 1992). For example, a team may have informal norms that discourage disagreements and favor swift consensus on team decisions and solutions. Team members possessing opinions or viewpoints that run contrary to the majority may be exposed and sanctioned more quickly in a team in which a majority of the team members communicate with each other than in a team in which fewer team members communicate with each other.

In addition to monitoring, density also is thought to facilitate trust among network members. Repeated exchanges among the members of a network allow behavior to become routinized and expected (Burt & Knez, 1995). As more members engage in repeated and redundant exchanges with one another, norms and mutual obligations begin to form (Coleman, 1988). As the ties in a network become more numerous and reciprocal, trust emerges from the fulfillment of members' expectation of reciprocity and performance (Blau, 1964; Granovetter, 1973). For example, several researchers have commented on the dense connections between the merchants in the New York diamond exchange (Brass et al., 1998; Coleman, 1988; Granovetter, 1992). Because members of the network have high levels of trust in each other and the ability to monitor each others' actions effectively, contracts between merchants are rarely needed. The threat of sanction from the network, in the case of deviant behavior, and the ability to trust one another replaces the need for formal agreements (Brass et al., 1998). Uzzi arrived at similar conclusions in his studies of the New York garment industry (1996; 1997).

Relational Dimension of Social Capital

The relational dimension of social capital refers to the strength of the ties that connect actors. Tie strength is determined based on the level of frequency of interactions, emotional

intensity, or duration of the relationship (Granovetter, 1973). Family and close friends are more likely to be considered strong ties than less emotionally intense relationships such as colleagues and former classmates. Weak ties are generally associated with acquaintances who communicate less frequently than close friends and who are less close affectively than family members. Strong tie contacts are more likely to be connected to each other due to the emotional closeness of the relationships; weak tie contacts are less likely to be connected to one another (Friedkin, 1980). Research by Friedkin (1980) supports this notion, showing that two individuals who shared strong ties with the same individual were also likely to share a tie with each other. This tendency for strong ties to be connected to each other has been supported by the concept of homophily.

According to the principle of homophily, individuals prefer to interact with others who are similar to themselves. Additionally, as individuals interact more, they tend to become similar in attitudes, values, and beliefs (see McPherson, Smith-Lovin, & Cook, 2001 for a review). Because strong tie contacts tend to share the same ties, they are more likely to assume that their contacts receive new information when they do and thus are less likely to communicate new information in a timely fashion (Granovetter, 1973). Information that is communicated among strong tie contacts however tends to overlap significantly due to the redundancy in the pattern of ties that connect them. Weak tie contacts are less likely to interact among each other and so do not assume that their contacts already possess information that they have acquired (Brass, 1995). Thus, weak ties provide their contacts with more non-redundant information and faster access to information than strong ties (Burt, 1992; 2004). Researchers assert that weak ties are more beneficial for creativity than strong ties, due to the tendency of weak ties to provide timely access to diverse, nonredundant information (Burt, 1992; Perry-Smith & Shalley, 2003). Perry-Smith (2006) found support for this reasoning by revealing that weak communication ties

increased individual creativity, but strong ties did not. Similarly, Zhou and colleagues (2009) found that employees with a moderate number of weak advice ties exhibited greater creativity.

Cognitive Dimension of Social Capital

The cognitive dimension of social capital refers to the shared perceptions and mutual understandings between actors that facilitate their ability to engage in collective action (Nahapiet & Ghoshal, 1998). When network members share similar perceptions concerning interactions and the motives behind certain behaviors, they can avoid potential misunderstandings that may inhibit the free exchange and combination of resources (Tsai & Ghoshal, 1998). Cognitive social capital helps actors develop shared goals and vision which helps them see the potential value in exchanging and combining resources with each other (Tsai & Ghoshal, 1998).

Overlap of the Dimensions of Social Capital

In laying out the tenets of the social capital framework, Nahapiet and Ghoshal (1998) acknowledge that aspects of the various dimensions of social capital may be highly interrelated. For example, structural social capital (density) gained by increased monitoring may facilitate the development of cognitive social capital by promoting shared perceptions and understandings between the members in a network. Shared perceptions between actors may encourage more frequent interactions, transforming weak ties into strong ties, and thus foster increased relational social capital. Because strong tie contacts tend to form redundant ties among their contacts, relational social capital may help increase structural forms of social capital. Although interrelated, these forms of social capital are argued to be distinct.

This discussion of the role of social capital in the exchange and combination of resources highlights the similarities between social capital logic and the mechanisms that facilitate creativity. Both perspectives emphasize the importance of relationships in determining the

capacity of actors to engage in coordinated, collective action. Although social capital theory appears to possess strong conceptual overlaps with theoretical explanations concerning the emergence of creativity and innovation (Brass, 1985; Obstfeld, 2005; Perry-Smith, 2006; Perry-Smith & Shalley, 2003; Zhou et al., 2009), social capital logic has been relatively untapped in the emerging efforts to understand what drives team-level creativity. Moreover, the limited empirical studies on the social aspects of individual creativity and innovation have been based on the types of relationships that by most accounts are considered positive in nature such as communication (Perry-Smith, 2006) and advice (Zhou et al., 2009). Absent from social capital research on creativity is the role of negative relationships.

Gap 4 – Research on the role of negative ties on collective action

Negative ties are relationships characterized by interpersonal difficulties such as antagonism, avoidance, and dislike (Baldwin et al., 1997; Klein, Lim, Saltz, & Mayer, 2004). Researchers advocating for increased attention to the nuances of tie content have suggested that the type of tie under consideration, such as positive or negative ties, may provide boundary conditions on extant models employing social capital perspectives (Balkundi & Harrison, 2006). Calls for more research on the contingent effects of negative relationships, in contrast to positive or neutral relationships, have gone virtually unanswered (Henttonen, 2010; Labianca & Brass, 2006; Perry-Smith, 2006). The implication is that the overemphasis of extant research on the positive aspects of relationships and the *opportunities* they provide for collective outcomes essentially ignores the potential *constraints* on collective outcomes imposed by negative relationships. Thus, the dearth of research applying social capital logic to the consequences of negative relationships on team creativity may be an artifact of the general lack of research on

negative ties (Labianca & Brass, 2006). This gap is particularly problematic in light of arguments for the existence of negative asymmetry.

The concept of negative asymmetry proposes that negative events and relationships have stronger effects on individuals' attitudinal and behavioral responses than positive or neutral events and relationships (Labianca et al., 1998; Taylor, 1991). Explanations offered for this unequal effect suggest that negative interactions are more impactful than non-negative interactions because negative interactions occur less frequently, are more disturbing, and are thus more salient than non-negative interactions (Taylor, 1991). Social ledger theory builds on the concept of negative asymmetry by encouraging the exploration, in a double-cost accounting fashion, of the costs and benefits of both positive and negative relationships (Labianca & Brass, 2006). Social ledger theory suggests that positive ties tend to produce beneficial outcomes, or social capital assets, whereas negative relationships tend to produce detrimental outcomes, or social liabilities. Consequently, social ledger theory draws attention to the preoccupation of extant research on positive ties and advocates for increased exploration of the nuances of negative ties (Labianca & Brass, 2006).

Although extant research on the effects of negative ties on team outcomes in the social networks tradition has been limited, it is not without precedent. In a study of 62 teams of MBA students, Baldwin, Bedell, and Johnson (1997) found that individuals with numerous adversarial relationships reported lower levels of satisfaction with their teams as well as with the MBA program overall. Adversarial relationships were characterized as difficult or antagonistic relationships in which a disliked individual is deprived of information or benefits or is intentionally harmed by the other party (Baldwin et al., 1997). The authors reasoned that adversarial relationships are discomfoting and result in feelings of isolation and a lack of access

to information from others. The authors commented that their most significant finding was that adversarial network density, while negatively related to team satisfaction, workload sharing, and team interaction, surprisingly was *positively* related to team effectiveness. The authors reasoned that the mixed and counterintuitive results provided by their analysis emphasize the fact that antagonistic relationships generate both costs and benefits. Thus, the challenge lies in reaping the benefits of enhanced team performance while minimizing the costs of lowered team member consensus, acceptance, and positive affect (Baldwin et al., 1997).

Building on the work of Baldwin and colleagues (1997), Sparrowe, Liden, Wayne, and Kraimer (2001) studied the effects of the positive and negative social networks of 38 groups of workers, in various industries, on the workers' individual and group performance. Hindrance network density was found to be negatively related to group performance. Similar to adversarial relationships, hindrance relationships involve parties who make it difficult for others to complete their work by engaging in behaviors such as withholding information or resources. Group members central in the hindrance network—selection by others as one who makes it difficult to carry out job responsibilities—were more likely to be rated lower in performance than those less central. Although hindrance network density was found to be negatively related to group performance, advice network density was not significantly related to group performance; providing support for the negative asymmetry perspective of social ledger theory (Labianca & Brass, 2006).

Thus, the conclusions drawn by recent social network studies which suggest that increases in the number and strength of interactions may be beneficial for creativity (e.g. Perry-Smith, 2006; Zhou et al., 2009) are likely to be bounded by the type of relationship, positive or negative, under consideration. Increases in the frequency of negative interactions are likely to

hinder actors' opportunities and willingness to exchange and combine resources thereby reducing creative performance (Labianca et al., 1998). One particular type of negative relationship that may provide findings contrary to existing models of positive networks is conflict.

Gap 5 – Inconsistencies concerning the relationship between team conflict and performance

Relationship Conflict

In general, conflict refers to the awareness of discrepancies and incompatibilities between individuals (Jehn & Mannix, 2001). Conflict is generally attributed to differences based on either task-related issues—task conflict, or interpersonal incompatibilities—relationship conflict (Jehn, 1995). Relationship conflict involves an awareness of interpersonal incompatibilities which include feelings of tension and contempt for others (Jehn, 1997). Because relationship conflict involves non-task related disputes over personal issues, it is theorized to be generally detrimental to team performance. Relationship conflict has its effect on team performance by reducing team members' willingness to engage in cooperative group activities (Jehn & Mannix, 2001). The discomfort and isolation produced by relationship conflict reduces timely access to information held by other team members and lowers motivation to engage in coordinated actions (Jehn, 1994; 1995). Jehn (1994) found that relationship conflict was negatively related to performance. Many researchers argue that personal attacks and disagreements between team members often cause feelings of discomfort and dissatisfaction in team members (Amason & Schweiger, 1994; Jehn, 1994, 1995; Jehn, Chadwick, and Thatcher 1997). The negative feelings that relationship conflict produces reduce the amount of effort team members expend in completing their task work (Amason, 1996). Further, as relationship conflict increases, members tend to exhibit withdrawal

behaviors concerning cooperative activities such as task focused exchanges and information combination (Jehn et al., 1997). Jehn and colleagues (1997) argue that negative emotional responses to relationship conflict reduce opportunities for coordination of group tasks and ultimately hinder individual performance, group performance, and satisfaction.

As evidenced by these studies, relationship conflict is generally considered to be negatively related to team performance. However, several studies have failed to find significant relationships between relationship conflict and group outcomes. Although Jehn found a significant association between relationship conflict and performance in a previous study (Jehn, 1994), in a follow up study, Jehn (1995) failed to find a significant association between relationship conflict and performance. She reasoned that although negative relations cause dissatisfaction, individuals often elect to avoid parties with whom they experience negative relations (Jehn, 1995). Although avoidance of parties external to an individual's team may be less detrimental to teams' creative performance, avoidance behaviors within small groups may seriously limit teams' ability to exchange and combine information to perform creatively. The studies by Baldwin and colleagues (1997) and Sparrowe and colleagues (2001) show that antagonistic relationships hinder performance by reducing team member satisfaction, limiting team member access to information and benefits from other team members, and causing members to feel isolated.

Pelled and colleagues (1999) also failed to find a significant association between relationship conflict and performance. They reasoned that although subjects may have experienced negative relations with others, they simply found ways to cope with the discomfort (Pelled, Eisenhardt, & Xin 1999). If the preferred method of coping tends to be avoidance, as

suggested by previous research (Jehn, 1995), then the long term effects of relationship conflict on cooperative behaviors and team performance are likely to be detrimental.

Task Conflict

Although researchers generally agree that relationship conflict is unequivocally detrimental for individual and group outcomes, whether task conflict is beneficial or detrimental is less certain. Many of the earlier studies of intragroup conflict favored the idea that task conflict is positively related to team performance. For example, in a study of not-for-profit organizations, Schwenk (1990) found that higher quality decisions were positively associated with levels of task conflict. In their study of top management teams, Eisenhardt and Schoonhoven (1990) claimed that integration of diverse views and opinions facilitated more thoughtful consideration of decision alternatives and ultimately improved firm performance. Coser (1956) argued that conflict can be beneficial in that it helped groups establish and maintain group identity and cohesion. Deutsch (1973) suggested that conflict increased creative problem solving by encouraging people to notice information that may otherwise go unattended.

Researchers have argued for the beneficial effects of conflict for strategic decision-making, creativity, and inhibiting groupthink (Amason & Schweiger, 1994; Jehn, 1995; Schweiger, Sandberg & Rechner, 1989). In a study of teams of scientists, Pelz and Andrews (1966) found that the intellectual tension and vigorous interaction posed by fellow colleagues, and based on strategies and not personal differences, improved performance. Mitroff, Barabba and Kilmann (1977) found that a lack of creative thinking and overly adhering to organizational norms by group members hindered their ability to effectively solve problems. Further, the authors found that strategies encouraging employees to create and synthesize divergent

perspectives enhanced strategic planning. In a study of top management teams, Borgeois (1985) found that 'too' low levels of task dissent hindered effective strategy making. Other studies of conflict in top management teams linked divergence of opinion in strategic planning and decision making with decision quality and firm performance (Amason, 1996; Eisenhardt & Schoonhoven, 1990).

The beneficial effects of conflict also have been uncovered in the context of student teams. A study of 88 student MBA teams showed that task conflicts between team members increased team performance (Jehn, 1994). Jehn followed up the study of student teams with one using a Fortune 500 company as the sample. The follow up study confirmed the previous study's results by showing moderate to high levels of task conflict were associated with higher levels of individual and group performance (Jehn, 1995). Baron (1991) found that group members' abilities to develop new insights and approaches were associated with group disagreements. Putnam (1994) found that task disagreements were associated with issue identification.

Amason (1996) reported that task conflict was positively related to decision quality, consensus, and affective acceptance of teams' final decision. Conversely, relationship conflict reduced decision quality and affective acceptance. Amason argued that the exercise of voice during decision making should increase team members' commitment to the team's final decisions and produce positive affect (Korsgaard et al., 1995).

Schweiger and colleagues (1989) showed that conflict caused teams to more carefully consider the assumptions underlying various decision choices. Pelled (1996) argued that substantive, or task conflicts, allowed team members to test the assumptions underlying their viewpoints by making them available for scrutiny through open discussion and debate. Nemeth

(1986) found that groups consisting of members with divergent ideas and approaches to group tasks were more creative than groups with members who shared similar ideas.

Low levels of task conflict may lead teams to be susceptible to the phenomenon of groupthink. Groupthink occurs when decision makers reach premature consensus on what oftentimes prove to be suboptimal solutions (Janis, 1982). Premature consensus occurs due to the reluctance of team members to challenge prevailing viewpoints (Janis, 1982). Failure to offer dissenting viewpoints is argued to constrain teams' capacity for deep, deliberative thinking and creative problem solving (Nemeth & Kwon, 1987). Minority dissent has been suggested as a deterrent to the occurrence of groupthink and is often drawn upon in studies of conflict and cognitive team performance. Minority dissent refers to the open opposition by opinion minorities of the assumptions held by the opinion majority concerning ideas, beliefs, policies, or strategies (De Dreu & West, 2001). Minority dissent is argued to promote divergent thinking. Divergent thought processes lead team members to consider problems from multiple angles, generate more novel ideas, and arrive at creative solutions to complex problems (Jehn & Bendersky, 2003; Nemeth, 1987; 2001). Van Dyne and Saavedra (1996) reported findings supporting the idea that minority dissent induced an increase in creativity among majority members. In a study of innovation in teams, De Dreu and West (2001) found that the presence of minority dissent in teams with high levels of engagement in decision making were more innovative. Thus, minority dissent may diminish the potential for groupthink and foster the divergent thinking necessary for novel insights and innovation.

Task conflict increases divergent opinions, interpretations, and viewpoints

In a study of top management teams (TMT) strategic decision making, Eisenhardt and Bourgeois (1988) found that conflict, that challenges the ideas and position of dominant

coalitions, increases performance and inhibits groupthink. Cognitive conflict increases information sharing, group decision quality, communication of divergent opinions and viewpoints, and re-evaluation of processes and standards (Amason, 1996; Jehn & Bendersky, 2003). Scientists who maintained relationships with peers who provided vigorous interaction and intellectual tension experienced higher levels of performance (Pelz & Andrews, 1966). Task conflict is argued to improve performance through enhanced understanding of various viewpoints and creative options (Jehn & Bendersky, 2003). The integration of perspectives that materializes from the exchange and combination activities associated with task conflict is argued to be superior to the individual perspectives themselves (Amason, 1996; Jehn & Mannix, 2001).

Task conflict increases critical evaluation and assessment of alternatives

Too little task dissent may interfere with successful strategy making in TMTs (Bourgeois, 1985; DeDreu and West, 2001). Eisenhardt and Schoonhoven (1990) reported links between constructive conflict and organizational growth. Schweiger and colleagues (1989) found that critical evaluation led to better decision-making performance.

Task conflict increases communication, shared information, and problem identification

Task conflict has been argued to provide a deeper comprehension of teams' tasks. Task conflict forces a deeper analysis and understanding of one's own position as well as others' views. One must comprehend both sides of an issue when countering another's position (Olson et al., 2007). Shared perceptions and understanding among team members may help facilitate effective implementation of team solutions and decisions (Olson et al., 2007; Pelled et al., 1999; Wooldridge & Floyd, 1990). Conflict encourages members to gather new data useful for problem solving (Pelled, 1999). Teams that use some form of dialectical inquiry or devil's advocacy

produce higher quality decisions than teams that pursue consensus approaches or no approach at all (Amason, 1996; Schweiger et al., 1989).

Task conflict increases satisfaction, commitment and acceptance of the group's final decision

Task conflict has been positively associated with group members' positive affective responses such as increased satisfaction and commitment (Amason, 1996). In a study of student decision-making teams, low levels of conflict and high levels of consensus were associated with higher levels of performance and an increase in willingness to work together in the future (Schwenk & Cosier; 1993). Task conflict enables members to understand the rationale of the decisions teams make (Olson et al., 2007). Understanding and acceptance of a team's final decision may help to escalate commitment to these decisions. Commitment is thought to decrease the likelihood of major resistance to, and sabotage of, decision implementation (Guth & MacMillan, 1986; Olson et al., 2007). Commitment is a key component of innovation and creativity because creative strategies and solutions must be supported in order to be implemented (Amabile, 1983; Amason, 1996; De Dreu, 2006).

Negative Effects of Task Conflict

As evidenced by this review, arguments for the beneficial effects of task conflict for team performance have found support in numerous groups and teams studies. However, a number of compelling arguments also have been advanced that suggest that task conflict is generally detrimental to team performance, and that only under limited and specific circumstances does task conflict benefit team performance (De Dreu, 2008). Many of these arguments are based on the cognitive processing view of conflict (Carnevale & Probst, 1998) which suggests that conflict interferes with individuals' ability to effectively attend to and process information. Both task and relationship conflict are argued to distract individuals' attention and thus reduce opportunities for

information exchange and combination. Early work by Hackman and Morris (1975) supports this position, suggesting that conflict produces relationship difficulties and distracts individuals from their task work. In a laboratory study involving undergraduate students, Carnevale and Probst (1998) equated low levels of conflict with cooperative negotiation tactics and higher levels of conflict with competitive negotiation tactics. The results from this study revealed that lower levels of conflict (cooperative negotiation) were associated with higher levels of divergent thinking than higher levels of conflict (competitive negotiation). The study showed that when individuals expected conflict, they tended to experience restricted cognitive processing and a reduction in general problem-solving ability. Thus the Carnevale and Probst (1998) study forms the basis of what researchers generally refer to as the cognitive, or information processing view of conflict (De Dreu & Weingart, 2003; Jehn et al., 2010).

Consistent with this perspective, Baron (1986) argued that the mere presence of others can distract individuals from their tasks. Excessive distraction can cause team members to experience what is referred to as attention overload. Attention overload occurs as a result of individuals exhausting their limited cognitive resources attempting to make sense of overwhelming amounts of information (Ellis, 2006; Shaw et al., 2010). Attention overload causes a narrowing of cognitive focus, which may lead team members to rely on cognitive shortcuts, or heuristics, in an effort to preserve their limited cognitive resources (Shalley, 1995). Excessive reliance on cognitive shortcuts may cause members to overlook informational cues suggestive of new knowledge combinations (Hinsz, Tindale, & Vollrath, 1997). Moreover, burdens on team members' cognitive resources and capacities restrict the production of novel insights and creative solutions by hindering team members' ability to engage in coordinated information processing (Ellis, 2006). De Dreu (2006) argued that distraction may have

contagion effects because distracted, disengaged team members may tend to divert the attention of other team members, thus causing overall group distraction. Furthermore, process losses, resulting from attentional interference, reduce teams' capacity to be creative and thwart innovation activities (De Dreu, 2006; Shaw et al., 2010).

Task conflict also has been associated with lower levels of satisfaction and motivation. In a study of 375 students in groups, both task and relationship conflict were found to be negatively related to satisfaction (Wall & Nolan, 1986). Amason and Schweiger (1994) found links between task conflict and lower levels of satisfaction and group consensus. In a study of 88, 5-person, MBA student teams, task conflict was found to be negatively related to members' satisfaction with the group (Jehn, 1994). Additionally, although task conflict was hypothesized to be positively related to group performance, this hypothesis was not supported.

Association between Task and Relationship Conflict

Further reason to suspect that task conflict may be more detrimental to team performance than previously thought concerns its association with relationship conflict. Although generally not explored directly, researchers often have found task conflict, particularly high levels, to be significantly related to relationship conflict (De Dreu & Weingart, 2001; Pelled et al., 1999). The meta-analysis by De Dreu and Weingart (2003) revealed significant correlations between task and relationship conflict across the majority of the studies they analyzed. Researchers have provided several sets of rationale as to why this relationship tends to occur. Pelled and colleagues (1999) argued that task conflicts may be taken personally by the targets of task challenges, resulting in relationship difficulties. Moreover, relationship conflicts may cause offended team members to retaliate by mounting frivolous attacks against rivals' ideas, thereby generating task conflict.

In a study of 70 top management teams in the hotel industry, Simons and Peterson (2000) reasoned that the reciprocal effects of task conflict and relationship conflict create a negative spiral which becomes exceedingly difficult to escape if it is allowed to continue. In their review of the extant team conflict literature, Simons and Peterson (2000) identified 11 studies; 10 the studies revealed significant, positive relationships between task and relationship conflict, while the eleventh study revealed a small, but significant negative relationship. They argued that in the absence of trust, targets of task conflict are likely to interpret the motive behind task conflicts as personal attacks or as hidden agendas designed to harm. The inference of relationship conflict as a possible motive for task conflict causes the target to distrust the conflicting party. The perception of distrust by the target of the task conflict is likely to cause the target to respond in-kind, causing a pattern of negative reciprocity and an increase in rivalry between the parties (Simons & Peterson, 2000). Because negative interactions generate stronger affective, behavioral, and physiological responses than positive interactions (Taylor, 1991), reciprocal conflict exchanges between rivals interfere with information processing and diminish rivals' willingness and ability to exchange and combine information.

Further, Simons and Peterson (2000) argued that task conflict that is poorly articulated or that uses emotionally harsh language can leave team members feeling disrespected and offended (Pelled, 1996). Feelings of offense and disrespect may lead to an increase in relationship conflict between the parties. In his perceptual decision-making conflict model, Mandel (1979) suggested that group tension is associated with distortions in members' perceptions and interpersonal conflict. Jehn and colleagues (1999) further suggested that disagreements concerning task issues often may lead to relationship conflict; similarly, interpersonal disagreements and dislike may lead to a spike in disputes over member competence to accomplish task work.

In rationalizing the finding of an inverse relationship between task and relationship conflict and team outcomes, Amason (1996) reasoned that group interventions designed to stimulate task conflict often trigger relationship conflict unintentionally. The study's quantitative results, as well as portions of the study's qualitative interviews, suggested that some groups had high levels of both task and relationship conflict. Although these teams experienced higher quality decisions due to task conflict, the team members' acceptance of the decisions were relatively low. The author attributes this relationship simply to relationship conflict (Amason, 1996). However, an alternative explanation for the study's results is that the way in which team members expressed their dissent, or support, for certain decisions may have been the true source of the lowered affective acceptance of the teams' decisions. For example, the 'loser' of a task debate may experience a decrease in satisfaction and affect as a result of the debate's outcome. The loser's dissatisfaction and negative affect may make him less likely to fully consent to the team's final decision.

Furthermore, the way in which conflict is captured in traditional empirical studies does not capture who was involved in the task-focused debates. If task conflicts are dominated by only a small proportion of a team's members, then some members may not get an opportunity to express their views. Team members who do not have the opportunity to exercise voice (Folger, 1977) during group problem solving or decision making may be less likely to feel motivated to engage in future decision and problem solving exercises due to lower levels of commitment and affect (Amason, 1996).

Pelled (1996) argued that relationship conflict may diminish any positive effects that task conflict may generate. The author provided three reasons to support this position. First, the feelings of anxiety and threat caused by relationship conflict may reduce individuals' ability to

process incoming or complex information. Process losses may reduce the efficiency and effectiveness of information exchange. Second, the hostility often associated with relationship conflict may increase team members' resistance to the ideas expressed by others. Finally, groups may fail to resolve task-related debates because much of groups' precious time and energy resources are consumed responding to and managing relationship conflicts (Pelled, 1996). Thus, the positive effects on team performance attributed to task conflict may actually be hiding the negative effects that relationship conflict exerts on team members' willingness to engage in subsequent cooperative activities.

Curvilinear nature of task conflict

Support for the position that task conflict is an inhibitor of team performance can be found in the meta-analysis by De Dreu and Weingart (2003). The study revealed a negative correlation ($r = -.23$) between task conflict and team performance. The negative meta-analytic correlation casts some doubt on the position that task conflict is beneficial for team outcomes. Further, the authors reasoned that the apparent inconsistency may be the result of researchers failing to check for curvilinear effects of task conflict on team performance (Shaw et al., 2010). Consequently, these meta-analytic findings have steered recent research efforts away from the position that task conflict is positively and linearly related to team performance; and instead towards the position that under certain conditions task conflict exhibits an inverted U-shaped relationship to team outcomes, such as team creativity (De Dreu, 2006; Farh et al., 2010) and team performance and satisfaction (Shaw et al., 2010). Interestingly, this same position was supported by findings in Jehn's original study which established the intragroup conflict scale (Jehn, 1995). This scale is by far the most frequently used measure of task and relationship conflict.

Building on research by Walton (1969), who argued that individuals' capacity for cognitive complexity is influenced by conflict in a nonlinear manner (inverted U), De Dreu (2006) found that moderate levels of task conflict, as opposed to low or high levels, led to higher levels of innovation in teams of postal workers. Moderate intensity conflict creates the stress necessary for optimal attentiveness, knowledge integration, and creative thinking. Moderately intense conflict, as opposed to highly intense conflict, is less likely to be misperceived as relationship conflict, thereby allowing team members to work cooperatively to transfer and combine information to generate novel solutions to team tasks. Compared to moderate amounts of conflict, high intensity conflict hinders teams' capacity to cooperatively process and integrate diverse knowledge by triggering excessive stress levels, exhausting cognitive resources, and reducing trust among team members (Anderson et al., 2004; De Dreu, 2006; Shalley et al., 2004). In a similar study, Leenders, Van Engelen, and Kratzer (2003) found an inverted U-shaped relationship between density in new product development teams' communication networks and team creativity.

In a study of 71 Chinese information technology project teams, Farh and colleagues (2010) reported that task conflict exhibited a nonlinear effect on team creativity, such that high and low levels of task conflict were associated with lower team creativity. Additionally, an interaction between task conflict and team phase revealed that the curvilinear effects of task conflict on team creativity was greatest in the early stage of the team life cycle, but was unrelated at later stages. The authors drew upon the concept of minority dissent theory (De Dreu & West, 2001) to make their arguments concerning the task conflict—team creativity relationship.

Minority dissent refers to the open opposition by a small percentage of the team, who oppose the assumptions held by the remaining members of the team, concerning ideas, beliefs,

policies, or strategies. Such opposition benefits creativity by increasing divergent thinking and preventing movements toward consensus before all alternatives have been fully vetted (Nemeth & Kwan, 1987). Further, challenging the status quo prompts team members to alter strategies, objectives, and processes to more appropriately fit the teams' tasks. However, at high levels of task conflict, teams' capacity to attend to and process information is hindered due to the inability to converge multiple lines of thinking. High task conflict exhausts time and attentional resources, resulting in cognitive overload and team member frustration. Low levels of task conflict fail to stimulate information search and the exchange of a sufficient amount of diverse perspectives to produce observable changes in performance. Failure to fully consider available alternatives and courses of action results ultimately in reduced creative performance. Support for these arguments are found in the study by Zhou and colleagues (2009) that revealed a curvilinear relationship between the number of weak advice ties an employee possessed and the employee's creativity. Similarly, Shaw and colleagues (2010) found that, at low levels of relationship conflict, task conflict exhibited an inverted U-shaped relationship with team performance. Valuable insights may be gleaned from these limited studies of the nonlinear relationship between team conflict and creativity. Although task conflict may have some beneficial effects on team outcomes under limited circumstances, and at modest levels, task conflict appears to be generally detrimental for team outcomes.

Perhaps the most interesting notion in the study by Farh and colleagues (2010) concerns the authors' acknowledgement that extant conflict research that advocates for the curvilinear nature of the task conflict—performance has failed to accurately articulate what high, low, and moderate levels of task conflict look like. To address this deficiency, the authors called for future research to utilize a taxonomy, similar to that advocated by Harrison and Klein (2007) that

clearly assesses the configuration of divergent opinions between and among the members of the team. The present study answers this call by using a social capital perspective to evaluate specifically who has conflict with whom between and among members of the team (Bachrach et al., 2011).

Zhou and colleagues (2009) provided three arguments in support of their curvilinear prediction of the number of weak advice ties and creativity. Although these arguments were given in the context of an advice network, their rationale is appropriate for this discussion concerning task conflict and team creativity. First, the amount of time teams can dedicate to open discussions and debate decreases with each additional task dispute above some ‘optimal’ amount (Zhou et al., 2009). Teams with high levels of task conflict may vigorously debate the merits of multiple alternatives, but under the pressures of a deadline they may run out of time before full consensus is reached, or before a sufficient number of alternatives have been considered. Similar arguments were made by Jehn and Mannix (2001) in a longitudinal study of team conflict. High levels of task conflict may be an indication of a fierce exchange of divergent viewpoints, but with limited integration (Zhou et al., 2009). Teams that exchange ideas without sufficiently integrating them will likely develop fewer new insights and novel combinations.

The second reason given for the curvilinear relationship between team conflict and creativity is that task conflicts are distracting and interfere with information processing (Zhou et al., 2009). This position is consistent with the cognitive processing view of conflict discussed above (Carnevale & Probst, 1998). In a study of new product development teams, Leenders and colleagues (2003) argue that innovation and creativity are essentially information processing activities. Researchers have suggested that the attention phase of information processing may be the most critical because new information cannot be exchanged and combined with

complementary information if it goes unperceived by team members (Ellis, 2006). High levels of task conflict strain teams' already limited cognitive resources (Simon, 1957) and thus diminish information processing capacity (Hinz et al., 1997). Further, team members distracted by task debates will miss opportunities to engage in exchange and combination activities with other team members.

Third, high levels of task conflict may cause cognitive overload. Cognitive overload refers to excessive demands on team members' cognitive resources. High levels of task conflict are argued to cause cognitive overload because making sense of information that is dissimilar in nature may be more taxing on individuals' limited cognitive resources than the evaluation of information that is relatively similar in nature (Carnevale & Probst, 1998; Zhou et al., 2009). Thus, burdens on teams' cognitive functioning constrain their capacity to exchange and combine information and thereby limit their creative and innovative performance.

In contrast to high levels of task conflict, low levels of task conflict fail to stimulate divergent thinking amongst the members of a team. Creativity is dependent upon the exchange and combination of divergent ideas and perspectives. Teams may indeed engage in positive forms of communication and exchange information, however *combination* is more effectively done through disagreeable forms of communication such as task conflict (De Dreu, 2006; Jehn et al., 2010).

Summary and Takeaways of Literature Review

Although the previous review of the conflict literature highlights many of the inconsistencies and mixed results generally found in studies of this important group process, several themes seem to emerge and hold across most of the studies. First, high levels of task conflict consume large amounts of time, attention, and cognitive resources (Pelled, 1996; Shaw

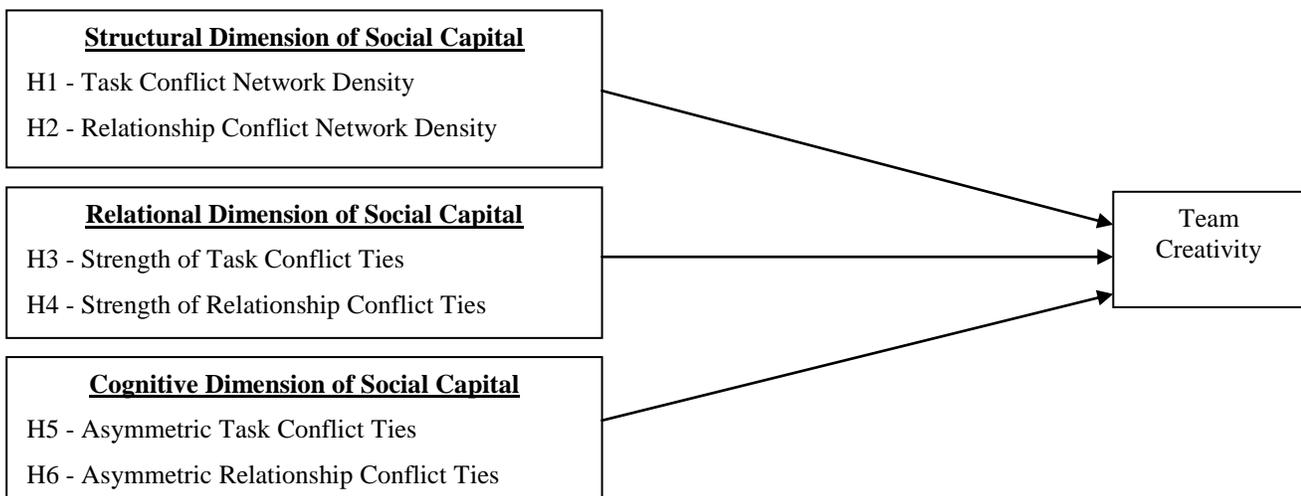
et al., 2010). High levels of task conflict impair individuals' ability to notice and appraise information, thus leading to suboptimal cognitive processing (Carnevale & Probst, 1998). These resource burdens reduce opportunities for information exchange and combination and hinder team performance and creativity (De Dreu, 2006). Second, high levels of task conflict are more likely to be misinterpreted as personal attacks or gamesmanship by disputants (Amason, 1996; Pelled, 1996) and thus may unintentionally trigger dysfunctional relationship conflict. Third, high levels of task conflict may reduce the exercise of voice by team members, causing a reduction in commitment, diminished affective acceptance, and an increase in withdrawal behaviors (Amason, 1996; Jehn & Mannix, 2001; Folger, 1977). Withdrawal intentions and uncooperative behaviors restrict access to team member knowledge and lower team member motivation to engage in information exchange and combination (Baldwin et al., 1997; Sparrowe et al., 2001). Conversely, low levels of task conflict may allow team members to debate the merits of alternative solutions without the emotional intensity associated with high levels of task conflict (De Dreu, 2008; Shaw et al., 2010). Low levels of task conflict allow teams to reap the benefits of divergent thinking and dissent while minimizing the costs associated with high levels of task conflict (Amason, 1996; De Dreu, 2006).

However, teams with low levels of task conflict may fail to stimulate participation, attentiveness, and coordination resulting in process losses (Ellis, 2006; Carnevale & Probst, 1998). Process losses restrict the exchange and combination of information and thus hinder team performance (Hinz et al., 1997). Moreover, teams with low levels of task conflict fail to generate sufficient amounts of divergent information and perspectives in order to successfully generate novel and useful ideas (De Dreu & West, 2001). Finally, moderate levels of task conflict minimize the costs and maximize the benefits of high and low levels of task conflict. Moderate

levels of task conflict encourage increases in information gathering, knowledge exchange and combination, and thus the generation of novel ideas (De Dreu, 2006; Jehn.1995; Shaw et al., 2010; Van de Vliert & De Dreu, 1994; Zhou et al., 2009).

Although powerful, these arguments fail to conceptualize the number of team members engaging in task and relationship conflicts (density) nor do they capture the frequency (tie strength) of task and relationship conflicts between team members. Theorizing from the social capital domain suggests that structural and relational manifestations of interpersonal interactions may provide additional explanatory power over traditional, aggregate conceptualizations (Venkataramani & Dalal, 2007). The structural and relational dimensions of social capital theory are well suited to address these gaps by illuminating these different structural manifestations of conflict. Figure 1 illustrates the hypotheses and arguments advanced in the next section of the dissertation.

FIGURE 1
Social Capital Model of Team Conflict and Team Creativity



Integration of Social Capital Theory, Conflict, and Creativity

Structural Social Capital of Task Conflict and Team Creativity

Recall that a team's task conflict network refers to the members of the team and the presence or absence of task conflict ties between them. A task conflict tie exists between two team members if at least one of the members perceives task conflict between them. If no tie exists between two members, this is referred to as an absent tie. Network density refers to the proportion of ties present within a network to the total sum of present and absent ties in a network (or the proportion of extant ties to the total number of possible ties). A team with a high density network is characterized by a relatively large number of present ties among team members. A low density network contains many more absent ties than present ties. In moderately dense networks, the number of present ties is roughly equal to the number of absent ties. Arguments for an inverted U-shaped relationship between team creativity and structural forms of social capital derived from teams' task conflict networks are based on recent research focusing on nonlinear relationships between task conflict and team performance (e.g. De Dreu, 2006; Farh et al., 2010; Shaw et al., 2010; Zhou et al., 2009)

High density task conflict networks are characterized by large numbers of task conflict ties among the members of the team. Teams with large numbers of task conflict ties will find less time being devoted to meaningful and productive discussions. Group communication may be based more on conflict resolution than on creative problem solving or idea generation. Due to limits on individual cognitive processing (Simon, 1957), team members can effectively engage in only a limited number of task debates before experiencing cognitive overload. Team members overwhelmed by task disagreements are less likely to have adequate cognitive resources to make meaningful connections between such large numbers of alternatives.

Due to the large amounts of present ties, team members are likely to experience high levels of distraction in high density task conflict networks. The attention and focus required to effectively exchange and combine information is likely to be hindered when a majority of a team's members are engaging in task disagreements. Team creativity is dependent on the ability of team members to pick up on bits of information suggestive of novel and useful combinations. Team members are likely to overlook valuable pieces of information while trying to make sense of the barrage of diverse perspectives being exchanged by a majority of a team's members. Thus, confusion and frustration are likely to be prevalent in teams with high density task conflict networks, which are likely to result in reduced creative efforts.

In contrast to teams with high density task conflict networks, teams with low density task conflict networks have relatively few task conflict ties present among team members. This type of structure may be indicative of team norms favoring quick resolution of disagreements and disputes. Team norms that discourage disagreements may be susceptible to the trappings of groupthink (Janis, 1982). Although minority dissent has been argued to be a deterrent to groupthink, teams that lack an adequate amount of diverse perspectives will be less likely to generate new and useful ideas.

A team with a relative absence of task conflict ties may be indicative of a collection of team members with similar ideas, expertise, and ways of thinking. Homogeneity of perspectives is argued to be a hindrance to creative thinking. Teams that lack sufficiently diverse ideas and opinions are less likely to generate new ideas. In contrast to teams with high or low levels of task conflict density, teams with moderately dense task conflict networks are better structured to reap the benefits of diverse perspectives and to avoid the costs of cognitive overload and distraction. A relative balance of present and absent task conflict ties may allow teams the ability

to engage in sufficient divergent thinking to exchange diverse perspectives and similarly, enough convergent thinking to combine the perspectives to create new knowledge combinations (Nemeth et al., 2004). Thus the following hypothesis is predicted:

H1: In task conflict networks, network density exhibits a curvilinear relationship (inverted U) with team creativity, such that moderate density networks will be associated with higher levels of creativity than will high density or low density networks.

Structural Social Capital of Relationship Conflict and Team Creativity

Structural social capital based on relationship conflict is argued to be negatively related to team creativity. As more team members engage in disagreements based on dislike and antagonism, opportunities for exchange and combination should diminish (Baldwin et al., 1997; Sparrowe et al., 2001). The discomfort and isolation members experience in teams with numerous relationship conflict ties reduces timely access to information held by other team members, and lowers motivation to engage in coordinated actions.

Teams with dense relationship conflict networks may be reflective of overall group dysfunction that is exceedingly difficult to overcome (Simons & Peterson, 2000). The dispersion of dysfunctional conflict reduces the amount of social support resources available for conflict resolution. When relationship conflict is widely dispersed, as is the case in dense networks, team members may encounter difficulty understanding and locating the source(s) of dysfunction. If the true causes of interpersonal difficulties cannot be identified or contained, resolution strategies may be ineffective if pursued at all.

The feelings of dislike and isolation associated with relationship conflict ties may cause team members to withdraw from the team or avoid other team members (Baldwin et al., 1997). Team members experiencing relational difficulties may not avail themselves of creative activities

such as exchange and combination of insights and ideas. Diverse knowledge held by a member who has physically or psychologically withdrawn from the team is no longer accessible to other team members. A reduction in member access diminishes team member motivation and reduces opportunities to engage in exchange and combination of information. Dense relationship conflict networks also may be indicative of incompatible goals and values among team members. Teams with dense relationship conflict networks spend disproportionate amounts of time and cognitive resources dealing with relationship issues and less time on productive activities (Shaw et al., 2010). In addition, teams with dense relationship conflict networks generate low levels of trust and mutual respect among team members. The social support resources that aid collective action are quickly depleted when relationship conflict is pervasive. Thus I propose the following:

H2: In relationship conflict networks, density will be negatively related to team creativity, such that high density networks will be associated with lower levels of team creativity than will low density networks.

Relational Social Capital of Task Conflict and Team Creativity

An integration of the relational dimension of social capital theory with intragroup conflict theory allows for a reframing of conflict in terms of strong and weak conflict ties. The number of strong task conflict ties possessed by a team is argued to hinder its creativity.

Similar to the arguments given for high density task conflict networks, strong task conflict ties between team members result in limited access to team member knowledge and lowered motivation for information exchange and combination.

Previous research has shown a tendency for task and relationship conflict to be highly correlated (Amason, 1996; De Dreu & West, 2001; Simons & Peterson, 2000). Reasons given for this tendency focus on the notion that the emotional intensity associated with strong task conflict

is likely to trigger relationship conflicts (Amason, 1996). Strong task conflicts are more likely to be misattributed as personal attacks resulting in feelings of offence and confusion. Frequent, emotionally charged task disagreements between team members may cause the target of the disputes to distrust the other party's motives for the disagreements. Offended team members are likely to respond with frivolous, yet strong objections to the other party's ideas or opinions. In this manner, productive information exchange relations may be replaced by norms of negative reciprocity, mutual distrust, and an increase in rivalry between team mates. Research on negative asymmetry suggests that negative interactions are more impactful and generate stronger affective and behavioral responses than positive interactions (Taylor, 1991). Increases in the frequency of task conflicts are likely to be matched by more frequent relationship conflicts and vice versa (Simons & Peterson, 2000). Thus, strong task conflicts that morph into relational difficulties may produce "negative spirals" that limit exchange and combination activities between team members (Simons & Peterson, 2000).

As the number of strong task conflict ties in a team increases, teams' capacity for creativity should tend to decrease. Teams with large numbers of either strong task conflict or relationship conflict ties will have fewer opportunities for productive discussions and debates because team members will be likely to exhibit avoidance behaviors, distraction, or disengagement (De Dreu, 2006; Shaw et al., 2010). Team members distracted by strong task or relationship conflict ties may tend to distract team members who have attempted to steer clear of either type of destructive forms of conflict (De Dreu, 2006).

Conversely, less frequent and less emotionally intense task conflicts may allow team members the opportunity to openly consider the merits of divergent ideas and opinions without the distrust and hostility often associated with stronger forms of disagreement. Team members

are likely more accepting and considerate of weaker expressions of task dissent. When idea challenges between team members are less frequent, the parties are more likely to engage in meaningful dialogue concerning more productive ways to accomplish task work. Weak task conflict ties may allow teams to benefit from the new insights generated from constructive levels of task conflict while circumventing the injuries produced through strong task conflict ties. Thus, the number of weak task conflict ties possessed by teams is argued to increase team creativity.

H3: In task conflict networks, tie strength will be negatively related to team creativity, such that a) weak ties will be positively related to team creativity whereas b) strong ties will be negatively related to team creativity.

Relational Social Capital of Relationship Conflict and Team Creativity

As the preceding discussion indicates, relationship conflict appears to be generally detrimental to team creativity by causing distraction, isolation, dissatisfaction, and withdrawal (Amason, 1996). However, the meta-analysis by Hulsheger and colleagues (2009) failed to find a significant association between relationship conflict and team creativity and innovation. In addition, the present dissertation's review of the empirical record revealed primary studies that failed to find a significant association between relationship conflict and team performance (Jehn, 1995; Pelled et al., 1999). Rationale for the non-significant findings suggests that although relationship conflicts are uncomfortable (Pelled et al., 1999) and dissatisfying (Jehn, 1995), team members find ways to cope while still fulfilling their task responsibilities. In their study of MBA teams, Baldwin and colleagues (1997) actually found a *positive* relationship between adversarial network density and team effectiveness.

These mixed findings suggest the possibility that certain nuances of negative relationships have yet to be teased out in the literature. Thus, in a departure from the existing

paradigm, I consider the possibility that weak relationship conflict ties may actually be *beneficial* for team creativity. This position is not inconsistent with extant research. Although most explanations of the linear association between relationship conflict and team performance emphasize the notion that high relationship conflict is associated with low levels of team performance, the inverse is not given much consideration. Neglected is the notion that lower, or weaker levels of relationship conflict are generally associated with higher levels of team performance than stronger, higher levels of relationship conflict. The meta-analysis by De Dreu and Weingart (2003) found a significant negative correlation of $r = -.22$ between relationship conflict and team performance. The authors argued that the result gives support to the information processing view of conflict that negative interactions between team members restrict cognitive functions (Carnevale & Probst, 1998; De Dreu & Weingart, 2003).

This perspective suggests that teams that are able to keep interpersonal difficulties to a minimum may have more time and cognitive resources available for information processing activities. Infrequent relationship conflicts between team members allow members to engage in task focused exchanges and combinative processes more often, and more effectively, than team mates experiencing frequent relationship conflicts. Yet, interpersonal differences are very difficult to avoid, particularly for small groups dependent on high levels of communication to create and innovate. Teams engaging in non-routine, complex tasks such as decision making and creative problem solving are likely to produce negative interactions and relationships to some extent.

However, teams with members who are overly concerned with maintaining harmonious relationships may have members less inclined to engage in legitimate task conflicts with others (Jehn & Shah, 1997). A team with a virtual absence of relationship conflicts may be indicative of

team norms favoring group cohesion and friendliness (Jehn & Shah, 1997; Nibler & Harris, 2003). Teams with members concerned with avoiding the activation of relationship conflict ties may show a tendency to prematurely move towards consensus on decisions and complex problems without allowing time for creative insights to develop (De Dreu, 2008; Janis, 1982). In this context, minority dissent may be viewed as deviant behavior by the cohesion-valuing majority, and violators may be subject to sanctions from the majority. These sanctions may include the withholding of social support, information, or other group benefits (Sparrowe et al., 2001). Moreover, team members that lack any relationship conflict ties with others may overly value their lack of interpersonal difficulties to the detriment of their teams' creative performance.

This position is consistent with research on groupthink. Janis (1982) describes situations in which group members are clearly aware of faulty assumptions held by their group's lead decision maker, but instead withhold vital dissent for fear of being seen as deviants. Team members less concerned of running afoul of group norms, or losing social support from fellow team mates, may be more inclined or likely to offer dissenting opinions for the sake of the team, and be more willing to accept the personal or social consequences associated with this behavior. Thus, teams with members accepting of some level of relationship conflict may be more likely to benefit from the constructive levels of task debate while avoiding the costs of destructive forms of task conflict and strong forms of relationship conflict.

H4: In relationship conflict networks, tie strength will be negatively related to team creativity, such that a) weak relationship conflict ties will be positively associated with team creativity whereas b) strong relationship conflict ties will be negatively related to team creativity.

Cognitive Social Capital of Task Conflict and Team Creativity

The literature review conducted in this chapter of the dissertation explored a number of empirical studies of intragroup conflict. An assumption underlying much of this work involves the notion that all group members perceive equal amounts of conflict. However, this assumption has recently been questioned in a study by Jehn and colleagues in which the researchers develop the notion of conflict asymmetry (Jehn et al., 2010). Conflict asymmetry addresses a shortcoming in extant conflict research by acknowledging the likely possibility that a group's members will perceive different amounts of conflict in their group. A recent study by Jehn and colleagues (2010) introduces two types of conflict asymmetry—individual and group level asymmetry. Individual conflict asymmetry (ICA) refers to whether an individual group member perceives higher or lower amounts of conflict than the rest of team. As the present dissertation is focused on team-level creativity, I focus primarily on the group form of conflict asymmetry.

Group conflict asymmetry refers to the dispersion or variance in members' perceptions concerning the amount of conflict in the group (Jehn et al., 2010). If all of a group's members perceive the same amounts of conflict, then the group would be considered as having low group conflict asymmetry (GCA), or conflict symmetry (Jehn, et al., 2010). High group conflict asymmetry occurs when all group members perceive different amounts of conflict.

Drawing on research on collective cognition and shared mental models, Jehn and colleagues offer several arguments in support of the hypothesis that group conflict asymmetry is negatively associated with group performance and creativity. First, according to shared mental models research, common understandings between group members increase the accuracy of perceptions of group interactions, and allows for more effective coordination between group members (Carnevale & Probst, 1998; Hinz et al., 1997). Second, variance in perceptions of conflict may cause group interactions and communication to be ineffective. These authors argue

that conflict resolution is exceedingly difficult if members do not agree on, or are not aware of, the existence of conflict (Jehn et al., 2010). Third, asymmetric conflict perceptions hinder information exchange and thus the generation of novel ideas needed for effective group creative performance (Amabile, 1983; Carnevale & Probst, 1998; Nemeth et al., 2004). Additionally, the authors build on work by Mason and Griffin (2003) claiming that symmetric perceptions are preferable to asymmetric perceptions even if the members agree on a negative assessment (Jehn et al., 2010). Finally, the awareness that other group members do not share the same perceptions as themselves can be disturbing and confusing for group members (Jehn et al., 2010). These feelings can reduce cooperation and information exchange, thereby limiting creativity in groups (Amabile, 1983).

The study revealed group (task) conflict asymmetry to be negatively related to team creativity, providing support for the above arguments concerning asymmetric perceptions of conflict. In addition to this finding, the authors also controlled mean levels of task conflict. The mean, or average, level of conflict is the traditional psychometric measure upon which most of the studies reviewed in this dissertation are based (Jehn, 1995). The study showed that group task conflict asymmetry explained significant incremental variance ($\Delta R^2 = .33, p < .001$) above that explained by the traditional mean level measure (Jehn et al., 2010).

The study revealed an important gap in the literature on team conflict; the cognitive dimension of conflict. The importance of this deficiency is further highlighted by the finding that conflict asymmetry is a better predictor of team creativity than previous predictors (Jehn, 1995). The authors called for more researchers to explore more fully individual and group conflict asymmetry. Additionally, the authors called for more work exploring both relationship and task conflict asymmetry. The present dissertation answers this call by integrating the cognitive

dimension of social capital with the conflict asymmetry approach to explore dyadic aspects of task and relationship conflict.

Building on the concepts of individual conflict asymmetry (ICA) and group conflict asymmetry (GCA), I introduce the concept of dyadic conflict asymmetry (DCA). I define DCA as an aspect of the relationship between two individuals that describes the discrepancy in conflict perceptions between them. DCA differs from ICA and GCA in that DCA is a relational variable. Relational variables have been shown to explain significant variance beyond traditional predictors in several recent studies. For example, Venkataramani and Dalal (2007) found that citizenship behaviors, captured at the level of the dyad, and conceptualized as interpersonal helping and harming, explained significant variance above and beyond traditional measures of citizenship.

GCA and ICA are based on individual perceptions of how much conflict occurred in individuals' group *generally*. However, as a relational variable, DCA accounts *explicitly* for which team members had conflicts with each other and the amount of variation between the two members' perceptions of conflict with each other. Consistent with social capital theory, variance in perceptions between the parties that share a conflict tie determine their ability to engage in coordinated actions such as the exchange and combination of resources (Nahapiet & Ghoshal, 1998). Thus, building on the conflict asymmetry approach (Jehn et al., 2010) and social capital theory, an asymmetric task conflict tie is considered to exist between two team members if they perceive different amounts of task conflict between them. Similarly, an asymmetric relationship conflict tie occurs when team members vary in their perceptions of relationship conflict with each other. When team members vary in the amount of task or relationship conflict that exists

between them, they may be less likely to develop the common understandings and shared perceptions that facilitate knowledge exchange and combination.

For example, if a team member understands the extent of disagreement between himself and an opposing team member concerning a decision under consideration, then he may be better positioned to recognize a mutually agreeable solution that results in a creative solution to the problem. Consider a scenario in which team member A perceives a high level of task conflict with team member B, but team member B perceives that no conflict exists between the two. Team member B may think that team member A shares a similar viewpoint and ideas as himself. However, team member A may think that team member B has a far different perspective on approaches to team task work. These team mates are likely to possess inaccurate judgments concerning the viability of potential information combination and exchange opportunities between them.

Shared perceptions allow team members to develop a deeper comprehension of one another's positions and approaches to task work (Olson et al., 2007). Accurate understanding of both sides of a task debate may help team members coordinate with each other to arrive at mutually beneficial outcomes. Shared perceptions between team members also may help facilitate effective implementation of creative ideas and solutions (Olson et al., 2007; Pelled et al., 1999; Wooldridge & Floyd, 1990). Borgatti and Foster (2003) argue that the choice to seek information from another is influenced by the information seeker's perception of another's expertise. Research on transactive memory supports this argument, suggesting that shared perceptions concerning the location and quality of group members' knowledge and expertise benefits teams' information processing capabilities (Lewis, 2003). Team members with accurate perceptions concerning which team members possess diverse information may be more capable

of seeking appropriate information useful for creative combinations. Moreover, team members who are more accurate in their perceptions of complementary information possessed by others may help facilitate the implementation of creative outputs. Thus, as the number of symmetric task conflict ties in a team increases, information exchanges and combinations may become more frequent, effective, and efficient.

H5: In task conflict networks, the number of asymmetric task conflict ties a team possesses will be negatively related to team creativity,

Cognitive Social Capital of Relationship Conflict and Team Creativity

Research failing to find significant associations between relationship conflict and team performance suggests that team members may be able to cope with negative relationships and still perform well on team task work (Jehn, 1995; Pelled et al., 1999). One explanation for this phenomenon may be associated with the notion of symmetric perceptions of relationship conflict. Two team members may strongly dislike each other; however, if both parties are aware that the negative feelings are mutual, then they may become highly skilled at avoiding each other unless it is required for team activities. Mutual awareness of interpersonal incompatibilities may reduce the further escalation of relationship conflict, limiting its negative effects on team creativity.

However, asymmetric perceptions of relationship conflicts are likely to be detrimental to team creativity for several reasons. First, a team member in an asymmetric relationship conflict relationship who inaccurately perceives that no relationship conflict exists between him and another may be more vulnerable to harm from the other party. When team members accurately perceive that another party dislikes them, then they are better equipped to cope with any negative attacks from the other party. However, the impact on an individual's cognitions is more

disturbing when the individual is *blindsided* by relationship difficulties. A team member who is unaware that another team member has animosity towards him/her may be more strongly impacted if s/he becomes the target of a personal attack from the other party. The injured team member's affective response is likely to be more intense because the attack was unexpected (Taylor, 1991). A team member who is aware of another's true feelings toward him/her is more likely to accurately predict political maneuvers and gamesmanship and thus the accurate perceiver is not surprised when the rival engages in counterproductive behaviors. Thus, teams with large numbers of asymmetric relationship conflict ties may have more offended and dissatisfied team members due to the injuries sustained from unexpected personal attacks. As dissatisfaction and offense increase, opportunities for motivation for creative efforts will decrease. Thus I propose the following:

H6: Regarding relationship conflict networks, the number of asymmetric relationship conflict ties a team possesses will be negatively related to team creativity.

CHAPTER 3

METHOD

Sample and Procedures

The sample is composed of 527 undergraduate business students at a large public university in the United States. The participants were enrolled in two sections of an undergraduate management course, both of which were taught by the same instructor. Traditionally, most students who take this course are classified as juniors and seniors and the proposed sample (juniors 74% and seniors 23%) upholds this tradition. With respect to demographics, the participants included 279 males (53%) and 247 females (47%), had an average age of 20.72 years, and were mostly Caucasian (87%). Participants were randomly organized into 132 four-member teams for their core-course activities which included participation in the Global-Business (Glo-Bus) simulation described below. Although participants took part in the Glo-Bus simulation as a required element of their course, they also completed the survey necessary for participation in this dissertation for extra course credit on a voluntary basis. Participants were fully apprised of their rights as participants in this research prior to participation, and were given alternative extra credit opportunities prior to taking part. A total of 513 (97.3%) opted to participate in the study.

Glo-Bus. Glo-Bus is a semester-long, team-based, business simulation in which student teams participate as part of their core course requirements. Performance in the simulation accounts for 30 percent of students' grades in the course. Glo-Bus is designed to simulate the context in which real world management teams make decisions concerning the operations of global firms. Teams compete against one another in head-to-head fashion, whereby the effectiveness of one team's ('company') strategy is contingent on the competitiveness of the

strategies enacted by other teams ('companies') in a given industry. The simulation consists of weekly decision rounds in which teams alter and enact new strategies based on past performance and their competitive position in their industry. Statements illustrating how teams fared in terms of financial performance in relation to rival teams in the class were made available to each team via weekly competitive reports. This process encouraged teams to discuss and analyze the viability of current strategies and to craft new strategies in order to improve their team's performance. The Glo-Bus simulation is non-routine and complex by design, reflecting real world operational contingencies.

Measures

All variables including independent, dependent, and control variables were captured at two points of team interaction; during the midpoint which was approximately 5 weeks after team formation and at the end which was approximately 10 weeks after team formation. This was done to create a lagged effect in the data and to rule out alternate explanations associated with the direction of causality.

Independent Variables

Structural Dimension of Social Capital

Task conflict network density and relationship conflict network density. Consistent with social capital theory, conflict network density captures the relative frequency or intensity of conflict interactions within a team. Conflict network density describes the overall level of disagreement that a team's members perceive. Conflict network density is the proportion of the actual number of nominations within the network among the total number of possible network nominations (Wasserman & Faust, 1994). Conflict network density is comparable to the average number of conflict ties each team member maintains (Leenders et al., 2003). Theoretically, a

maximum density conflict network is one in which each actor has a conflict tie with every other actor (i.e. density=1) (Balkundi & Harrison, 2006), whereas a minimum density conflict network is one in which there is a total absence of ties among network actors (i. e. network density= 0).

Task conflict refers to disagreements over task-relevant issues such as strategies, methods, and decisions (Amason, 1996; Jehn, 1995). Social capital measures of the task conflict network were obtained by measuring the frequency of task conflicts between team members. Using a six-point scale ranging from 1 to 6 [1 = no conflicts, 2 (very infrequently) to 6 (very frequently)], respondents were asked the following network question concerning each of their team members: “Please indicate the frequency with which you have had task conflicts with your team mates.”

Relationship conflicts are non-task related disagreements based on personal preferences, dislike, annoyance, or interpersonal incompatibilities (Jehn & Mannix, 2001). Similar to task conflict, social capital measures of the relationship conflict network were assessed on a six-point scale ranging from 1 to 6 [1 = no conflicts, 2 (very infrequently) to 6 (very frequently)], by asking respondents to indicate the frequency with which they had encountered relationship conflicts with each of their team mates.

Following past research (Oh et al., 2004; Sparrow et. al, 2001), task and relationship conflict network density were calculated as the sum of participant responses to the task and relationship conflict network questions respectively divided by the total possible sum of responses respectively. For example, to calculate task conflict network density, each respondent’s responses to the frequency of task conflict with every other team member were summed, and then divided by the total possible sum of responses. The total possible sum was calculated using the formula $(n(n-1) * (p))$, where n equals the total number of members on a

team and p equals the maximum conflict frequency value. The present research design was composed mainly of 4 person teams with a maximum conflict frequency of 6. Thus, the total possible sum for each team is 72. Following past research, missing data were replaced with the median value for the team (Oh, et al., 2004; Sparrow et. al, 2001). Each team in the sample had at least 75% of the team members to respond on the conflict network questions. Thus, no teams were excluded from analysis (Oh et al., 2004; Sparrowe et al., 2001). Task and relationship conflict network densities were calculated using the statistical package UCINET VI (Borgatti et al., 2002).

Relational Dimension of Social Capital

Strength of task conflict ties. Consistent with prior research, the strength of task conflict ties was measured based on the frequency of task conflict between team members (Seibert et al., 2001; Zhou et al., 2009). Previous social networks research has employed the use of frequency counts and “cut points” to differentiate between strong and weak ties. Rather than arbitrarily choosing median cut point to differentiate strong and weak ties, I instead checked the descriptive statistics for noticeable breaks in responses. The frequency distribution suggested a clear break between responses of “6” and responses in the range of 2-5. Thus, respondents indicating conflicts with another of 6 were considered as having a strong conflict tie. Respondents indicating conflicts with another of 2, 3, 4 and 5 were considered as having a weak conflict tie. Respondents indicating a value of 1 were considered as not having a conflict tie with that team member. The strength of task conflict ties was coded as follows: 1 = none, 2-5 = weak and 6 = strong.

Strength of relationship conflict ties. The strength of relationship conflict ties was determined by following the procedure used to assess task conflict tie strength. The strength of relationship conflict ties were coded 1 = none, 2-5 = weak, and 6 = strong.

Following previous research, conflict was assumed to have occurred between two team mates if at least one of them responded to the (task or relationship) conflict tie strength questions above with a value of 2 or more. To illustrate, if team member A reported a value of 2 concerning the frequency of (task or relationship) conflicts with team member B and team member B reported a value of 1 concerning the frequency of conflicts with team member A, then team member A was considered to have a *weak tie* with team member B, but B was considered as having an *absent tie*, or no conflict relationship with team member A. Further, if team member A reported a value of 6 instead of 2 concerning the frequency of conflicts with team member B, then team member A was considered as having a *strong tie* rather than a *weak tie* with team member B. Thus, a tie needed not be reciprocated in order to be considered a tie.

Cognitive Dimension of Social Capital

Asymmetric task and relationship conflict ties. Asymmetric conflict relationships are those in which team members differ in their perceptions concerning the amount of conflict between them. Operationally, an asymmetric task or relationship conflict tie exists between two team members when their task or relationship conflict tie scores differ by 3 or more. To illustrate, if team member A reports a value of 2 concerning the frequency of (task or relationship) conflicts with team member B and team member B reports a value of 1 concerning the frequency of conflicts with team member A, then the pair is not considered as having an asymmetric conflict tie since the difference in their scores (1) is less than 3. However, if team member A had reported a value of 5 instead of 2 concerning the frequency of conflicts with team

member B, then the pair is considered to have an asymmetric conflict tie as the difference (4) is greater than 3.

Dependent Variable

Team creativity. Following previous research (McGlynn, McGurk, Effland, Jhll, & Harding, 2004), team creativity was measured at the team level with self-report measures (Jehn et al., 2010). Six items were adapted that are commonly used in creativity and innovation research (De Dreu, 2006; Jehn et al., 2010). The wording of the items was modified to reflect the competitive business simulation game environment in which the participants completed their tasks. Participants were asked to rate how well their team performed by indicating their agreement on a seven-point scale ranging from 1 (very little) to 7 (very much). Sample items included “Being innovative in our approach to how we compete with other teams” and “Taking a creative approach with respect to how we work through simulation activities.” An exploratory factor analysis was conducted to determine the factor structure of the six item scale. Principle axis-factoring and a varimax rotation provided strong support for a one factor solution. The one factor solution accounted for 61% of the variance in the items, each with loadings greater than .70. (See Table 1 for items and results). Reliability analysis revealed the items formed an internally consistent scale ($\alpha = .90$).

Control variables. Previous research involving team conflict and team creativity has indicated the need to control for other sources of variance that may affect the conclusions researched in the study. Specifically, the present dissertation identified gender and transactive memory systems as variables that may affect the relationship between team conflict and team creativity. Previous conflict research has suggested a relationship between gender diversity and team performance, such that gender diverse teams may experience higher levels of conflict

(Jehn, 1995). Gender proportion (0 = male, 1 = female) was calculated as the percentage of females on the team. Previous research on group cognitive processing and performance suggests that transactive memory systems (TMS) may influence teams' performance on activities requiring coordinated information processing such as decision making and problem solving (Ellis, 2006; Rau, 2005). TMS is a group-level, information processing system that involves team members developing a cognitive division of labor for group task work (Lewis, 2003). Consequently, TMS may affect the efficiency and effectiveness of information exchange and combination, thereby influencing teams' ability to be creative. TMS may offer an alternative explanation for how and why conflict influences team creativity and thus was controlled.

Table 1
Exploratory Factor Analysis of Six Items Assessing Team Creativity

Items	Factors
1. Trying to standout relative to other teams.	.87
2. Being innovative in our approach to how we compete with other teams.	.85
3. Taking a creative approach with respect to how we work through simulation activities.	.76
4. Developing our own method to compete with the other teams.	.74
5. Thinking 'outside of the box' regarding how to play the game.	.70
% variance	61.06
Eigenvalue	3.664

Note. N=527.

TMS was measured using the scale developed by Lewis (2003). The scale has 3 dimensions (specialization, credibility, and coordination) measured by 14 items. Team members responded on seven-point scales ranging from 1 (strongly disagree) to 7 (strongly agree). Sample items for the specialization sub-dimension include “Each team member has specialized knowledge of some aspect of our project” and “I have knowledge about an aspect of the project

that no other team member has.” Sample items for the credibility sub-dimension include “I am comfortable accepting procedural suggestions from other team members” and “I trust that other members’ knowledge about the project is credible.” Sample items for the coordination sub-dimension include “Our team works together in a well-coordinated fashion” and “Our team has very few misunderstandings about what to do.” In addition to calculating internal reliability scores for the entire TMS scale, scores were also generated for each subdimension of TMS. The complete scale ($\alpha = .82$) as well as the specialization ($\alpha = .81$), credibility ($\alpha = .76$), and coordination ($\alpha = .79$) dimensions of TMS produced internally consistent values.

Following past research (Jehn et al., 2010), mean levels of task and relationship conflict were controlled in an effort to examine any effects of the social capital variables above and beyond the mean conflict variables captured. Task and relationship conflict were measured using Jehn’s (1995) Intragroup Conflict Scale. The six-item scale contains 3 items measuring task conflict ($\alpha = .92$) and 3 items measuring relationship conflict ($\alpha = .86$). Team members responded on seven-point scales ranging from 1 (strongly disagree) to 7 (strongly agree). Items used to measure task conflict included, “People in your team have conflicting opinions about the project you are working on,” and “There is conflict of ideas in your team.” Relationship conflict was measured with items including, “There is relationship tension in your team,” and “There is emotional conflict in your team.”

CHAPTER 4

RESULTS

Analyses

Means, standard deviations, and correlations of the dissertation's variables are provided in Table 2 below. Contrary to the direction hypothesized, weak task conflict ties and weak relationship conflict ties were negatively correlated with team creativity. TMS was positively correlated with team creativity and negatively correlated with two of the independent variables, weak task conflict ties and weak relationship conflict ties. Although a cause for concern, the fact that TMS was correlated with the dependent variable and multiple independent variables justified its inclusion as a control variable. Although many of the conflict-based variables were strongly correlated (as expected), the extremely high correlation between task conflict density and strong task conflict ties ($r = .93, p < .01$) and relationship conflict density and strong relationship conflict ties ($r = .97, p < .01$) are an indication that these constructs are likely capturing the same phenomenon. As will be discussed below, analyses were run with and without these variables to examine any potential effects of multicollinearity.

The respondents in the proposed sample were four-person teams of students participating in a business simulation game as part of their course requirements. All of the study's variables are team level variables; thus data nesting was not anticipated to be a concern. However, because the data were not collected at the team level, the mean level of within-group agreement, r_{wg} (James, Demaree, & Wolf, 1984), and intraclass correlation coefficients (ICC(1) and ICC(2)) (Bliese, 2000; McGraw & Wong, 1996) statistics were calculated to justify aggregating the data to the team level. Values greater than .70 for the interrater reliability coefficient, r_{wg} , indicate acceptable agreement among group members and provide justification for aggregating individual

responses to the group level (James et al., 1984). Average r_{wg} was .83 for team creativity, providing justification for using the group mean of individual creativity scores. ICC(1) is a measure of between group variance and reflects the proportion of variance explained by group membership (Bliese, 2000). ICC(1) values greater than .20 justify aggregation of responses to the group level. ICC(2) is an index of interrater reliability of the group mean. ICC(2) values exceeding .60 indicate reliability of group aggregation (Glick, 1985). Both ICC (1) and ICC (2) values supported the use of team means for creativity as they were .30 and .63 respectively.

Table 2
Means, Standard Deviations, and Correlations

Variable	Mean	Std Dev	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	0.47	0.24												
2. TMS	5.24	0.50	0.00											
3. Mean TC	2.05	0.83	-0.32	-0.45**										
4. Mean RC	1.58	0.71	0.00	-0.56**	0.65**									
5. TC Density	0.40	0.14	-0.06	-0.05	-0.06	-0.17								
6. RC Density	0.43	0.16	-0.06	-0.08	-0.02	-0.07	0.73**							
7. Strong TC Ties	3.02	2.24	-0.08	0.02	-0.18*	-0.13	0.93**	0.76**						
8. Strong RC Ties	3.55	2.34	-0.05	-0.01	-0.13	-0.22**	0.73**	0.97**	0.79**					
9. Weak TC Ties	1.52	1.71	0.08	-0.26**	0.42**	0.29**	-0.06	-0.12	-0.32**	-0.20*				
10. Weak RC Ties	0.98	1.37	0.03	-0.35**	0.47**	0.55**	-0.02	0.04	-0.15*	-0.16*	0.40**			
11. Asymmetric TC Ties	2.49	1.57	0.00	0.00	-0.06	-0.05	0.77**	0.62**	0.77**	0.63**	-0.15*	-0.02		
12. Asymmetric RC Ties	2.73	1.48	-0.01	-0.04	0.00	-0.10	0.56**	0.73**	0.60**	0.74**	-0.07	-0.03	0.74**	
13. Team Creativity	5.80	0.74	-0.09	0.40**	-0.33**	-0.31**	0.01	0.00	0.05	0.05	-0.25**	-0.18*	0.04	0.01

Note: TC = Task Conflict. RC = Relationship Conflict.. TMS = Transactive Memory System.

N = 132. One-tail correlations.

* $p < .05$, ** $p < .01$

Hierarchical regression analysis was conducted using SPSS 16.0 to test the study's hypotheses concerning the relationship between conflict social capital and team creativity. The three social capital manifestations of task and relationship conflict were hypothesized to influence team creativity independently of each other. To test these hypotheses, the study's control variables were entered in Step 1. In Step 2, the study's main effect variables were entered, including task conflict network density, relationship conflict network density, strong task conflict ties, weak task conflict ties, strong relationship conflict ties, weak relationship conflict ties, asymmetric task conflict ties, and asymmetric relationship conflict ties. To test the

curvilinear relationship between task conflict network density and team creativity (Hypothesis 1), a squared task conflict network density variable was created and entered in Step 3. All variables were standardized with a mean of zero and standard deviation of 1 prior to being entered into the regression. Standardization facilitates comparison of results across different scales and helps minimize potential problems with multicollinearity (Aiken & West, 1991). Centered variables were created and entered into the regression as well. Centered variables did not provide different results from standardized variables. Only standardized variables are reported. The results of this analysis are shown in Table 3 below.

Hierarchical regression analysis revealed several of the control variables entered in step 1 ($R^2 = .099$; $F(4, 127) = 3.495$, $p < .01$) were related to the dependent variable team creativity; TMS ($\beta = .200$, $p < .05$) and mean task conflict ($\beta = -.217$, $p < .05$) were significantly related to team creativity. Multicollinearity was assessed by calculating tolerance and variance inflation factor (VIF) indices in SPSS 16.0 for the study's variables. Tolerance values close to but less than 1 and VIF values less than 5 demonstrate low levels of multicollinearity. As mentioned previously, the significantly high correlations between the study's various conflict-related variables foreshadowed multicollinearity problems when conducting the regression analyses. These problems surfaced with the first hypothesis which proposed that moderate levels of task conflict network density would be positively related to team creativity. Contrary to my hypothesis, task conflict network density was not significantly related to team creativity, indicating a lack of support for hypothesis 1. What's more, SPSS excluded the squared task conflict network density variable from the F-test, indicating VIF (84,6163.30) and tolerance (1.182 E^6) values well in excess of those recommended in previous research. As a result, this variable was excluded from further analyses.

Table 3
Hierarchical Regression Results

Dependent Variable: <i>Team Creativity</i>									
Variables	β	<i>SE</i>	<i>Beta</i>	<i>adj R</i> ²	ΔR ²	<i>t</i>	<i>p</i>	<i>T</i>	<i>VIF</i>
Step 1: Control Variables									
Gender Diversity	-.324	.356	-.077			-.909	.37	1.00	1.003
Transactive Memory	.198	.101	.200			1.971	.05	.69	1.451
Mean Level of TC	-.217	.108	-.217			-2.014	.05	.61	1.644
Mean Level of RC	.089	.114	.089			.776	.44	.54	1.858
<i>F</i> (4,127) = 3.495***				.071	.099				
Step 2: Social Capital Variables									
TC Network Density	.079	.087	.079			.915	.36	.95	1.052
RC Network Density (H2)	-1.004	.688	-.1004			-1.459	.15	.02	66.357
Strong TC Ties (H3a)	-.081	.198	-.081			-.409	.68	.18	5.516
Weak TC Ties (H3b)	1.081	.716	1.081			1.509	.13	.01	71.919
Strong RC Ties (H4a)	-.163	.103	-.163			-1.576	.12	.67	1.492
Weak RC Ties (H4b)	.156	.165	.156			.946	.35	.26	3.832
Asymmetric TC Ties (H5)	.085	.178	.085			.478	.63	.23	4.428
Asymmetric RC Ties (H6)	-.048	.161	-.048			-.295	.77	.28	3.633
<i>F</i> (12,119) = 1.759*				.065	.051				
Step 3: TC Network Density ² (H1)	-	-	-104.928	-	-	-1.355	.178	1.182E-6	846162.295

Note: Standardized and unstandardized regression coefficients are reported from the final step. N = 132.

T = Tolerance. VIF = Variance Inflation Factor, TC = Task Conflict. RC = Relationship Conflict.

* $p < .10$. ** $p < .05$. *** $p < .01$.

The study's main effects variables were entered in Step 2 of the hierarchical regression. Step 2 revealed a marginally significant increase in R^2 from Step 1 ($\Delta R^2 = .051$; $F(8, 119) = 1.759$, $p = .06$). Hypothesis 2 proposed that relationship conflict network density would negatively relate to team creativity. Contrary to expectations, relationship conflict network density was not significantly related to team creativity ($\beta = -1.004$, *n.s.*), indicating a lack of support for hypothesis 2.

Hypothesis 3a proposed that weak task conflict ties would be positively related to team creativity. Contrary to my hypothesis, weak task conflict ties were not significantly related to team creativity ($\beta = -.163$, *n.s.*), indicating a lack of support for hypothesis 3a. Hypothesis 3b proposed that strong task conflict ties would be negatively related to team creativity. Contrary to expectations, strong task conflict ties were not significantly related to team creativity ($\beta = -.081$, *n.s.*). Thus, hypothesis 3b was not supported.

Hypothesis 4a proposed that weak relationship conflict ties would be positively related to team creativity. Contrary to expectations, weak relationship conflict ties were not significantly related to team creativity ($\beta = .156$, *n.s.*). Thus, hypothesis 4a was not supported. Hypothesis 4b proposed that strong relationship conflict ties would be negatively related to team creativity. Contrary to expectations, strong relationship conflict ties were not significantly related to team creativity ($\beta = 1.081$, *n.s.*), indicating a lack of support for hypothesis 4b.

Hypothesis 5 proposed that asymmetric task conflict ties would be negatively related to team creativity. Contrary to my hypothesis, asymmetric task conflict ties were not significantly related to team creativity ($\beta = .085$, *n.s.*), failing to provide support for hypothesis 5. Hypothesis 6 proposed that asymmetric relationship conflict ties also would be negatively related to team

creativity. Contrary to expectations, asymmetric relationship conflict ties were not significantly related to team creativity ($\beta = -.048, n.s.$). Thus hypothesis 6 was not supported.

CHAPTER 5

DISCUSSION

There were several goals of the present study. First, the study sought to address inconsistencies in the team conflict literature concerning the potential beneficial and detrimental consequences of conflict. Through the use of a social capital perspective, the current study sought to answer calls for more research exploring alternative approaches to conceptualizing and testing conflict in small groups. In many ways the study represented a constructive replication of previous studies of the team conflict creativity relationship. Constructive replication refers to the cross-validation of previous research findings by modifying the operationalization of the constructs under consideration (Colquitt & Zapata-Phelan, 2007). As argued by Eden (2002) constructive replications are critical to the accumulation of a body of knowledge and the advancement of the field. In a departure from the traditional conflict paradigm (Jehn, 1995), the study proposed several arguments regarding the association between the frequency, number, and relative symmetry of conflicts between team members and team creativity. The current study also developed the proposition that these alternative measures of conflict may be better predictors of team outcomes than traditional measures of the level of conflict perceived by a team's members.

Second, the study was designed to add to our understanding of the drivers of creativity at the team level of analysis by testing these various social capital expressions of task and relationship conflict as antecedents of team creativity. By altering the operationalization of task and relationship conflict used in previous studies, the present dissertation sought to provide a more rigorous test of the findings from previous studies of the team conflict—team creativity relationship (Lykken, 1968).

Although theoretically sound, the sociometric measures of conflict used in this study were unable to reproduce the findings of previous empirical studies employing psychometrically-constructed measures of team conflict. Had most or all of the study's hypotheses been supported, this chapter of the dissertation would have been devoted mainly to a discussion of its significant findings and less on its insignificant findings. However, in the absence of material upon which to discuss the implications of supported findings, this chapter will be presented in a less than conventional manner. The chapter will instead be devoted to areas for future research spurred by the study's non-findings. Additionally, I will focus on the lessons I learned from the dissertation journey as a whole.

There is much to be learned from insignificant findings and the process it requires to create them, and arguably more importantly, to understand them. Indeed, the study's inability to replicate previous empirical findings calls for additional inquiry to explore why, when, and under what circumstances the sociometric approach to the team conflict – team creativity relationship actually holds. In this chapter, I begin to answer this call by identifying a number of limiting factors and oversights that may have prevented the dissertation's hypotheses from reaching significance. I offer solutions, in the form of research propositions for future theory building and hypothesis testing, designed to overcome the study's limitations and to capitalize on research opportunities. Given constraints on time and space for this chapter, the propositions offered and the discussion directly preceding them, are not fully developed and nor are they intended to be. The propositions and supporting material are reflective of the "bones" of my emerging body of work. These bones are providing the structure upon which I am developing fully-fleshed out theoretical arguments commensurate with those found in published scholarly research. Indeed, such scholarly work requires more space and conceptual development than can be devoted in this

final chapter of this manuscript. Finally, I end with a potential research design that will facilitate field testing of the propositions offered. In this way, the final chapter of the dissertation serves as an important springboard towards a fertile and sustainable research pipeline.

My maturation as a researcher-scholar was greatly enhanced as a result of producing this dissertation. My development began with the reviews I conducted of the social capital, conflict, and creativity literatures. It was through these reviews that I identified several fundamental gaps at the intersection of these literatures. In my estimation, these gaps pointed to three simple, yet profound research questions upon which I chose to base my dissertation: *Does who has conflict with whom matter? Moreover, does how much and what type of conflict one has with others matter? If so, how and why?* I consider these questions simple because intuitively one would say *well, of course it matters*—particularly given that previous social network research has shown a range of interpersonal relationships to have non-trivial influences on individual-, dyadic-, and group-level outcomes. I also deem the questions profound because though extant theories of conflict and creativity are based on the notion that interpersonal difficulties and disagreements promote and constrain the generation of new and useful ideas, these theoretical conjectures had yet to be submitted, in a systematic way, to rigorous empirical scrutiny. Consequently, I sought to provide a more appropriate test of the assumptions underlying previous findings by adopting a sociometric rather than a psychometric approach to conceptualizing and testing task and relationship conflict in teams. In this way, not only did I replicate previous research, I extended this research by capturing explicitly the *between whom, what kind, and how much* of the interpersonal conflict that researchers have argued to influence a team's creativity. Although grounded in theory and consistent with extant research, the study's hypotheses were not supported as expected. As a result, the study's non-findings provide support to a growing chorus

of researchers calling for an update to the interpersonal conflict paradigm (see also Dreu & Weingart, 2003; Jehn et al., 2010; Korsgaard et al., 2008).

In addition to what I learned from reviewing the conflict, creativity, and social networks literatures and developing and testing the study's hypotheses, I conducted informal interviews with those with first-hand knowledge of the Glo-Bus simulation game. The Glo-Bus game was administered to students enrolled in an introductory management course. This course is generally the first of several management-related courses that students must complete in order to fulfill the requirements for a degree in business. I verbally polled students in four of the elective courses that I have taught during my doctoral tenure as to whether they had participated in the Glo-Bus simulation. In a non-threatening, conversational manner, I asked those students who responded in the affirmative to tell me about the interactions they experienced with their teammates and others while working on the simulation. The conversations were akin to low-pressure debriefing sessions where I asked open-ended questions and merely took notes on students' responses. Further, I interviewed students who were participants in the Business Strategy Game (BSG), a similar strategic decision making simulation that is required of students enrolled in the capstone strategic management course at this university. I audited this course while working on this dissertation. The instructor of this course held a debriefing session at the conclusion of the simulation to allow students the opportunity to describe their experiences and satisfaction with the simulation. Again, I took notes on student responses. Finally, I had numerous personal communications with two instructors who had previously commissioned the Glo-Bus and BSG simulations in their courses. These informal interviews and communications were highly informative and added context to my dissertation's findings.

First, I learned that there may not have been enough variance in the study's dependent variable, team creativity, to allow for the identification of significant associations with the set of independent variables I evaluated. The nature of tasks teams engaged in during the completion of the Glo-Bus game may not have provided sufficient reward for teams to engage in creative decision making. The informal interviews with students and instructors suggested that the keys to success in the Glo-Bus game are found in the game's Player's Guide. The Player's guide is said to describe, in explicit detail, the strategies that are likely to provide teams with high levels of performance. Thus, teams that engaged in creative decision making processes, which resulted in strategies unique to those found in the Player's guide, may have been less effective than teams that adopted the publicly available strategies provided by the Player's Guide. This suggests additional boundary conditions such as task variety (Jehn & Bendersky, 2003) and need for creativity (Hunter, Bedell & Mumford, 2007) on the team task conflict—creativity relationship. Future research should explore the conditions under which the team task conflict—creativity relationship is more (or less) likely to emerge.

Proposition 1a: Task variety moderates the relationship between task conflict and team creativity; the relationship is positive when task variety is high but negative when task variety is low.

Proposition 1b: Need for creativity moderates the relationship between task conflict and team creativity; the relationship is positive when need for creativity is high but negative when need for creativity is low.

Second, interviewees suggested that performance in the Glo-Bus Game is path dependent. That is, teams performing well in the early stages of the competition seemingly maintain their performance throughout the competition. Similarly, teams with low levels of early performance

are not likely to make up enough ground to finish in the top of their industries. Implied in this framework is that performance at time t is strongly correlated with performance at time $t+1$. Although this phenomenon may be an artifact of the nature of the simulation, the notion of first mover advantage (Makadok, 1998) suggests that the same pattern often is found among firms competing in higher stakes contexts. It would be interesting to explore team process variables, such as creativity and conflict, as mediating mechanisms between performances at different stages of a team's tenure.

Proposition 2a: Creativity at time $(t+1)$ mediates the relationship between performance at time (t) and performance at time $(t+2)$.

Proposition 2b: Task conflict at time $(t+1)$ mediates the relationship between performance at time (t) and performance at time $(t+2)$.

Previous team conflict research has shown that the complexity of teams' tasks may moderate the effects of team conflict on team outcomes (Jehn, 1995). In the present study, the level of perceived complexity of the weekly decisions may have begun to decrease as teams learned, and became more familiar with the nature of the game; each weekly decision round produced feedback on the effectiveness of the strategies enacted by the team in the previous week. This feedback loop suggests that team learning and adaptation (Van der Vegt & Bunderson, 2005) likely occurred with each subsequent decision round. Thus, the effects of team conflict on team creativity may have been affected by changes in task complexity as a result of adaptive team behavior.

Proposition 3: Over time, changes in task complexity will moderate the positive relationship between task conflict and team creativity; the relationship weakens as task complexity decreases.

Previous research examining the effects of team structure and processes on team performance using cross-sectional designs has acknowledged the possibility that the direction of causality may serve as an alternative explanation for significant findings. For example, a meta-analysis of the relationship between social network structure and team performance revealed that the network structure – team performance sequence had a stronger effect than the performance – network structure sequence (Balkundi & Harrison, 2006). Further, they found that team member familiarity weakened the performance – network structure relationship. The findings suggested that networks play an integral role in determining team performance whereas team performance comparatively has less of an effect on network structure—especially when team processes variables (e.g. familiarity) are considered. More research examining the effects that team performance may exert on team processes and team structural variables is needed. In the present study, team performance may have suppressed (Jehn & Bendersky, 2003) the effects of the team conflict—creativity relationship. Teams performing well in the beginning and middle stages of the Glo-Bus game may have deemed it unnecessary to engage in significant amounts of conflict, or creativity, to maintain their competitive position in the game. In contrast, teams performing poorly in the beginning and middle stages of the Glo-Bus game may have experienced reduced amounts of motivation and satisfaction, and were thus unwilling to exert the effort necessary to overcome their team’s performance deficits. Future research should examine the moderating effects of team performance in the early stages of team projects on team process models in later stages.

Proposition 4: Team performance at time (t) moderates the positive relationship between task conflict at time (t+1) and creativity at time (t+2); the relationship is weaker when time (t) performance is low.

Third, the study's results revealed multicollinearity problems between the various team conflict variables (Aiken & West, 1991). This was not entirely unexpected as the measures created were based on single network questions for task conflict and relationship conflict. Additionally, the high correlations between the psychometrically-based conflict variables (i.e. mean task and relationship conflict) and the network-based conflict variables appeared to exhibit the same phenomenon. Although the psychometrically-based conflict variables were not constructs of interest in the study, they were included as covariates to explore any additional variance explained by the network-based conflict variables (which were the constructs of interest in this study). Post hoc regression analyses conducted without the psychometric conflict variables revealed significant relationships between the number of weak task conflict ties teams possessed and team creativity. Additional analyses conducted leveraging team performance (measured as team stock price) as the dependent variable instead of team creativity also revealed significant relationships between weak task conflict ties and team performance. These analyses suggest that task conflict ties—in particular weak task conflict ties—may be useful for explaining variance in performance and creativity at multiple levels of analysis. For instance:

Proposition 5: The number of weak task conflict ties an individual possesses will be positively related to the individual's creativity.

Proposition 6: The number of weak task conflict ties a team possess will be positively related to the team's creativity.

Fourth, as the literature review of this study describes, moderate levels of task conflict have been shown to have stronger relationships with team outcomes than high or low levels of task conflict. As evidenced by several high correlations, the network-based concept explored in this study of task conflict ties (e.g. absent, weak, strong) may be closely associated with the

“levels” of task conflict (e.g. low, moderate, high) examined in previous research. This close association may explain why weak, as opposed to strong or absent task conflict ties, tended to predict team creativity and team performance (in post hoc analyses) in the absence of traditional measures of task conflict. The number of weak and strong task conflict ties in a team not only captures the level or frequency of task conflict in a team, but also allows for the identification of the number of conflict relationships possessed by each team member. In this way, the concept of conflict networks, and by extension task conflict ties, extends team conflict theory by explicitly capturing the extent of team member participation in decision making and problem solving *via* team members’ task focused disagreements with other members of the team.

Proposition 7: The number of conflict ties a team possesses will be positively related to the comprehensiveness of team decision making.

Fifth, although the present study explored team creativity as a dependent variable, team creativity may have been more effectively conceptualized and tested as a mediating mechanism between team conflict and team performance. Though mediation would not be found in the present study (the IV’s were not significantly related to the proposed mediator), future studies should explore creativity as an explanatory mechanism between team conflict and team performance. Much of the extant research on team conflict assumes that task and relationship conflict influences team performance by increasing or decreasing teams’ willingness and ability to generate novel and useful solutions to complex problems and decisions. However, much of this extant research suffers from model under specification, in that the mechanisms that explain the team conflict—performance relationship are often not captured in traditional research designs. To address concerns with model under specification, team creativity may be more appropriately positioned as a team process variable that explains the beneficial and detrimental

effects of team conflict on team performance. This will be an important next step for future research to explore more fully.

Proposition 8: Team creativity mediates the relationship between task conflict and team performance.

The information gathered from the informal interviews conducted at the completion of the study indicated that levels of interdependence in the study's teams may have suppressed some of the relationships between team conflict and team creativity. Interdependence refers to team members' degree of reliance on other team members for achieving beneficial outcomes (Hollingshead, 2001). Mutual dependence in interdependent teams is argued to increase the amount and intensity of interactions between the dependent members (Jehn, 1995). Increased reliance and interaction encourages team members to accept responsibility for the achievement of each other's outcomes (Kiggundu, 1983), to embrace the need to coordinate actions (Anderson & Williams, 1996), and to exhibit helping behaviors (Van der Veegt & Van de Vliert, 2005). Interdependence has been argued to amplify the effects of task and relationship conflicts (Jehn, 1995; Jehn & Bendersky, 2003). Among the most researched forms of interdependence are task and goal interdependence (Van der Veegt & Van de Vliert, 2002).

Task interdependence is the degree to which team members rely on each other for information, resources, and support to perform and fulfill their tasks (Van der Veegt, Van De Vliert, & Oosterhof, 2003). Jehn (1995) reported that task interdependence decreased the negative relationship between task conflict and individual's affective responses, but increased the negative effect of relationship conflict on individual outcomes. Further, Jehn (1995) reported that task interdependence increased the positive effect of task conflict on team performance. Jehn argued that task conflict is not only necessary in interdependent groups to effectively process

high levels of information, but that interdependence increases the amount and intensity of conflict. In interdependent teams, task conflicts benefit team performance through uncertainty reduction by helping members clarify roles, goals, and expectations (Jehn, 1995; Van de Ven & Ferry, 1980).

Likewise, cognitive interdependence is the extent that team members rely on one another to acquire, store, and make information available for use by other team members (Hollingshead, 2001). Teams are cognitively interdependent when members possess specialized expertise that is not held by other members. Conversely, teams that possess large amounts of expertise in common are considered to be low in cognitive interdependence. Cognitively *independent* teams have a diminished need to depend on others for information storage and retrieval. A potential limitation of cognitive interdependence is that mutual cognitive reliance encourages team members to focus on developing and maintaining expertise in one or a few knowledge areas at the expense of other areas of knowledge. This leads to a “silo-ing” effect in teams where members fail to attend to information that is outside of their area of expertise.

The concept of transactive memory systems (TMS) shares conceptual overlap with that of cognitive interdependence. TMS has been conceptualized as having three dimensions: specialization, credibility, and coordination. A team is considered to operate a TMS to the extent that the whole of a team’s expertise is differentiated and dispersed among team members (specialization), members trust that the expertise managed by others is reliable (credibility), and that the expertise is accessible when needed by others (coordination) (Lewis, 2003). The specialization aspect of TMS essentially captures how reliant team members are on each other for expertise and thus reflects the team’s level of cognitive interdependence. However, TMS credibility and coordination go a step further than merely capturing the team’s level of cognitive

interdependence by describing the level of cognitive trust among team members and the effectiveness of a team's use of its members' specialized expertise.

A TMS begins to develop as a team's members divide the responsibilities for remembering, processing, and retrieving information required for task performance. This cognitive division of labor results in team members developing specialized expertise in the different knowledge domains necessary for successful task completion. This distribution of specialized knowledge allows teams to collectively store and bring to bear larger amounts of information on complex team tasks than the team's members could additively (Lewis, 2003). To be effective, teams utilizing TMS must rely on one another to not only become experts in their assigned domains, but to also stay current on the location of expertise held by others. Knowing who is responsible for which certain areas of expertise allows team members to access and utilize expertise efficiently and effectively. Consistent with research on interdependence, mutual reliance on others for information storage and retrieval necessitates increased interaction among members employing TMS (Jehn, 1995).

Although composed of three subdimensions, empirical treatments of TMS have generally been conducted in a unidimensional manner—assuming that specialization, credibility, and coordination influence and are influenced by other factors equally. This assumption may be unnecessarily restrictive. Consider the subcomponents of TMS as predictors of team task conflict. Expertise specialization is thought to be associated with increased levels of task conflict, while expertise credibility and coordination could be argued to be associated with lower levels of task conflict. Members who overly trust the knowledge of other team members may fall prey to groupthink by failing to challenge others' perspectives. Teams whose members have few coordination problems are less likely to have task conflicts than teams with members who have

frequent coordination mishaps. Further, the unique impacts of the components of TMS on task conflict may be amplified by the amount of relationship conflict in the team. Because TMS was found to be strongly correlated with task conflict, relationship conflict, and team creativity in the present study, an interesting next step in this research program would be to explore the boundary conditions of the TMS construct by testing interactions between relationship conflict and the components of TMS and their influence on team creativity as mediated by task conflict. Similar tests could be conducted using team performance as the dependent variable.

Proposition 10: All three components of transactive memory (specialization, credibility, and coordination) contribute uniquely to predicting task conflict, but the nature of their contributions is different. Specifically,

- a. Of the three components, specialization will have the strongest relationship with task conflict. This relationship will be positive.*
- b. Credibility will be negatively related to task conflict.*
- c. Coordination will be negatively related to task conflict.*

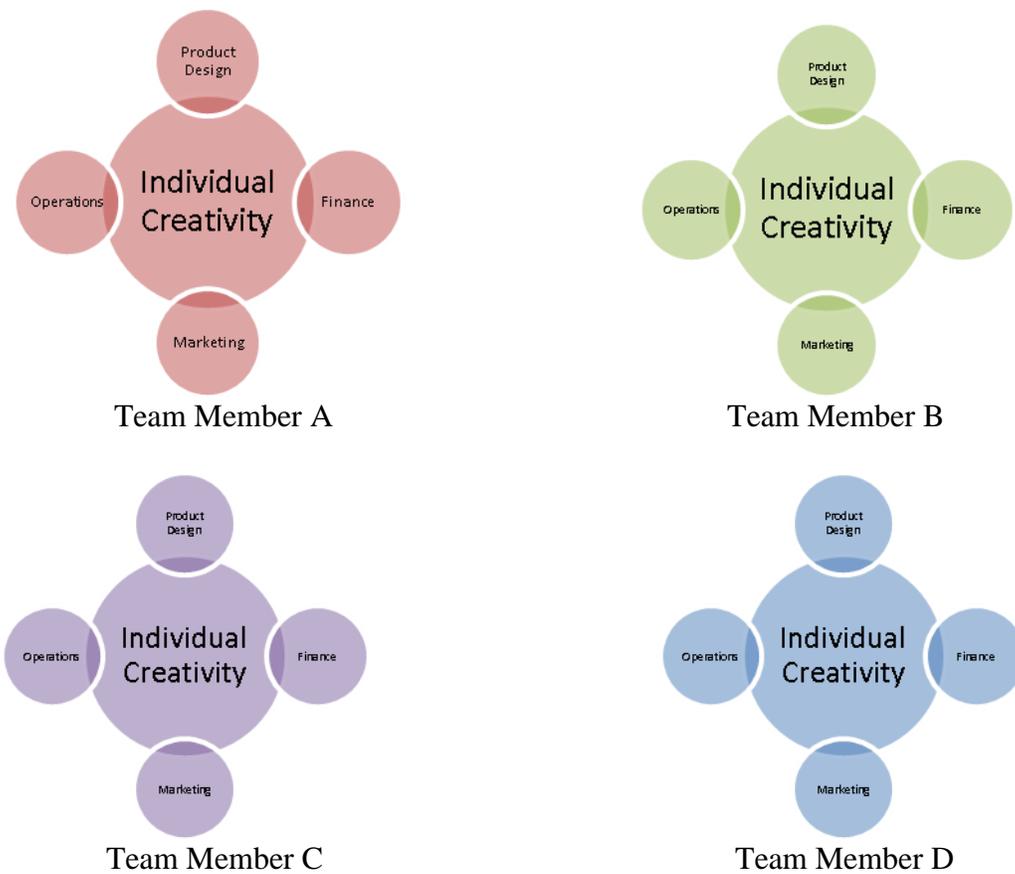
Proposition 11: Relationship conflict moderates the relationship between team creativity and each of the components of TMS: specialization, credibility, and coordination. These interactions will be mediated by task conflict.

Proposition 12: Relationship conflict moderates the relationship between team performance and each of the components of TMS: specialization, credibility, and coordination. These interactions will be mediated by task conflict.

Figures 2 and 3 are provided to illustrate the differences in teams with high and low levels of TMS specialization (i.e. cognitive interdependence). Consider a four-person team that must accomplish a task that requires information from four unique knowledge domains—product

design, marketing, finance, and operations. Figure 2 is a representation of a team with a low level of TMS specialization. All four members of this team have expertise in all four required domains for the task. The team in Figure 2 would be considered to have a low level of TMS specialization because no team member needs to rely on any other team member for domain expertise. Figure 3 represents a team in which each team member possesses unique, specialized knowledge in only one of the four knowledge domains required for successful task completion. This team would be considered as having a high level of TMS specialization and cognitive interdependence due to each team member's reliance on one another for expertise.

Figure 2
Locus of Creativity—Individual



As shown by these two illustrations, the social network perspective advocated in the present study also can be applied to the TMS concept. In distinguishing transactive memory from the mere uniformity of group members' individual cognitions (i.e. group mind, Wegner, 1987), Wegner describes a transactive memory system as “a social network of individual minds that transcends such uniform agreement.” (Wegner, 1987; p. 206). TMS has been compared to a computer network in which individuals, their expertise, and their perceptions of the location and quality of others' expertise are represented by nodes. The links between the nodes are represented by network ties, which act as conduits for the transmission of information between nodes for storage and future retrieval when needed. Information remains stored in the network's nodes and is made available only when needed by the team for task completion.

Figure 3
Locus of Creativity—Team



When considered through social network logic, the structural, relational, and cognitive dimensions of the transactive memory network take on heightened importance. The proportion of

ties present or absent between nodes (density) effects the capacity of the network to exchange and combine the teams' differentiated and distributed expertise. Since ties act as conduits for information transmission, the strength of the ties that connect each node determine the amount of information that can be passed effectively between nodes before cognitive overload or process losses occur. The level of symmetry in the ties that connect the nodes determines the quality and mutuality of information exchange between nodes. The type of tie (e.g. advice, task conflict) determines what type of resources (e.g. convergent information, divergent information) flow through the network's conduits.

Locus of creativity

Figures 2 and 3 illustrate the locus of creativity for teams. As discussed in Chapter 2 of this study, creative insights are generated at the intersections of unique bits of information brought together by information exchange and combination. This information exchange and combination may occur within the cognitions of a single individual (i.e. intra-individual) or through communications and interactions between individuals (i.e. inter-individual). Thus, team creativity involves the exchange and combination of divergent information between team members that produces novel and useful insights and ideas, (Amabile, 1983; Amabile et al., 1996) whereas individual creativity involves the synthesis of divergent information within a single team member.

Extant creativity research generally focuses on exchange and combination occurring at the intra-individual level of analysis or at the inter-individual (dyadic or group) level. However, less research has considered that creativity may occur both within and between individuals working in a group setting. There are several factors that are likely to determine the location of

team creativity such as the level of task and cognitive interdependence perceived by group members as well as the team's network structure.

Individual – (Figure 2) since each individual possesses knowledge of all four expertise domains, creativity may be equally likely to occur at the intra-individual level of analysis as at the inter-individual (e.g. dyadic, triadic or team) level.

Team – (Figure 3) in the high TMS condition in Figure 2, since each team member possesses unique knowledge that no other team member holds in common, creative insights are more likely to occur between team members rather than within one team member.

The preceding discussion suggests that relationships between a team's network structure and the level of cognitive interdependence (i.e. TMS) in the team is likely to affect the team's performance and creativity.

Extant research has suggested that TMS is beneficial for team performance because this structure increases teams' capacity to store and process information. Because a high level of TMS allows individual team members to focus on a limited number of knowledge domains, the team as a whole is able to develop a greater depth and breadth of understanding in multiple areas of expertise. When each of a team's members is able to develop this greater level of understanding in their assigned knowledge domains, the team as a whole has an increased potential to achieve high levels of performance on complex tasks. The potential for high levels of team performance in high TMS teams is contingent on team members' willingness and ability to retrieve information from memory and to exchange it when needed by others.

In teams with low levels of TMS, team members tend to share a relatively large amount of expertise in common. High levels of overlapping expertise can be beneficial for teams by

making them more resistant to disruptions and process losses caused by the unavailability of any one team member's expertise. Low TMS teams have a reduced need for interaction and communication between team members since each team member shares the same expertise. High levels of communication in low TMS teams may lead to redundant knowledge exchanges and inefficient information processing. Thus, low TMS teams are less likely to derive benefit from numerous task conflict ties between team members.

Shared Space

The dependence on knowledge availability and exchange highlights the transactive nature of TMS. In teams with high levels of TMS, the distribution and differentiation of team knowledge among team members requires that this knowledge be made available for exchange and combination in the shared space between team members. The team's shared space includes the elements of the team's network that exist between team members such as the communication ties that connect team members and the information resources that are exchanged and combined through those communication ties. Communication ties between team members serve as conduits for the movement of specialized expertise from team member to team member. Shared space can be thought of as the team's public domain. During group discussions, team members formulate opinions concerning the viability of certain alternatives in comparison to others. The member may choose to keep his/her preferences private by not sharing it with any other team member. Unshared information remains in the individual's unshared space. However, once the individual communicates his/her preference with other team members during group discussion, the information enters the team's shared space. Only shared information is available for scrutiny and consumption by other team members. Information that is not transferred from an individual's unshared space into the team's shared space via interpersonal communication is unavailable for

decomposition and refinement by the group's members. In this way, unshared information constrains team level creativity.

In contrast to a team's shared space, the unshared space refers to the private domain of team members' individual cognitions. Personal unshared thoughts and ideas reside in an individual's private unshared space until such a time as the individual makes the information available for vetting by others. Unshared information may lead to creativity, but only at the intra-individual level. Individual creativity requires novel associations to be made within an individual's private, unshared space, whereas team creativity requires novel associations to occur in the team's public, shared space.

TMS, Task Interdependence, and the Locus of Creativity

The juxtaposition of individual and team creativity, unshared and shared space, suggests that a likely location exists for creative thinking and information processing based on the levels of task interdependence and TMS in a team. Creativity is constrained by the availability of diverse information. In low TMS groups, creative thinking (i.e. convergent and divergent thinking) can occur efficiently at the individual level since each team member maintains expertise in multiple knowledge domains (intra-individual level). However, in high TMS groups, creative thinking is more likely to occur in the shared space between team members, since team members maintain expertise in a limited number of (often only 1) knowledge domains. Thus, creativity is more likely to be exhibited at the individual level when TMS is low, but at the team level when TMS is high. Thus the following:

Proposition 13: In high TMS teams, the positive relationship between TMS and team creativity will be stronger than the positive relationship between TMS and individual creativity. However, in low TMS teams, the positive relationship between TMS and team

creativity will be weaker than the positive relationship between TMS and individual creativity.

High levels of task interdependence force team members to interact and make considerable use of their shared space to complete their tasks. Teams with members who bring distributed and differentiated expertise to the shared space are more likely to discover novel associations than teams with members who bring redundant perspectives. Thus, high TMS teams that are also highly task interdependent are likely to experience high levels of team creativity.

Individuals working in teams with low levels of task interdependence are not structured to interact frequently with each other and thus accomplish their task work primarily in their unshared spaces. Making novel associations in the unshared space requires that individuals possess specialized expertise in multiple knowledge domains. Thus, in high TMS teams where team members possess specialized expertise in only a limited number of areas, members would find creative activities difficult if they worked primarily in their unshared spaces as is customary in teams with low levels of task interdependence.

Teams with members that maintain overlapping areas of expertise (low TMS) are less likely to benefit from the high levels of shared space usage that highly task interdependence teams utilize since their members' ideas and perspectives are likely to be redundant. Redundant information sharing is unproductive by causing frustration, unnecessary conflicts, and wastes of time. Low TMS teams are more likely to derive creative benefits from low task interdependent structures whereby team members can make novel associations within their own unshared spaces.

The preceding suggests a contingency exists between task interdependence, TMS, and creativity. Combining the previous arguments for weak task conflict and creativity with this discussion suggests the following:

Proposition 14: For teams working under incongruent low-high or high-low combinations of task interdependence and TMS, there is a negative relationship between weak task conflict ties and team performance. For teams working under congruent low-low or high-high combinations of task interdependence and TMS, there is a positive relationship between weak task conflict ties and team performance.

Proposition 15: Creativity mediates the relationship between the interactive effects of weak task conflict ties, task interdependence, and TMS on team performance.

Sharing of common vs unshared information

Research on group decision making has found that group members tend to offer information and preferences that are commonly shared by other group members at a much higher rate than information and preferences which are unshared by others (Stasser & Titus, 1985). Exposure to debate and dissent has been argued to prompt individuals to share uncommon and previously unshared information (Schulz-Hardt, Brodebeck, Mojzisch, Kerschreiter, & Frey, 2006).

The tendency to discuss commonly held information rather than unshared information is especially problematic for teams with high levels of TMS. High TMS teams need to engage in optimal levels of communication, such as task conflict and advice exchange, to ensure that unshared decision preferences and problem solutions are transferred to the teams' shared space for proper vetting and consideration. Failure to make unshared information available for group discussion potentially limits the decomposition and refinement of divergent ideas, thereby

limiting team creativity. Psychological safety has been proposed as a factor that influences the amount and effectiveness of intragroup communication.

Psychological safety

Team psychological safety is a shared belief that the team environment is safe for interpersonal risk taking (Edmonson 1999). It describes an environment characterized by interpersonal trust and mutual respect in which team members are comfortable offering dissenting viewpoints, ideas, and opinions. Research has shown that optimal team performance occurs when organizations create positive, non-threatening environments characterized by trust, and mutual respect and where the free exchange of ideas is welcomed and encouraged (Edmonson 1999). Edmonson (1999) found that psychological safety was positively related to team learning behaviors such as feedback seeking, information sharing, asking for help, and talking about errors. Jehn and Mannix (2001) found that high performing teams were associated with positive group atmospheres—team environments characterized by high levels of interpersonal trust and respect, open discussion norms, and low levels of competition. The study by Jehn and Mannix (2001) also found that positive group atmospheres fostered low levels of relationship conflict and moderate levels of task conflict for teams that performed well. Collectively, these studies show that the environments in which teams operate impose significant impacts on the processes that impact team outcomes. Team members who believe that sanctions accompany those who dissent with the majority of the team may be less likely to engage in task conflict. Teams operating with high levels of TMS may engage in high levels of task conflict only when the team's members feel safe to do so. If the risks associated with offering dissenting viewpoints are too high, high TMS teams may not reap the desired benefits associated with their diverse expertise. Members embroiled in task conflicts while perceiving low levels of

psychological safety may be more likely to distrust the motives behind the disagreements. Distrust is likely to lead to a decrease in motivation to engage in coordinated memory functioning. When psychological safety is high, team members are more likely to give deeper and fairer consideration of dissenters' perspectives. This results in greater accuracy and understanding concerning the uniqueness of others' ideas and expertise. Increased appreciation and understanding may engender a heightened commitment to patience and cooperation among team members and thereby facilitate the growth and development of transactive memory. Thus, the following:

Proposition 16: Psychological safety moderates the positive relationship between task conflict and TMS; the relationship is stronger when psychological safety is high.

Weak task conflict ties versus Advice ties

Earlier in this study I discussed the role that different types of ties play as conduits for the transmission of different forms of resources. This discussion laid the groundwork for conceptualizing task conflict ties as conduits for the transmission of divergent rather than convergent information. Divergent information tends to produce divergent thinking whereby information is subjected to a process of deconstruction and decomposition. In contrast to divergent information, complementary information tends to produce convergent thinking. Convergent thinking involves the combination and integration of divergent ideas and information (Shalley & Perry-Smith, 2008). These dual processes of divergent and convergent thinking are the necessary drivers of the exchange and combination mechanisms argued to generate creative outputs. Creativity is likely dependent on optimal configurations of these processes.

Earlier I argued that task conflict ties provide connectivity between team members that allow for the emergence of divergent information exchange and thinking—too much divergence

results in the exhaustion of cognitive and time-related resources; too little divergence limits the generation of disparate perspectives. Moderate as opposed to high or low levels of task conflict ties allow teams to strike a balance between divergence and convergence. However, the role of ties that provide the complementary function of convergence to that of divergence was not specified in this study. Advice ties may be that complement.

In contrast to task conflict ties, advice ties act as conduits for the transmission of convergent rather than divergent information. Research on biased-information seeking suggests that individuals tend to search for and prefer information that is consistent with one's own preferences (Schulz-Hardt, Jochims, & Frey, 2002). Information that disconfirms one's opinions or preferences is likely to produce negative affective reactions from the information seeker. Thus, to avoid the discomfort associated with disconfirming information, individuals are likely to seek information that complements and confirms one's own preconceived notions. Although biased information-seeking may lead to detrimental group consequences such as premature consensus and groupthink (Janis, 1982), it also may be beneficial to teams working under extreme time constraints, increasing the speed with which decisions are made and implemented (Schulz-Hardt et al., 2002). Oftentimes, teams reach rapid consensus on decisions and problems by quickly gathering and identifying similarities in members' preferences and selecting alternatives based on the highest level of group agreement. In this way, information-seeking promotes convergent thinking by identifying complementary information and member preferences suggestive of agreement.

Sociocognitive ties

The preceding discussion suggests that creativity is driven by convergent and divergent cognitive and communicative processes. By prompting team members to give deeper

consideration of information under deliberation, task conflict ties provide the needed stimulation for teams to deconstruct, refine, and generate divergent bits of information. Advice ties allow these divergent bits of information to be combined into new associations suggestive of novel and useful strategies and solutions. Thus, the more a team's members are connected by advice seeking and task conflict ties, the higher the capacity of the team for creative decision making and problem solving. I refer to a relationship containing both an advice and a task conflict tie as a sociocognitive tie.

Sociocognitive ties are multiplex in nature; that is they refer to exchange relationships in which an individual shares both an advice sharing relationship as well as a task conflict relationship with another (Oh et al., 2006). The term sociocognitive refers to the sharing of information and information processing between team members (Shalley & Perry-Smith, 2008). A sociocognitive tie denotes a richer problem solving and decision making relationship than either task conflict or advice sharing ties alone. A sociocognitive tie encompasses both convergent and divergent communication and cognitive processes. Individuals who possess sociocognitive ties are better equipped to accurately assess the location, quality, and reliability of the expertise and information possessed by their exchange partners (Shalley & Perry-Smith, 2008). Sociocognitive ties are more likely than either advice or task conflict ties separately to generate novel and useful information that ultimately leads to higher levels of performance and creativity. Thus the following:

Proposition 17: Controlling for the number of task conflict ties and advice sharing ties a team possesses, the number of sociocognitive ties (both advice and task conflict) a team possess will be positively related to team creativity.

Extending this line of thinking to the individual level suggests:

Proposition 18: Controlling for the number of task conflict ties and advice sharing ties an individual possesses, the number of sociocognitive ties an individual possesses will be positively related to the individual's creativity.

Limitations

Leaderless teams

The research design of the dissertation employs leaderless teams. However, organizations are composed of teams having no leader, a distinct formal leader, or multiple leaders. In all of these teams, it is possible that an informal leader or leaders emerge to help coordinate team taskwork, resolve conflicts, and to ensure their teams achieve their desired goals (Oh et al., 2006). What factors cause leaders to emerge in leaderless teams? It is possible that the level of task and relationship conflict in a team could influence and be influenced by the presence of informal leaders. Also, the stage at which leadership emerges (i.e. early, middle, late) may have an effect on team processes and team performance outcomes. For example, Jehn and Mannix (2001) argued that the middle stage of a team project was critical in determining team performance because the high performing teams in their study may have had leaders who promoted constructive debate while minimizing relationship differences at the midpoint. Teams that lack a distinct leader, especially in the early and middle phases of team interaction, may suffer from destructive forms of conflict and subsequently poor team performance. What are the consequences for team performance when a team's distinct leader is involved in numerous relationship and/or task conflicts? Future research should examine performance differences between teams with formal and emergent leaders, their interaction with task and relationship conflict, and the stage(s) at which this leadership is most influential.

Proposition 19: The presence of a distinct leader will be positively related to team performance. Task and relationship conflict mediate this relationship.

Proposition 20: The presence of a distinct leader has a greater effect on team performance during the middle stage than in the early or late stage of team interaction.

Proposition 21: The number of relationship conflicts involving a team's distinct leader will be negatively related to the team's performance.

Proposition 22: The number of task conflicts involving a team's distinct leader will be positively related to the team's performance.

Many measures of social network characteristics, such as the measure for density used in this study, are sensitive to network size. Although the effects of size were essentially controlled by using all 4-person teams, future team-based network research should capture teams of varying sizes. Use of larger teams (10 members or more) would help to draw stronger inferences concerning the effects of network density on team creativity and performance. Though a concern for organizationally-based studies of traditional workteams, samples of smaller sized teams are beneficial for making inferences concerning the interpersonal dynamics of entrepreneurial teams. Entrepreneurship researchers have acknowledged that new ventures are generally launched and managed by small groups of people. Thus, although a limitation for traditional organizational behavior research, small group research in entrepreneurial contexts may be considered a strength. Future field research exploring the decision-making processes of new venture top management teams will need to address any potential limitations associated with small sized teams.

Although the study's use of single-item measures to capture task and relationship conflict networks could raise questions concerning the reliability of the data, single-item measures are an accepted practice in social network research (Marsden, 1990). Another limitation of the study is

the potential for common method bias as responses for the independent and dependent variables were taken from the same respondents. Future research employing teams in natural contexts could use external evaluations of teams' creative outputs to capture the dependent variable (e.g. team creativity or performance). For example, business plan and business idea competitions frequently utilize diverse, expert panels of judges to rate the uniqueness and feasibility of new venture teams' business plans and ideas. The application process for many business incubation programs requires applicants to submit a formal business plan. Perceptions of the feasibility of an applicant's business plan determine whether new ventures are accepted into the program. In formal organizations, supervisor evaluations of their team's creativity could be combined with customer evaluations of the uniqueness and appropriateness of the solutions provided by those teams to produce a team outcome measure. Such measures could add reliability to future creativity studies.

An apparent limitation of this dissertation involves the use of a student sample. Although the use of students with relatively limited work experience limits the generalizability and interpretations of the study, the nature of the respondents' tasks was designed to simulate the strategy-making process utilized by teams in their natural contexts. In the next section, I propose a future research design that would overcome this limitation and allow for the test of some of the propositions outlined in this study.

Future Design

To test some of the propositions detailed above, I propose a longitudinal sample comprised of top management teams of early stage new ventures. I choose to focus on teams in the early stages of new ventures because the patterns of conflict and coordination are likely very rich and have yet to become routinized. Structural and process aspects of teams are likely to be

under development and highly sensitive to changes in the makeup of the group. Team member additions and exits may help shed light on the advantages and vulnerabilities of certain structural and process configurations in nascent ventures as well as the boundary conditions of the relationships between TMS, conflict, creativity, and performance.

The sample of new venture teams will be taken from a business incubator in the southeastern United States. A business incubator is a program designed to spur economic growth by offering reduced rent, networking, mentoring, and training to the operators of new ventures. The business incubator under consideration is a public-private partnership of the city government, university, and the business community of a major metropolitan city. The incubator program currently consists of approximately 60 ventures and receives approximately 90-100 new applications for the program each year. The program typically graduates 10 ventures and accepts 10 new ventures each year.

Surveys will be distributed via email semi-annually to the key contacts of each current, former, and potential venture participant. To maximize response rate, a cover letter endorsing the study and encouraging participation will be requested from the chief operating officer of the incubator. The researcher will conduct follow-up calls and in person visits with current program participants to secure their participation in the study. Respondents will be promised an executive summary of the findings in exchange for their continued participation over the multiple rounds of data collection. Other business incubators will be contacted in an effort to increase the sample size and representativeness of the study.

Conclusion

The present study contributes to the literatures on team conflict, social capital and team creativity by providing a competing treatment of conflict and creativity. The study's elucidation of the structural, relational, and cognitive dimensions of conflict offers an additional set of tools

for conflict and social capital researchers to employ. The study joins the ranks of previous research that challenges the validity and reliability of the traditional team conflict paradigm. Although traditional psychometrically-constructed measures of team conflict have shown to deliver unreliable effects on team outcomes such as creativity, usage of these measures persist. The social capital approach was argued to provide a more appropriate framing and a more precise test of the theoretical justifications supporting the team conflict – team creativity relationship than the conventional approach. The social capital perspective was found to be insignificantly related to creativity whereas the traditional perspective was significantly related to creativity. It would be tempting to impose closure on this debate by summarily dismissing the social capital perspective as being inferior to the conventional approach. However, such a position would be premature. The discrepancy in support for the two approaches demands explanation that can only be provided by additional research comparing and contrasting the two approaches. It is possible that the traditional aggregation of individuals' perceptions of how much conflict occurred in their groups does not capture interpersonal conflict at all (as theorized), but actually captures some other perceptual phenomena related to the climate, culture, environment, or atmosphere of group conflict. Further, it's arguable that the structural, relational, and cognitive aspects of conflict capture the essentially dyadic nature of interpersonal conflict (Marineau & Labianca, 2010).

Perhaps the conventional approach has led researchers to prescribe vague remedies to managers concerning the promotion of “constructive controversy.” Currently, managers are advised that “too little” and “too much” task conflict is harmful and that all relationship conflict should be avoided. However, these current prescriptions are unable to advise managers which of their teams' members should be involved in which types of conflict to deliver optimal team

performance. The notions of minority dissent and devil's advocacy come close to capturing the arguments advanced by the social capital perspective. However, minority dissent and devil's advocacy come short of detailing the optimal number, frequency, and strength of conflict relationships that deliver high performance. This study provides the beginnings of a research program that aims to provide this much needed conceptual and empirical clarity.

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Appendix A

Scale Items

TRANSACTIVE MEMORY SCALE ITEMS (Lewis, 2003)

Specialization	<ol style="list-style-type: none">1. Each team member has specialized knowledge of some aspect of our project.2. I have knowledge about an aspect of the project that no other team member has.3. Different team members are responsible for expertise in different areas.4. The specialized knowledge of several different team members is needed to complete the project deliverables.5. I know which team members have expertise in specific areas.
Credibility	<ol style="list-style-type: none">1. I am comfortable accepting procedural suggestions from other team members.2. I trust that other members' knowledge about the project is credible.3. I am confident relying on the information that other team members bring to the discussion.4. When other members give information, I want to double-check it for myself.5. I do not have much faith in other members' "expertise".
Coordination	<ol style="list-style-type: none">1. Our team works together in a well-coordinated fashion.2. Our team has very few misunderstandings about what to do.3. Our team needs to back track and start over a lot.4. We accomplish tasks smoothly and efficiently.5. There is a lot of confusion about how we should accomplish tasks.

INTRAGROUP CONFLICT SCALE ITEMS (Jehn, 1995)

Relationship Conflict	<ol style="list-style-type: none">1. There is relationship tension in your team.2. People get angry while working in your team.3. There is emotional conflict in your team.
Task Conflict	<ol style="list-style-type: none">1. There is conflict of ideas in your team.2. There are disagreements within your team about the project you are working on.3. People in your team have conflicting opinions about the project you are working on.
