Winter 3-22-2013

A Comprehensive Model Of The Intragroup Work Conflict Framework: Examining Substantive Conflict, Information Exchange, Task And Relationship Conflict, and Conflict Management in Relation to Performance Effectiveness

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A Dissertation

Presented in

Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

BY

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FEBRUARY, 2013

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ACKNOWLEDGMENTS

I would like to recognize my appreciation of DePaul University for providing the financial assistance to sponsor this project through the College of Science and Health Graduate Research Funding Program. I thank my advisor Alice Stuhlmacher for her guidance and timely communication throughout, as well as departmental readers, Suzanne Bell, Yan Li, and outside readers, Kay Yoon and Charles Naquin. Lastly, I express gratitude to all participating instructors and students, as their cooperation during recruitment made this study possible.

VITA

The author was born in Dearborn, Michigan, on December 19, 1982. He graduated from Divine Child High School in 2001. He received his Bachelor of Arts degree from the University of Michigan–Dearborn in 2006, graduated with Honors and with Highest Distinction, and was named Honor Scholar of the Year in the discipline of Psychology. He received his Master of Arts degree in Industrial and Organizational Psychology from DePaul University in 2009.

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CHAPTER I

INTRODUCTION

As members of an organization, workers must fulfill performance obligations, often of a decision making, problem solving, or project completion nature. In doing so, workers will encounter positions that are in agreement or disagreement with one's own perspectives on how to approach work, or with regard to various other aspects of life. To illustrate work-related discord, medical professionals may not always agree on what is the best course of treatment for a patient. A team of lawyers may disagree over court settlement demands. Politicians may disagree about fiscal policy matters. Top executives may disagree over whether or not to engage in downsizing strategies. Controversies, or conflicts, such as these are inevitable and unavoidable in the context of the workplace, and as illustrated, are often centered on work-related activities. As result, the study of conflict in the workplace has garnered considerable attention from theorists, researchers, and practitioners alike, cementing it as a major topic of interest within the realm of applied psychological and management studies, with a considerable number of scientific journals contributing to the advancement of knowledge thereof.

The phenomenon of conflict in the workplace has intrigued researchers for some time. Originally thought of as detrimental to organizational outcomes (e.g., Brett, 1984; Schmidt & Kochan, 1972), conflict researchers later proposed that under certain conditions conflict may be beneficial if focused on work tasks and not interpersonal relations (e.g., Amason, 1996; Rahim, 2000). Despite repeated

testing there has been mixed support at best for the notion that conflict is beneficial, as the majority of accumulated evidence suggests conflict is mostly detrimental to organizational outcomes, except when present among a set of very narrow conditions (De Dreu, 2006). Given this current outlook on organizational conflict, I attempt to further investigate how conflict operates in a team setting by examining conflict more closely in an input-mediator-output-input (I-M-O-I) framework (Ilgen, Hollenbeck, Johnson, & Jundt, 2005). In doing so, I attempt to offer clarification to the misconception that the *emergent state* of conflict is particularly beneficial. Instead, I propose that effective information exchange and conflict management *processes*, not the existence of conflict *per se*, are most critical to organizational outcomes. A model is proposed to empirically test hypothesized associations within the conflict framework with consideration to meaningful organizational outcomes, including creativity, innovation, and group problem solving effectiveness.

Conflict in Team Settings

In the face of competition and technological challenges, many organizations have turned to work teams as an approach to resolving employee motivation issues and achieving organizational productivity goals (Peters, 1988; Tornatsky, 1986). As result, group decision making in the workplace has proliferated and has become critical to organizational performance, as teams are often able to accomplish tasks and meet challenges above and beyond the ability of individual working independently (Hackman, 1998). Hackman's (1987) four part definition classifies a work group as being (a) an entity comprised of more

than two members (b) that is an intact social system with boundaries (c) whereby members recognize themselves and are recognized by others as a group, and (d) operates within an organization. In the context of work, the terms *team* and *group* are often used interchangeably throughout psychological literature. While some consider there to be no real difference between them (e.g., Guzzo, 1995), others distinguish between the two terms, suggesting that the work team connotes more coordination between members engaged in task accomplishment. Thus, when compared vis-à-vis, teams are thought of as being more interdependent than groups, as groups may be comprised of members working in proximity albeit disjunctively and not necessarily with a collective effort toward a shared outcome (Tannenbaum, Beard, & Salas, 1992). However, some, like Guzzo and Dickson (1996), use the term *work group* to be inclusive when describing individuals who see themselves and are recognized as a social entity, perform interdependent tasks, and are embedded in some larger social system. While this distinction is often drawn, it is not uncommon to discuss teams, groups, or both in the same context, without differentiating between them. For simplicity sake, the terms *team* and *group* will be used interchangeably henceforth, with acknowledgement that the distinction is sometimes but not always recognized throughout the literature.

Due to the complexities and interdependencies of organizational life, conflict is becoming increasingly common in the workplace (Aldrich, 1971; Cosier & Schwenk, 1990; Jehn 1995). At present, conflict may be more pressing than ever before as employees increasingly deal with greater work demands, job insecurity, role conflict, misunderstandings, and related grievances (De Dreu &

Gelfand, 2008). Humans in an organizational structure have an inherent tension between personal autonomy and the goals and objectives of the organization as well as those of other coexisting individuals (Pondy, 1967). In most cases, workers are assigned placement within organizational hierarchies where they are exposed to differences in power, authority, rewards, and decision making capabilities (Jaffee, 2001). Manifestations of conflict can exist at various levels *within* an organization, including between individuals (i.e., interindividual conflict), both between and within groups (i.e., intergroup and intragroup conflict, respectively), in addition to existing *between* organizations (i.e., interorganizational conflict) as well as occurring at local or even international levels (see De Dreu & Gelfand, 2008). In the context of work teams, members must coexist in a setting in which members are interdependent and engage in social interactions. Inevitably, conflict can emerge as result of differing interests, values, or ideas, which may present a challenge to harmonious interpersonal dynamics. As result, teams are faced with the challenge of remaining productive despite that conflict may be present amongst group members.

As a construct, conflict is an oft studied social phenomenon that has been of interest to research and practitioners alike due to its wide-spread prevalence and connectedness with critical organizational and individual outcomes. In their description of organizational psychology, Katz and Kahn (1978) suggest that "every aspect of organizational life that creates order and coordination of effort must overcome tendencies to action, and in that fact lies the potential for conflict" (p. 617). As a testament to the pervasiveness of conflict, Thomas and Schmidt

(1976) estimate that management spends about one fifth of their time dealing with conflict in the workplace. Additionally, estimates suggest that a vast majority of American employees (i.e., 85%) report experiencing some amount of workplace conflict, with 29% describing occurrences as either frequent or constant (Hayes, 2008). According to Spector and Bruk-Lee (2008), organizational conflict is a leading source of stress for employees across cultures, age groups, and occupations. With increased pressures to adapt to changing environments—including globalized economies—an increasingly diverse workforce, the decrease in rich face-to-face communication resulting from Internet-based interactions, and with the increased tendency to work in teams, the potential for conflict has only increased (De Dreu & Gelfand, 2008). The implications of conflict are certainly evident, as Chen and Spector (1992) found interpersonal conflict to be significantly predictive of turnover intentions across many occupations (r = .39), with this correlation being strongest amongst a set of different job strains (Spector & Jex, 1998). Recently, Ma (2007) labeled the emergence of conflict management as, "a major sub-field of organizational behavior" (p. 3). Indeed, the phenomenon of conflict has become a focal topic within the realm of organizational research, becoming increasingly popular in recent times.

The phenomenon of conflict has been described as incompatibility between individuals (e.g., coworkers) or entities (e.g., rival companies) whereby the actions of one are perceived to interfere with, hinder, or prevent the desired actions of another, resulting in tension (Deutsch, 1973; Thomas, 1992; Wall & Callister, 1995). The causes of conflict may stem from real or perceived

differences in individual characteristics (e.g., personality, values, goals, commitment to positions, stress, anger, or desire for autonomy), or a multitude of interpersonal factors, including perceptual interface (e.g., distrust of others, misunderstanding, competition, perceptions of threats), communications (e.g., distortions, hostility, dislikes, insults), behaviors (low interactions, power struggles, impeding goals, reductions in others' outcomes), structure (e.g., proximity, power imbalances, creation of interdependence, status differences, preferential treatment, interdependencies), previous interactions (e.g., past failures to reach agreement, previous episodes of conflict), or the nature of the conflict issue(s) (e.g., complex vs. simple, multiple vs. few, vague vs. clear, size, principled; see Wall & Callister, 1995). Not surprisingly, early conflict literature framed conflict as counterproductive, as something to be avoided if at all possible. At the time, researchers suggested conflict exerted a harmful effect on organizational functioning by impeding information gathering and decision making processes among members of a team (Argyris, 1976; Pondy, 1967). With conflict present, there would be detractions from both time and cognitive resources devoted to task completion, with teammates becoming preoccupied instead with resolving intragroup conflicts, thus detracting from the optimal completion of group objectives (Coser, 1956; Deutsch, 1969; Evan, 1965). Resulting tensions and negative cognitive appraisals accompanying such distractions were thought to reduce satisfaction among members, a view still supported by many in the field (see De Dreu & Weingart, 2003). Empirically, the perspective that conflict is detrimental to organizational outcomes (e.g., team

productivity and satisfaction) has received considerable support over time (Gladstein, 1984; Saavedra, Earley, & Van Dyne, 1993; Wall & Nolan, 1986). Prior to 1990, with the vast majority of conflict theorists viewing conflict negatively (Jehn & Bendersky, 2003), early efforts concentrated on determining the causes of conflict and finding ways to reduce or manage its negative impact (e.g., Brett, 1984; Schmidt & Kochan, 1972). The prevailing sentiment was to suppress or eliminate as much conflict from the workplace as was possible.

Notwithstanding, despite the apparent costs of conflict, another more recent perspective suggests that conflict, if effectively managed, may have benefits that would otherwise not come to fruition. Some evidence highlights that when conflict over work objectives is present, both individuals and groups have been found to make better quality decisions than in the absence of conflict (Baron, 1991; Fiol, 1994; Janssen, Van de Vliert, & Veenstra, 1999; Jehn & Chatman 2000; Putnam, 1994; Schweiger, Sandberg, & Ragin, 1986; Schweiger, Sandberg, & Rechner, 1989). Additionally, conflict has been found to facilitate group acceptance of decisions, with some research suggesting that work-related conflict can result in increased satisfaction with group decisions as well as a desire to stay in the group, as members are likely to have been able to voice opinions during group deliberations (Amason, 1996; Hoffman & Maier, 1961; Korsgaard, Schweiger, & Sapienza, 1995). Tjosvold (1991) suggested that conflict can be a manifestation of the right to individual dissent and self-expression, contributing positively toward organizational effectiveness. Additionally, Tjosvold argues that conflict enlightens individuals engaged in problem solving, allowing members to

better identify problems correctly, offer more solutions to problems and become more accepting of them, and fostering a sense of justice and fairness among group members. Collectively, with conflicting reports on the benefits and detriments of organizational conflict, researchers were faced with the challenge of better understanding situations in which conflict might be helpful or destructive, and the factors that contribute to the positive or negative effects on group outcomes.

Tripartite Conflict Typology

Ensuing from the suggestion that the repercussions of group conflict can be both positive and negative, a shift in attention took place following the seminal works of Jehn (1994, 1995, 1997a). These works by Jehn explicitly differentiated between different manifestations of conflict, as others had done previously (albeit using inconsistent terminologies; e.g., Cosier & Rose, 1977; Guetzkow & Gyr, 1954; Pinkley, 1990; Priem & Price, 1991; Wall & Nolan, 1986). In addition, this framework was used to develop theoretical predictions and empirical examinations of conflict associations with various organizational and individual outcomes. Although historically conflict has been described and conceptualized in many different ways (e.g., Coser, 1956; Guetzkow & Gyr, 1954; Pinkley, 1990), Jehn's research led to the emergence of a consistently used conflict typology, which at present is the most predominant typology used throughout the conflict literature. This view of conflict suggests that the construct is multidimensional in nature, in which scholars distinguish between *task conflict*, *relationship conflict*, and a third (more recently proposed and somewhat rudimentary in theoretical development) form of conflict, namely *process conflict* (Jehn & Bendersky,

2003). Jehn's tripartite conflict typology has proven useful to researchers; examining conflict as distinct subdimensions has improved the specificity and precision of predictions relating to conflict with respect to group outcomes.

Task conflict. *Task conflict* (sometimes called substantive conflict, cognitive conflict, content conflict, and realistic conflict) is characterized by perceived disagreement among group members regarding decisions, viewpoints, ideas, and work-related opinions (Jehn & Bendersky, 2003; Simons & Peterson, 2000). Conflict of this nature might be perceived as work conflict, work disagreement, or task disagreement, noting that the focal point of the conflict centers on the work tasks at hand (Jehn, 1997a, 1997b). Examples of task conflict are disagreements over the distribution of resources, procedures and policies, judgments, and interpretation of facts (De Dreu & Weingart, 2003). For example, task conflict characterizes a disagreement among design team members over ideal floor plan arrangements of a hotel lobby, as this constitutes conflict over the actual work that is being done. Task conflict can be facilitated by elements of an organization's structure, including factors such as dissimilar areas of content expertise (e.g., line versus staff), worker interdependencies, competition over resources, competing goals, objection to authoritative power, status inconsistencies, and uncertainty over employee jurisdiction (Nelson & Quick, 2005). Pelled (1996) advises that although task conflict relates to group tasks, an ensuing cost may be impaired interactions between individuals, albeit potentially with some benefits to group idea-generation.

Relationship conflict. *Relationship conflict* (sometimes called affective conflict, socio-emotional conflict, and interpersonal conflict) is characterized by perceptions of interpersonal incompatibilities among group members, which often results in animosity, tension, and annoyance among members (Damon & Butera, 2007; Guetzkow & Gyr, 1954; Jehn & Bendersky, 2003; Priem & Price, 1991; Simons & Peterson, 2000). This type of conflict centers on nontask-related issues, such as differences of values, opinions, personal taste, political preferences, and interpersonal styles (De Dreu & Weingart, 2003). An example of relationship conflict might be heated disagreement among coworkers regarding political ideologies, which would otherwise be unrelated to their work. Workers generally experience a negative state of psychological arousal as result of relationship conflict, often leading to frustration, uneasiness, and dislike of individuals with whom they are in conflict (Walton & Dutton, 1969). Reactions to relationship conflict typically include a desire for physical or psychological withdrawal from the unpleasant situation (Ross, 1989). Relationship conflict may be perpetuated by skills and ability variation among group members, barriers to communication, and cultural dissimilarities, and may be further exacerbated by one's emotions or mood at a given time (Nelson & Quick, 2005).

Process conflict. *Process conflict* is a type of conflict that researchers have considered more recently. Originally included as part of task conflict, researchers have begun to distinguish process conflict as perceived conflict regarding logistical and delegation issues related to accomplishing work objectives (Jehn, 1997a). As opposed to relationship or task disagreements, process conflict

consists of the management or control of how work will get done. An example of process conflict would be a disagreement among police officers as to how patrol duty and desk work assignments should be made. Jehn, Bezrukova, and Thatcher (2008) report that although process conflict may be more conceptually similar to task conflict (i.e., both being conflict of a work-related nature), its ramifications are more closely related to relationship conflict, for instance, in terms of group member performance and satisfaction. Despite the apparent uniqueness offered by its conceptualization and criticality toward group outcomes, these researchers describe process conflict as the least understood of the three forms of conflict (Jehn, Bezrukova, et al., 2008). While some researchers acknowledge its manifestation, process conflict has been avoided by others because of its conceptual similarity to task conflict and ambiguity surrounding its impact on team performance and member reactions (Behfar, Mannix, Peterson, & Trochim, 2008; Passos & Caetano, 2005). Others remain skeptical that models including process conflict are superior to others including only relationship and task conflict (Bendersky & Hays, 2008). Hence, while some researchers consider process conflict to be of considerable importance to organizational outcomes, others have not as readily incorporated this form of conflict as of present. While the importance of distinguishing process conflict from other forms is noted, in this current research it will be examined for exploratory purposes only.

Assessing the Value of Conflict

Over the last 30 years, researchers have devoted considerable attention toward utilizing positive outcomes associated with conflict while simultaneously

abating the negative outcomes. Theorists from the 1990s through the present have devoted particular attention to the relationship and task conflict distinction, suggesting that different types of conflict should be expected to affect organizational processes and outcomes differentially. One such theoretical viewpoint suggested that while relationship conflict should be detrimental to an array of organizational outcomes, task conflict could be potentially beneficial, given the right circumstances (Amason & Schweiger, 1994; Jehn & Bendersky, 2003; Schweiger et al., 1989; Tjosvold, 1991). Unlike the earliest conflict theorists that presumed conflict to be exclusively detrimental and suggested minimizing conflict to reduce its harmful effects (e.g., Brett, 1984; Schmidt & Kochan, 1972), these theorists suggested embracing certain forms of conflict and managing it effectively so as to improve organizational effectiveness.

In order to manage conflict properly, researchers would have to distinguish productive conflict from counterproductive conflict, and in doing so many incorporated the relationship–task conflict typology. Theoretically, relationship conflict diverts attention from group task completion because members must focus on reducing threats, increasing power, and making attempts to build and restore cohesion at the expense of working toward accomplishing group objectives (Jehn & Bendersky, 2003). The resulting animosity and tension make members less receptive to the ideas and suggestions of others with whom they are experiencing conflict, hindering group cohesion and the processing of new information as result. Prior empirical research revealed relationship conflict to be negatively related to such group outcomes as productivity, creativity,

consensus building, and satisfaction (Evan, 1965; Jehn, 1994, 1995, 1997a, 1997b; Gladstein, 1984; Wall & Nolan, 1986). Thus most researchers have consistently regarded relationship conflict as detrimental to organizational outcomes (Jehn, 1997a; Tjosvold, 1998). With these suppositions in mind, the following hypothesis is proposed:

Hypothesis I. Relationship conflict will be negatively associated with group effectiveness outcomes.

With the distinction between different forms of conflict, some researchers predicted that, in contrast to relationship conflict, task conflict could be beneficial to a host of organizational outcomes, as could process conflict in some situations. Often framing task conflict in a positive light, researchers proposed certain benefits of conflict, noting that *constructive conflict* could become a function of *cooperative conflict management* (Barker, Tjosvold, & Andrews, 1988; Van de Vliert, Nauta, Giebels, & Janssen, 1999). This line of theory takes early roots in Deutsch's (1969, 1973) works that suggest work-related conflict can facilitate interest and curiosity in controversial topics as well as uncover previously ignored problems and eventually lead to optimal solutions (see also Anastasi, 1996; Jehn, 1995). Additionally, work conflict has been theorized to facilitate mutual understanding and openness among members, as a variety of different insights and ideas can be shared, with members integrating inputs from dissimilar frames-of-reference (Pinkley, 1990). While critiquing opposing arguments, members are expected to engage in deep and deliberate processing of task-relevant information (De Dreu, 2006). The expected result could be constructive in the sense that

groups arrive at more comprehensive decisions after considering divergent perspectives and critically evaluating various positions. Ultimately, it was theorized that groups experiencing heightened task conflict would develop more creative insights and arrive at better problem solving decisions, and hence would be more effective than groups conflicting little over work-related matters (De Dreu, 2006).

In spite of intuitive and appealing theory suggesting positive associations between task conflict and various organizational outcomes, these hypotheses did not hold well against empirical testing. De Dreu and Weingart (2003) note that throughout the literature there are inconsistencies in the association between task conflict and team performance; some studies report strong positive correlations (e.g., Jehn, 1994), whereas others report negative correlations (e.g., Jehn, Northcraft, & Neale, 1999; Lovelace, Shapiro, & Weingart, 2001) or a non-significant association (e.g., Pelled, Eisenhardt, & Xin, 1999). To arrive at a more exact conclusion, De Dreu and Weingart (2003) conducted a meta-analysis examining the associations between both relationship and task conflict in relation to two notable organizational outcomes, namely satisfaction and performance. As hypothesized, relationship conflict was negatively associated with satisfaction ($k = 14$, $\rho = -.54$) and also with performance ($k = 24$, $\rho = -.22$). However, contrary to what was expected, task conflict did not exhibit the theoretically expected positive linear association with satisfaction ($k = 12$, $\rho = -.32$) nor with performance ($k = 25$, $\rho = -.23$), as these associations were negative. These researchers also found that the association between relationship conflict and task

conflict was positive in every obtained study (including both published and unpublished works), with a strong positive association overall ($k = 24$, $\rho = .54$). These findings refute the most basic proposition that relationship conflict is uniformly bad while task conflict is uniformly good. This research highlighted that the association between conflict and performance appears to be more complicated than had been presumed.

In order to better understand the perplexities of conflict and its associations I propose examining the construct more closely in a team effectiveness framework, thereby attending to sequences of team inputs, mediators, and outputs (Ilgen et al., 2005) in an effort to more precisely describe team dynamics and better predict outcomes. To explain briefly what will be elaborated in the sections that follow, the most popular conflict measure (i.e., Jehn, 1995) assesses only the extent to which conflict *emerges*, or is present, following group deliberations (see Table 1 for items). Two other measures located in the literature (i.e., Amason, 1996; Porter & Lilly, 1996; see also Table 1 for items) focus on task conflict emergence as well. While the latter two measures include some components of working through disagreements and information exchange, this focus is minimal at best. The latter two measures are less commonly used throughout the conflict literature than Jehn's measure (and derivations), which has guided the majority of recent empirical conflict research (e.g., top management teams: Amason, 1996; Amason & Sapienza, 1997; Simons & Peterson, 2000; organizational demography: Pelled, 1996; Pelled et al., 1999; work group diversity: Jehn et al., 1999; strategic decision making: Amason &

Table 1

Prevailing Measures of Task Conflict used throughout the Conflict Literature

Measure	Items
Jehn (1995)	1. How often do people in your work unit disagree about opinions regarding the work being done? 2. How frequently are there conflicts about ideas in your work unit? 3. How much conflict about the work you do is there in your work unit? 4. To what extent are there differences of opinion in your work unit?
Amason (1996)	1. How many disagreements over different ideas about this decision were there? 2. How many differences about the content of this decision did the group have to work through? 3. How many differences of opinions were there within the group over this decision?
Porter & Lilly (1996)	1. The members of the group have frequent disagreements in the process of doing these tasks. 2. Our group generally sees "eye-to-eye" on all issues. (R) 3. We often have quite heated debates in the process of doing these projects. 4. Differences of opinion within the group are quite common.

Note. Reverse coded items are indicated by (R).

Mooney, 1999; Janssen et al., 1999; and new team ventures: Ensley, Pearson, & Amason, 2000). While the emergence of conflict perceptions is important to examine when studying conflict, it may be myopic to focus exclusively on this aspect of conflict without considering other components of the overarching conflict dynamic. I argue that much of the current conflict research has neglected several components integral to the theoretical rationale underlying *why* conflict may be beneficial or detrimental. Therefore, specific areas of theoretical and empirical neglect that will receive focus in the current dissertation, in addition to the emergence of conflict, will be (a) the extent to which members possess actual differences of opinion, (b) the process by which information is exchanged during group deliberations, (c) the processes by which conflict is resolved, and (d) the nature of the task in relation to desired outcomes.

As Schulz-Hardt, Mojzisch, and Vogelgesang (2008) note, "for organizations to benefit from dissent, two conditions are necessary: On the one hand, the existing dissent has to be expressed, and on the other hand, the recipients have to properly react on this dissent" (p. 165). Thus, it appears insufficient to consider only the emergence of conflict, as the majority of conflict research has, without regard to other group processes and other contexts that may be influential in determining the quality of group outcomes. As result, the focus of the current dissertation will be a closer examination of the inputs, processes, emergent states, and outputs comprising intragroup conflict in relation to group outcomes.

Conflict within the Input-Mediator-Output-Input (I-M-O-I) Framework

In recent decades, most team effectiveness models have included consideration to inputs, processes, and outputs (I-P-O; Gladstein, 1984; Hackman, 1987; McGrath, 1984), noting the most basic premise that teams operate within open and complex systems. More recently, researchers have begun to consider additional mediating factors beyond processes, such as emergent states, in order to better understand associations between team inputs and outputs. Ilgen et al. (2005) describe this movement as a transition away from I-P-O frameworks and toward input-mediator-output-input models (I-M-O-I). I-M-O-I models are grounded in a taxonomic framework that typically includes three categories of team variables, namely inputs, processes (or mediators), and outcomes, all existing along a dynamic timeline where outputs at some stages can become inputs at others, which, in essence, operates in a reciprocal manner. Inputs variables describe properties of individual group members, the group as a whole, and the organizational context that add substance to group interactions. Examples of inputs include members' talents and the resources available to group members. Output variables include aspects of task performance, such as quality and quantity of outcomes, and other psychosocial manifestations, such as team viability and personal satisfaction (Hackman, 1987). While input and output variables have been met with some conceptual clarity, process (or mediator) variables have received inconsistent operationalizations throughout the literature (Marks, Mathieu, & Zaccaro, 2001).

In an effort to provide a unified taxonomic framework of team interactions, Marks et al. (2001) differentiate between *team processes* and *emergent states*. Team processes are defined as "members' interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioral activities directed toward organizing taskwork to achieve collective goals" (Marks et al., 2001, p. 357). These authors further describe team processes as the interactions of members with other members of the group or their task environment, such as "the means by which members work interdependently to utilize various resources, such as expertise, equipment, and money, to yield meaningful outcomes (e.g., product development, rate of work, team commitment, satisfaction)" (p. 357). Examples of team process dimensions include transition processes (e.g., mission analysis formulation and planning, goal specification, and strategy formation), action processes (e.g., monitoring progress toward goals, systems monitoring, team monitoring and backup behaviors, and coordination), and interpersonal processes (e.g., conflict management, motivation and confidence building, and affective management). In summary, team processes encompass the means by which members work interdependently, describing *how* members interact with one another.

In contrast to processes, other team factors involve properties of a team or its members that emerge over time as result of team interactions, including concepts such as attitudes, values, cognitions, and motivations. Marks et al. (2001) distinguish these factors from team processes using the label *emergent states*, defining these states as "properties of the team that are typically dynamic

in nature and vary as a function of team context, inputs, processes, and outcomes" (p. 357). These authors provide examples of emergent states variables, such as collective efficacy, potency, cohesion, and situational awareness. Unlike team processes, emergent states can be both inputs and proximal outcomes, and furthermore do *not* denote the nature of member interactions. These authors note that emergent states do not represent team member actions that lead toward the completion of teamwork or taskwork objectives. One illustration provided by Marks and colleagues describes how an *emergent state*, such as low cohesion, can lead to reduced levels of conflict management (a *process*), which can ultimately result in additional conflict (another *emergent state*), lowering intragroup cohesion even further.

Despite much debate over whether conflict is beneficial or detrimental, little research has examined the team-effectiveness framework in which conflict exists until only recently (e.g., Curşeu & Schruijer, 2010; Jehn, Greer, Levine, & Szulanski, 2008; Mannes, 2009). When it has been examined as such, there exist several disparities in conceptualization of conflict, albeit using similar terminologies. For example, while some researchers have examined conflict as a subjective perception (e.g., Jehn, 1995) others have treated conflict as an objective compositional property of the group (e.g., Mannes, 2009; Schulz-Hardt et al., 2008). There have also been discrepancies over whether conflict is an emergent state (e.g., Curşeu & Schruijer, 2010), or whether it is a process (e.g., Jehn, Greer, et al., 2008), as well as the timeline by which it can be both an input and process (e.g., Mannes, 2009). Lack of clarification over the theoretical

construct has led to disunity in the literature, manifesting in a considerable gap between theory and practice, with operational definitions and empirical results in misalignment with theoretical propositions. Based on Pondy's (1967) original conceptualization of conflict episodes, I present an overview of the conflict dynamic within the team-effectiveness framework and an accompanying model of task conflict (see Figure 1), to offer clarification on several associations that may account for empirical gaps between theory, practice, and research.

Before undertaking this endeavor, however, several clarifications are in order to specify terminologies used when describing conflict. Pondy (1967) first documented that the term *conflict* has been used in the literature to describe all of the following: (a) antecedent conditions of conflictful behavior, (b) affective states of individuals experiencing conflict, (c) cognitive states of individuals experiencing conflict, and (d) various types of conflictful behaviors. Despite obvious conceptual differences, the term *conflict* has been applied liberally to depict all of these manifestations, often without distinction. Tjosvold (2006) recently criticized the state of inconsistency in conceptualization and operationalization of conflict throughout the field, suggesting revisions are in order. To prevent future misuses of terminology and construct confusion, I suggest researchers use greater specificity when referring to different conceptualizations of conflict, in particular, the information exchange processes from the emergence of task conflict. Therefore, in the following sections, distinct manifestations comprising intragroup task conflict will be differentiated, and will be referred to by the framework found in Table 2: substantive conflict (cognitive

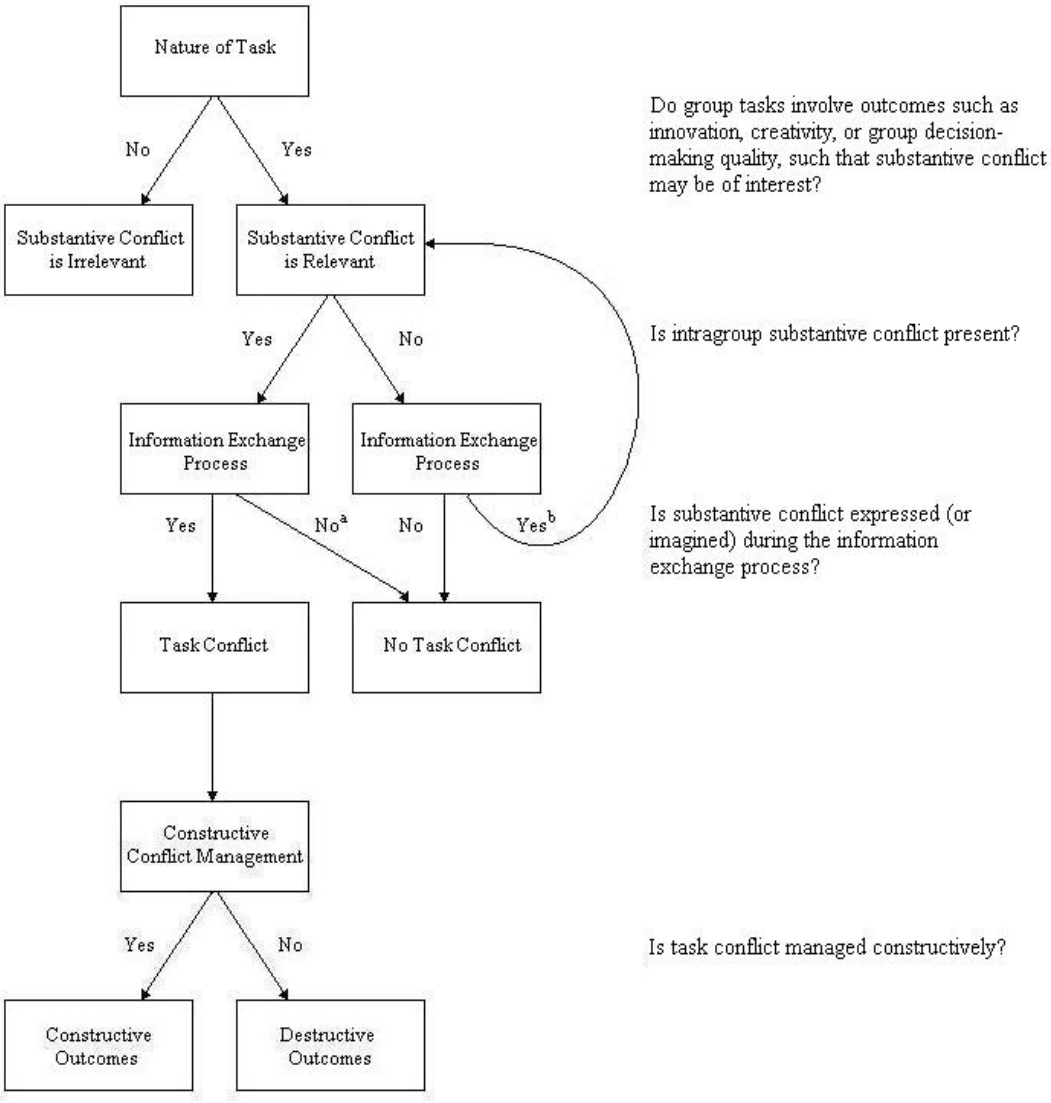

Figure 1. Model of the Dynamic of Task Conflict.
[a] = groupthink phenomenon (see Janis, 1971).
[b] = devil's advocate/dialectical inquiry phenomena (see Schwenk, 1990).

input), group information exchange (behavioral process), task conflict (perceptual emergent state), and additionally conflict management (behavioral process).

Substantive Conflict (Cognitive Input)

As a team-level input conflict can be thought of as objective differences between individuals within a group. Mannes (2009) differentiates between

Table 2

Distinct Manifestations of Intragroup Task Conflict

Manifestation	Description
Substantive conflict (cognitive input)	A state of objective task-related conflict, implying that members possess divergent viewpoints or true differences of opinion over work-related issues. These need not be explicitly expressed.
Information exchange (behavioral process)	The interactive process comprising group deliberations, including components such as presenting unique information, listening to suggestions, voicing opinions, critiquing arguments and considering flaws in logic, in order to arrive at optimal solutions.
Task conflict (perceptual emergent state)	A perceptual state of disagreement, whether real or imagined, in which one party perceives another party to be at odds with oneself over (non-delegation[a]) work-related matters.
Conflict management (behavioral process)	A set of behaviors describing the approach of group members toward the prevention or resolution of conflict.

Note. [a]The current model upholds that *process conflict* characterizes work-related discord involving delegation of how task completion will proceed.

perceived conflict and objective conflict, as have other researchers (e.g., Simons & Peterson, 2000; Van de Vliert & De Dreu, 1994), noting however that this distinction has been largely ignored throughout the literature. I concur with Mannes (2009) that the majority of conflict research has focused on perceptions of conflict, most often using measures (or derivations) developed by Jehn (1994, 1995), despite the fact that many define conflict as encompassing *both* real and perceived differences (e.g., Thomas, 1992; Wall & Callister, 1995). Developing a comprehensive and accurate intragroup conflict framework thereby becomes contingent upon addressing the lack of precision throughout the conflict literature.

Mannes (2009) uses the label *substantive conflict* to describe a state of objective task-related conflict, implying that members possess divergent viewpoints or true differences of opinion over work-related issues. Substantive conflict implies that members possess objectively different stances or views, and may exist irrespective of whether such differences are expressed or ever made known. This form of conflict reflects actual differences in cognitive views, which may be latent until coming to fruition. Substantive conflict should not be confused with task conflict; the latter, as is most often used, implies *perceived* task-related differences resulting from expressed or possibly imagined differences of opinions. Examples of substantive conflict might include members possessing actual differences of opinion concerning the following work-related tasks: the decision to merge or not merge with a competitor, the choice of the ideal candidate vying for a promotion, or determining anticipated company financial estimates. These differences, when existing, may be expressed (e.g., challenging the stance taken

by a team member) or suppressed (e.g., maintaining silence despite disagreement) to varying degrees during group information exchange.

Researchers have devoted considerable attention toward utilizing differences in member cognitions to foster team effectiveness beyond the contribution of individual members. One prominent perspective asserts that dissent among group members' individual prediscussion preferences can promote favorable group discussion outcomes (e.g., De Dreu & Beersma, 2001; Dooley & Fryxell, 1999; Simons, Pelled, & Smith, 1999). Mannes (2009) describes this phenomenon as increasing a team's *potential productivity*. By possessing divergent opinions, members are supplied with various task-specific cognitions that might lead to unique suggestions or might facilitate the presentation of different perspectives. Having such qualities improves the chances of possessing the correct solution, knowledge, or discernment for a judgment task, or additionally, for developing novel, creative, or innovative solutions. Possessing unique, complementary cognitions enhances the group's ability to deal with the overload of complex and unstructured information, which, for example, can lead to more effective top management team decision-making (Hambrick, 1995). However, it must also be acknowledged (and will be explained in greater detail in proceeding sections) that teams, in reality, often fail to realize these potential performance benefits (Harrison & Kline, 2007).

While the majority of empirical studies throughout the conflict literature focus on subjective perceptions of conflict, a handful of studies have examined objective differences in team members' task-related preferences as an antecedent

to group outcomes, the majority being conducted in laboratory settings. One approach to examining substantive conflict has been to compare members' pre-discussion stances to determine the extent task-related beliefs are in *actual* agreement. Results using this approach support that informational diversity promotes substantive conflict, of which the latter has been found to improve potential and actual performance (Mannes, 2009; Schulz-Hardt, Brodbeck, Mojzisch, Kerschreiter, & Frey, 2006; Schulz-Hardt, Jochims, & Frey, 2002). Schulz-Hardt et al. (2002) explain that conflict can be the result of strategic team interaction processes used to ensure that heterogeneous preferences, when existing, are expressed. However, if not expressed heterogeneous preferences serve little value. As result, pooling unshared information during group discussion becomes critical. Some researchers (e.g., Schulz-Hardt et al., 2006; Schulz-Hardt et al., 2002) have embraced this logic, testing the effects of group interaction processes by manipulating group composition in laboratory settings using both *genuine dissent* (i.e., selecting members known to hold heterogeneous decision preferences) and *contrived dissent* (i.e., stimulating debate by assigning controversial roles to group members, such as devil's advocate). After such manipulations it becomes possible to use simulated activities (i.e., hidden profile tasks) to study the effects of various combinations of intragroup dissent in relation to group effectiveness outcomes, as was done using 3-person groups in Schulz-Hardt et al. (2006; see Table 3).

Hidden profile tasks are team exercises in which each individual member cannot determine the correct solution based solely on the information provided,

Table 3

Dissent Conditions for Hidden Profile Task using 3-Person Groups

Condition	Description
No dissent	Homogeneity, i.e., all group members prefer the same suboptimal alternative prior to discussion
Pure minority dissent	Two members prefer the same and the third member prefers a different suboptimal alternative
Pure full diversity dissent	All members prefer different suboptimal alternatives
Minority dissent with proponents	Two members prefer the same suboptimal alternative and the third member prefers the best alternative
Full diversity dissent with proponents	Two members prefer different suboptimal alternatives and the third member prefers the best alternative

Note. From "Group Decision Making in Hidden Profile Situations: Dissent as a Facilitator for Decision Quality," by S. F. Schulz-Hardt, F. C. Brodbeck, A. Mojzisch, R. Kerschreiter, & D. Frey, 2006, *Journal of Personality and Social Psychology, 91*, p. 1082. Copyright 2006 by the American Psychological Association. Adapted with permission of the author.

but, after pooling and integrating all members' unique information can discover the optimal solution (Stasser, 1988). This research underscores the importance of both informational diversity and the role of group deliberations, of which the latter serves as a conduit in order to express heterogeneous preferences, should

they exist. Results have shown the benefits of heterogeneous member preferences on complex decision-making tasks as well as satisfaction (Brodbeck, Kerschreiter, Mojzisch, Frey, & Schulz-Hardt, 2002; Mannes, 2009; Schulz-Hardt et al., 2006; Schulz-Hardt et al., 2002). Collectively, this line of research supports that differences of opinion over task-related issues can lead to various positive team performance outcomes. However, achieving positive outcomes becomes contingent upon groups actually expressing divergent opinions during group interactions involving information exchange processes. Therefore it behooves group members to express differences of opinions during information exchange in order to maximize the possibility of arriving at optimal solutions.

As was noted, the majority of studies utilizing hidden profiles or otherwise examining substantive conflict have been conducted in laboratory settings. This is due, in part, to the complex nature of assessing objective conflict, especially if it has not been done prior to being expressed. In field studies, members may ask for retrospective accounts regarding task-related differences within their team, though Mannes (2009) notes their perceptions may not always be accurate. Relying on past recollections is not without flaws, as members may fail to recollect critical positions of disagreement, may recall past information incorrectly (or inconsistently), or may downplay their support for views originally favored but that no longer possess as great an appeal. In addition, not all topics of potential disagreement are confronted by groups, in which case disagreement remains in a latent state. When debatable topics are addressed, members do not always express disagreement when given the opportunity to do so (Janis, 1971). Collectively,

these factors may result in biased or contaminated assessments of objective conflict (Fink, 1968). Methodological problems often preclude measures of objective conflict, which as Mannes (2009) notes, makes this construct largely unobservable in natural environments. Necessarily, the majority of objective conflict research has been relegated to laboratory studies. Mannes (2009) nonetheless asserts:

> However methodologically difficult it may be to measure objective conflict in applied settings, this does not justify its absence from theoretical models. To the extent that objective and perceived conflicts have unique antecedents and consequences for team effectiveness, excluding either through a narrow conception of conflict leaves us with an incomplete understanding. (p. 8)

With these suppositions, the following propositions are outlined for theoretical rationale, and while not tested, elucidate upon the proposed model of conflict:

Proposition I. Substantive conflict will be positively associated with group information exchange.

Proposition II. Substantive conflict will be positively associated with group effectiveness outcomes involving innovation, creativity, or decision-making quality.

The Role of Informational Diversity

A second, related line of research has focused on differences in configural properties of group cognitions and relations to group outcomes under the umbrella term, *informational diversity*. Informational diversity is described as group

member differences in knowledge, perspectives, and ideas (Homan, van Knippenberg, Van Kleef, & De Dreu, 2007; Jehn et al., 1999; van Knippenberg & Haslam, 2003). These differences in cognitions have been framed as an input in the group decision making framework, which later act as a catalyst for evaluating task-related information (van Knippenberg, De Dreu, & Homan, 2004). Group creative endeavors and discovery of new ideas appear to be facilitated by the presence of diverse viewpoints and perspectives about the task (Damon, 1991; Levine & Resnick, 1993; Nonaka & Takeuchi, 1995). Informational diversity is thought to facilitate the elaboration of task-relevant information and perspectives within the group, thereby enhancing the group's pool of cognitive resources from which to draw. This is achieved through group information exchange whereby members share, integrate and synthesize ideas, knowledge, and other task-relevant insights (van Knippenberg et al., 2004). Despite apparent similarities between informational diversity and substantive conflict (i.e., both representing group configural properties relating to cognitions), the two constructs can be distinguished conceptually. Mannes (2009) notes that informational diversity varies between groups but is relatively stable within whereas substantive conflict describes a property that varies both between and within groups, depending on the task or issue at hand. Intuitively, differences in knowledge, perspectives, and ideas give rise to actual differences of opinion, and not vice versa. Thus, informational diversity can generally be thought of as preceding substantive conflict as opposed to being conceptually synonymous (Mannes, 2009).

Within the diversity literature, often a distinction is drawn between diversity variables that are highly job related (i.e., deep-level diversity variables; e.g., educational background, functional background) and those that are less job related (i.e., surface-level variables; e.g., age, sex; Pelled, 1996). Whereas deep-level, or information diversity, acts as a greater impetus within the framework of the information/decision-making perspective, it is thought that surface-level diversity, more so than informational diversity, acts as a catalyst within the framework of the social categorization perspective (Homan et al., 2007; Pelled, 1996; van Knippenberg et al., 2004). Heterogeneity in job-related areas (as compared to surface-levels) is thought to impact members' task-related knowledge and domain areas of expertise, creating variations in problems solving approaches as result of differences in work-related representational frameworks (Cronin & Weingart, 2007). Mannes (2009) notes that "differences in members' perceptions and judgment policies for all but the most unambiguous tasks are likely to lead to substantive conflict" (p. 11; also see Brehmer, 1976; March & Simon, 1958). Resultantly, informational diversity becomes positively related to the elaboration of task-relevant information and perspectives within the group, and ultimately to conflict perceptions, to the extent members express substantive differences during discussion (van Knippenberg et al., 2004). In describing this process, van Knippenberg et al. (2004) state that:

> Elaboration of task-relevant information and perspectives, in turn, is proposed to be related to group performance, especially to group creativity, innovation, and decision quality … when a group has strong

> information-processing and decision-making components, when the group is highly motivated to process task-relevant information and perspectives, and when group members are high in task ability. (p. 1010)

This logic predicates theoretical links between informational diversity, substantive conflict, information exchange, and task conflict with respect to several group effectiveness outcomes.

The logic that work-group diversity may be beneficial takes origin in the cognitive-resource (i.e., information/decision-making) perspective of diversity. According to this perspective, the positive effects of diversity are more likely to occur when groups are diverse on underlying job-related attributes (Pelled, 1996; van Knippenberg et al., 2004). As result, groups that are heterogeneous on job-related attributes should outperform homogeneous groups to the extent diverse groups are able to pool a broader range of relevant perspectives and other task-relevant informational resources, while not being disrupted by social category differences (van Knippenberg et al., 2004). According to the categorization-elaboration model (CEM), van Knippenberg et al. (2004) propose that *all* types of work-group diversity conceptualizations may have *both* positive and negative outcomes, warranting caution in ascribing particular forms of diversity as being uniformly beneficial or detrimental. The CEM addresses both the information/ decision-making as well as the social categorization perspective, the latter of which asserts that social categories (e.g., age, race, gender) give rise to perceptual differences (i.e., in-groups and out-groups) whereby members favor (and work more effectively with) those that are perceived as similar compared to those that

are not (see Williams & O'Reilly, 1998 for dual perspective review). According to the CEM, these two seemingly competing perspectives are, in fact, interactive rather than isomorphic. The clarifications provided by the CEM enlighten theorists on the mechanisms by which diversity may operate within teams as well as inform researchers attempting to make sense of empirical inconsistencies.

Meta-analysis is a statistical technique used by researchers to summarize results across multiple studies, and is often done in order to clarify conflicting results by presenting a coherent empirical depiction of a given phenomenon (Hunter, Schmidt, & Jackson, 1982). A recent meta-analysis conducted by Bell, Villado, Lukasik, Belau, and Briggs (2011) examined components of informational diversity (e.g., functional background and educational background) in relation to team performance. While there have been other meta-analyses on this topic (e.g., Horwitz & Horwitz, 2007; Webber & Donahue, 2001) this investigation was specific in that it linked diversity theories to particular demographic variables (e.g., functional background, organizational tenure) as well as to different measurement conceptualizations of diversity (i.e., separation, variety, and disparity). Bell et al. (2011) focused on job-related diversities conceptualized as variety (i.e., differences in categorical membership), finding that diversity increases to the extent job-relevant categories are represented (Harrison & Klein, 2007). An example of functional background diversity (as variety) would be a cross-functional group consisting of members with non-overlapping functional areas of expertise, such as sales and marketing, research

and development, production, and accounting. Bell et al. (2011) underscore the importance of variety conceptualizations of informational diversity:

> Having greater variety captures the essence of the informational diversity–cognitive resource perspective, which suggests that diversity is beneficial to performance because diverse teams can draw from different pools of information or resources. These differing perspectives can lead to debate and a broader understanding of the task, ultimately resulting in increased team performance, especially for tasks requiring creativity or innovation. (p. 713)

Bell et al. (2011) suggest a positive association between functional background variety and creativity/innovation outcomes. This association was stronger than the association between functional background variety and efficiency. Additionally, educational background variety was positively related to team creativity/innovation, and was especially valuable amongst top management teams. Other studies generally support that deep-level diversity variables, such as personality, functional background, or training, can promote divergent perspectives and hence may be beneficial to decision quality, more so than surface-level variables (Horwitz & Horwitz, 2007; Williams & O'Rielly, 1998). Bell et al. (2011) conclude their meta-analysis with the following practical advice:

> Staffing teams with members from different functional backgrounds (e.g., marketing, engineering) may be beneficial, particularly in situations where diverse functional perspectives are tied to the task such as in design teams

> or product development teams or when creativity or innovation is of primary importance. (p. 735)

Cavarretta (2008) reiterates the popularity of promoting diversity in the workplace, stating that "according to accepted wisdom, teams with diverse members should perform better because they can leverage better information" (p. 2). This reasoning has been strongly advocated, both in management pedagogy and in practice, as can be seen in the proliferation of cross-functional teams, now a common practice adopted by many of today's complex organizations (Brodbeck et al., 2007). Using the informational diversity perspective, organizations often seek to promote demographic diversity within work teams in order to draw upon a greater pool of knowledge and different perspectives. With these suppositions in mind, the following proposition and hypotheses are offered:

Proposition III. Intragroup informational diversity will be positively associated with substantive conflict.

Hypothesis II. Intragroup informational diversity will be positively associated with group information exchange.

Hypothesis III. Intragroup informational diversity will be positively associated with group effectiveness outcomes involving creativity, innovation, or group decision making quality.

Information Exchange (Behavioral Process)

Work team effectiveness is predicated on utilizing the contributions of different members toward achieving group outcomes. In this framework groups are often expected to act as an interdependent social entity comprised of

interacting members. It is during these interactions that actual differences of opinion (i.e., substantive conflict) become expressed. Actual differences of opinion existing among members, when expressed, serve as the root of perceptions of task-related conflict. However, it is also possible that groups possess divergent opinions but because of lack of expression do not perceive a lack of consensus (i.e., no task conflict). As some researchers note, it is not always the case that differences of opinion become expressed (Janis, 1971; Harrison & Kline, 2007). Therefore, the information exchange process is a pivotal stage in the transition from latent to perceived conflict and ought to be examined closely in relation to conflict and group performance outcomes.

Group deliberations encompass several critical team decision-making processes, which, as outlined in Marks et al. (2001), may be centered on mission analysis formulation and planning, goal specification, strategy formation, or other activities. The importance of information exchange is paramount in achieving optimal group outcomes, often serving as the basis for the formation of a team, which is to utilize the unique contributions of individuals toward accomplishing shared objectives. The information diversity perspective suggests that utilizing group differences will result in better performance than groups comprised of informationally homogenous members (van Knippenberg et al., 2004). It is during the information exchange process that group members can utilize differences by presenting unique information, listening to suggestions, voicing opinions, critiquing arguments and considering flaws in logic. Pasch (1991) underscores the necessity of argumentative dialogue, in which concepts or models are suggested,

challenged, possibly refuted, and met by counter proposals, suggesting that in certain lines of work (e.g., software development groups) such "vehement situations are considered as normal" (p. 559). The need to recognize dissimilar viewpoints and rethink existing arguments may allow the group to more thoroughly process task-relevant information, which may prevent the group from arriving at premature consensus on less than optimal courses of action.

Throughout the literature there have been a number of different, though related, descriptions of the group information exchange processes, including: debate (Simons et al., 1999), decision comprehensiveness (Simons et al., 1999), task conflict (Jehn, 1994, 1995, 1997a), cognitive conflict (Amason, 1996), substantive conflict (not to be confused with the definition encompassing objective conflict as described by Dirks and McLean Parks, 2003; Mannes, 2009), perceived discussion (Mannes, 2009), and elaboration of task-relevant information and perspectives (van Knippenberg et al., 2004). Given these discrepant terminologies, there is a tendency throughout the conflict literature to refer to conflict synonymously with the information exchange process, making no distinction between the two (e.g., Jehn, Greer, et al., 2008; Rispens, Greer, & Jehn, 2007). It would seem, however, that levels of perceived conflict could be described more accurately as a consequence of the information exchange process (i.e., an emergent state), and thus distinct from information exchange (Curşeu & Schruijer, 2010). Whether conflict actually manifests from the exchange process may depend on whether members are in actual disagreement (i.e., expressing genuine dissent stemming from substantive conflict) or, for the sake of argument,

assume different positions via contrived dissent (e.g., devil's advocacy technique), perhaps with little or no substantive disagreement present (Shultz-Hardt et al., 2002). As illustrated below, it is possible that members comprehensively exchange information while in agreement throughout the process. Alternately, it is possible that members disagree with one another but do not exchange relevant information.

Although generally recognized as important, many researchers have failed to include measures of group information exchange processes, instead relying on perceptions of task conflict to represent the presence or magnitude of group information exchange processes (e.g., Amason, 1996; Jehn, 1995). This can be misleading because the presence or absence of perceived conflict may or may not reflect actual group deliberation processes, instead representing an emergent state resulting from prior group interactions (Curşeu & Schruijer, 2010). Consider, for instance, that it is possible to have intense and comprehensive group deliberations without actual disagreement. For example, if a group of students collectively worked to identify and later discuss solutions to a set of math problems, there may not be any disagreement present if all arrived at the same solutions (whether correct or incorrect), despite that there may have been comprehensive information exchange taking place. Also, it is possible to have low intensity group deliberations with much disagreement perceived, as would be the case if members from opposing political parties refused to negotiate with opposing party members, thereby reaching an impasse in reaction to (or in anticipation of) polarized views. In extreme cases, the latter may reflect the sentiment of *refusing to negotiate with*

a madman. Likewise, it is possible that members possess actual disagreements, but, for various reasons (e.g., to maintain internal harmony, assumptions that information or views are common knowledge), fail to adequately critique or debate issues, thereby preventing the manifestation of perceived conflict (Gigone & Hastie, 1993, 1997; Janis, 1971).

While the aforementioned examples represent extreme cases, various possibilities exist in which conflict may or may not manifest as result of both actual disagreement and the exchange of information during group deliberation processes. Moye and Langfred (2004) further this sentiment, stating, "While the effects of conflict on group performance have been studied and discussed extensively (De Dreu & Weingart, 2003), we believe that the relationship between conflict and information sharing has not been fully developed" (p. 382). Lack of construct precision, when failing to capture inherent differences, can be misleading to audiences, both theoretically and empirically, rendering measures deficient of what is intended to be measured and conclusions misaligned with propositions. Mannes (2009) found that "although task conflict and perceived discussion are correlated (r = .43 in [Mannes's] study), and although the items used to measure these constructs are similar, they may be different enough to make separate predictions about their effect" (p. 79). Therefore, I propose it is important to distinguish between group *information exchange processes* and *conflict*, of which the latter can be better conceptualized both in terms of an *input* (i.e., substantive conflict) and also an *emergent state* (i.e., perceived task conflict), noting that these are theoretically distinct constructs with dissimilar implications

(Marks et al., 2001; Simons et al., 1999). With these suppositions in mind the following proposition is offered:

Proposition IV. Substantive conflict will moderate the association between group information exchange and task conflict. With greater substantive conflict present, group information exchange will be more positively related to task conflict.

Construct Clarification Regarding Information Exchange

Given the importance of construct distinctions, it is surprising that conflict research relies almost exclusively on perceptual conflict measures, despite much theoretical consideration to the importance of the information exchange process. This has resulted in substantial disparities between conceptual and operational definitions, which may be partially responsible for the notable inconsistencies between conflict theory and empirical results (see De Dreu & Weingart, 2003). Deutsch's (1973) early conflict theories describe how the emergence of conflict need not be uniformly detrimental, and instead can be beneficial to the extent costs are outweighed by benefits, given consideration to both short- and long-term outcomes. While this implies that there can be benefits *amidst* task conflict, it may be erroneous to imply that the emergence of task conflict *per se* is directly causing such benefits. This view is upheld by van Knippenberg et al. (2004), who provide the following commentary, "perhaps most important, performance does not benefit from conflict and dissent *per se* but from the process that conflict and dissent is assumed to promote: the deep-level and creative processing of diverse information and viewpoints" (p. 1011). This logic supports that the process of

information exchange, not the emergent state of conflict, may better describe the means by which groups might derive benefits from collaborative interactions.

Group information exchange has been conceptualized by Hinsz, Tindale, and Vollrath (1997), using the term *elaboration*, which encompasses not only the exchange of information and perspectives, but also individual-level processing of these cognitions. The implications of individual-levels processing may subsequently impact discussion, idea integration, and proceeding group activities. Elaboration may take place verbally or nonverbally, face-to-face or over long distances, and can involve group tasks, group members, or properties of the group. It is during group interactions that ideas, resources, information, norms, strategies, and so forth are exchanged (Hinsz et al., 1997). Both the type of information shared and the degree that information is shared can influence group effectiveness (Stasser, Taylor, & Hanna, 1989; Stasser & Titus, 1985). Given the centrality of information exchange to group processes, van Knippenberg et al. (2004) propose information sharing as responsible for informational diverse groups outperforming heterogeneous groups. Meta-analysis research (Mesmer-Magnus & DeChurch, 2009) supports the effectiveness of information sharing on team outcomes, including performance ($k = 43$, $\rho = .42$), cohesion ($k = 11$, $\rho = .20$), member satisfaction ($k = 3$, $\rho = .33$), and knowledge integration ($k = 9$, $\rho = .34$). Comparing these results with those of De Dreu and Weingart's (2003) meta-analysis, where task conflict acts conspicuously in the opposite direction of performance ($k = 25$, $\rho = -.23$) and satisfaction ($k = 12$, $\rho = -.32$), there is

compelling reason to believe group information exchange and task conflict perceptions are indeed conceptually and empirically distinct.

Simons et al. (1999) outline two components of the information exchange process, the first being *debate* and the second being *decision comprehensiveness*. Debate is defined as "an open discussion of task-related differences and the advocacy… of differing approaches to the strategic decision-making task (Schweiger et al., 1989)" (p. 663). Decision comprehensiveness is defined by Fredrickson (1984) as "the extent to which organizations attempt to be exhaustive or inclusive in making and integrating strategic decisions" (p. 445). These concepts, both related to information exchange, describe distinct aspects of the process. Debate involves actively challenging and opposing one another, such as bringing up points of disagreement involving flaws in reasoning and weaknesses in logic should they exist. As result of debate, members may have to reconsider stances or propositions in light of new stances or information presented. Simons et al. (1999) suggest that debate, through the process of weighing alternatives, may encourage members to take a broader, more open-minded approach to problem solving. Conversely, decision comprehensiveness entails the extent to which an issue is thoroughly examined by members of the group. This includes considering multiple approaches, multiple courses of action, and multiple decision criteria, which entail the exhaustiveness of finding optimal solutions to problems (Simons et al., 1999). These authors offer examples of how groups might have debate without decision comprehensiveness (e.g., disagreement without providing substantial explanation) and also decision comprehensiveness without debate

(e.g., members brainstorming lists of pros and cons without ever disputing their ideas). The results of their study suggest that with debate present, the positive effects of top management team diversity, particularly job-related forms (e.g., education-level, company tenure, functional background), on team performance are significantly enhanced. These effects were partially mediated by decision comprehensiveness (except in the case of functional background diversity), making it a necessary condition in many cases for diversity to be effective.

Conceptually, these concepts align with the suggestion of Schulz-Hardt et al. (2008) that dissent can facilitate more intense information processing at both the individual and group level. This allows for deeper elaboration when presented with different ideas and thoughts, which results from greater investment of cognitive resources to clarify information inconsistent with one's own cognitions (Edwards & Smith, 1996). As result of scrutinizing divergent arguments, group members should conduct more intense group discussions during deliberations, which as Schulz-Hardt et al. (2006) suggest, is the primary reason groups with prediscussion dissent often function at superior levels compared to groups with members in prediscussion agreement. In his examinations of top management team diversity effects, Hambrick (1994, 2007) repeatedly advocates closer examination of process variables, arguing that positive effects of top management team diversity can only be found when mutual and collective interactions are present, such as members sharing information. In summary, information exchange appears to be a critical process by which dissenting views, which are often derived from deep-level diversity, become amalgamations of group interactions,

signifying the importance of the notion that "unless expressed, dissent is useless" (Schulz-Hardt et al., 2008, p. 165).

The importance of expressing dissent is often framed in relation to the benefits of preventing what is known as *groupthink*, a term first characterized by Janis (1971). Janis (1971) used this term to explain "the desperate drive for consensus at any cost that suppresses dissent among the mighty in the corridors of power" (p. 43). This results from preponderant concurrence-seeking group norms, such as promoting morale, loyalty, and cohesion, in order for members to function harmoniously (Choi & Kim, 1999). As result, dissent often is not expressed, thereby reducing levels of critical thinking and criticisms of poor reasoning. Hence, group unity is reached but often at the expense of realistic appraisals of alternatives, which have been linked to a number of historical fiascoes (see Janis, 1971; Vaughan, 1996). Members' desire to preserve group harmony due to formal and informal norms of conformity can take precedence over the motivation to critically appraise relevant facts, resulting in poorer group decision making (Schulz-Hardt et al., 2002). Proponents of the benefits of conflict have argued that a moderate amount of task-related conflict can help to avoid such poor decisions (De Dreu, 2006). While it may be more accurate to attribute constructive information exchange processes, not the emergence of conflict *per se*, as most responsible for overcoming groupthink, Wall, Galanes, and Love (1987) describe how conflict operates in relation to group decision-making:

> Conflict has the potential for positive outcomes to the extent it expands the available pool of ideas, opens up an issue, helps to clarify it, alerts the

> system that corrective actions need to be taken, prevents a group from arriving at premature consensus, or increases the individual's involvement in the decision-making process. (p. 33)

In summary, it appears that the benefits of work-related disagreement become contingent upon expression. Moreover, when expressed, it appears that conflict derived from group information exchanges can be positive in the sense that that members confront and engage one another, openly debate issues, present contrasting viewpoints, and eventually arrive at more creative solutions in order to select positions that are agreed upon (De Dreu & West, 2001; Nemeth & Staw, 1989). As result, information exchange appears to be a critical component when considering the benefits of conflict, and is likely to contribute positively toward group decision-making effectiveness. Therefore, with these suppositions in mind the following hypotheses and proposition are offered:

Hypothesis IV. Group information exchange will be positively associated with group effectiveness outcomes involving creativity, innovation, or group decision making quality.

Proposition V. Group information exchange will mediate the association between substantive conflict and positive group effectiveness outcomes involving creativity, innovation, or group decision making quality.

Hypothesis V. Group information exchange will have a stronger (positive) association with group effectiveness outcomes involving creativity, innovation, or group decision making quality than will task conflict.

Task Conflict (Perceptual Emergent State)

Notwithstanding that conflict can take many forms, De Dreu and Gelfand (2008) assert that the essence of conflict involves individuals' or groups' perceived differences between oneself and other opposing entities. Perceptions of conflict are said to involve such things as interests, resources, beliefs, values, or practices of interest to the individual or group (De Dreu, Harinck, & Van Vianen, 1999; Thomas, 1992; Van de Vliert, 1997; Wall & Callister, 1995). The extent individuals perceive conflict impacts group and individual outcomes (Deutsch, 1969; Kabanoff, 1985). While perceptions of interindividual conflict are mutual in many instances, conflict may be perceived by only one party, or to varying degrees between parties (Brickman, 1974; Pondy, 1967). As Pondy (1967) asserts, "Conflict may sometimes be perceived when no conditions of latent conflict exist, and latent conflict conditions may be present in a relationship without any of the participants perceiving the conflict" (p. 301). To illustrate, in the former case, conflict may result from parties misunderstanding one another's true position, which may be resolved by improving lines of communication between opposing parties (Pondy, 1967). In the latter case, conflict is either never expressed, or if matters are only trivial, may be suppressed or inhibited such that levels of awareness are not reached (Pondy, 1967). Collectively, research suggests that perceptions of conflict are related to numerous individual, group, and organizational outcomes, including group consensus and affective acceptance (Amason, 1996), satisfaction (De Dreu & Weingart, 2003), commitment with

teams (Giebels & Janssen, 2005), creativity (Farh, Lee, & Farh, 2010), and performance quality (De Dreu & Weingart, 2003).

The most basic premise underlying constructive conflict is that through dissent there is an increase in the intensity of information processing at the individual level and discussion intensity at the group level (Schulz-Hardt et al., 2008). From a socio-cognitive standpoint, when individuals perceive dissent, attention and cognitive resources are devoted to scrutinizing opposing beliefs or stances, more so than when individuals encounter information that they are in agreement (Ditto, Scepansky, Monro, Apanovitch, & Lockhart, 1998). This occurs because cognitive inconsistencies in perception signify the possibility that either one's own opinion or contrasting opinions may be erroneous, in which case individuals consider whether to maintain or adjust their perspective (Edwards & Smith, 1996). As result, Jehn and Bendersky (2003) summarize that individual level reactions to task conflict include the following: (a) increased effort due to being challenged, (b) increased divergent cognitive processes, (c) enhanced task focus, but also (d) increased anxiety and tension. While the first three enumerated reactions appear beneficial, the final appears to have the potential of being detrimental. The benefits and detriments of intragroup task conflict will be explored further to help identify theoretically optimal levels of task conflict.

At the group level, task conflict is often accompanied by group discussion when members seek to resolve discrepancies between individuals. Generally speaking, groups having greater dissent tend to engage in more intense discussions than groups without dissent. More specifically, Schulz-Hardt et al.

(2008) summarize that when prediscussion dissent is present, members discuss problems longer (Brodbeck et al., 2002), exchange more information (Parks & Nelson, 1999), repeat exchanged information more often (Schulz-Hardt et al., 2006), and generate more arguments about a decision (Smith, Tindale, & Dugoni, 1996). This sentiment is shared by Jehn and Bendersky (2003), who likewise enumerate that task conflict (a) increases divergent opinions, interpretations, and viewpoints, (b) increases critical evaluations and assessments of alternatives, (c) increases communication, shared information, and problem identification, and (d) increases group problem-solving capabilities. From an information processing perspective, the effects of task conflict perceptions may be beneficial for these reasons.

Notwithstanding the potential positive effects of conflict, others suggest that member perceptions of task conflict can also have several detrimental effects. Conflict regarding tasks may indicate criticism of one's ideas or work-related views, which may present a challenge to one's self-esteem. Research has found that negative feedback and criticism can result in a temporary negative departure from normal self-esteem levels (Heatherton & Ambady, 1993). When a departure from a positive self-view is created by a conflict, people often arrive at a state of discomfort, and resultantly are motivated to reduce this discomfort by means of appearing competent or otherwise worthwhile (Greenwald, 1980). The quality of disagreement in general has been found to leave parties dissatisfied, create frustration and annoyance, disrupt social order, drive new conflict, and fuel

disharmony (De Dreu, Beersma, Stroebe, & Euwema, 2006; Rubin, Pruitt, & Kim, 1994).

Disagreement involving one's self-view may be particularly impactful in the context of group settings in the workplace. Because individuals are concerned with achieving and maintaining appearances of competence and worth in the workplace, individuals are expected to invest in and identify with their stance on work-related perspectives and other task decisions. Because task conflicts present challenges to individuals' self-affirmations of work competence, such conflicts may be perceived as particularly frustrating and challenging to one's self-esteem (Argyris, 1970; Tjosvold, 1983). In group settings, task conflict may encompass challenging a fellow member's work views in the midst of a group interaction or public setting, in which the person challenged must contemplate whether to defend, discuss, or alter his or her position in response to the disagreement in the presence of peers. Faced with task conflict, individuals may become defensive in order to publicly maintain self-esteem, or "save face" so to speak, in an effort to not appear or feel foolish (Easterbrook, Beck, Goodlet, Plowman, Sharples, & Wood, 1993). Humans are naturally inclined to attain a positive self-view and will undertake measures that affirm the self through promotion, enhancement, and protection of their self-view (Sedikides & Strube, 1997). Research finds that in the context of groups, perceptions of self-threatening behaviors produce more hostile and less constructive interactions than self-affirmation behaviors (Cohen & Sherman, 2002). The enumerated arguments suggest that task conflict may play

a significant role in intragroup interactions in as much as it relates to self-esteem and ego-threat perceptions (De Dreu & Gelfand, 2008).

Curvilinear Association between Task Conflict and Performance Outcomes

For some time researchers have had difficulty determining task conflict's overall effect on group effectiveness, with some authors suggesting task conflict to be beneficial while others have suggested it to be detrimental. This bifurcation has resulted in two camps, the task-relationship perspective and information processing perspective (De Dreu & Weingart, 2003). Those believing task conflict to be potentially positive (i.e., task-relationship perspective supporters), have argued that members confront and engage one another, openly debate issues, present contrasting viewpoints, and eventually arrive at more creative solutions in order to select positions that are agreed upon (De Dreu & West, 2001; Nemeth & Staw, 1989). This position originates in groupthink theory (Janis, 1971), which suggests that members' desire to preserve group harmony due to formal and informal norms of conformity can take precedence over the motivation to critically appraise relevant facts, resulting in poorer group decision making (Schulz-Hardt et al., 2002). When groupthink occurs, critical expression is censored in order to suppress conflict, leading to acquiescence of group assumptions and recommendations, which may be inferior or invalid. Low levels of conflict intensity are proposed to contribute to group inactivity and avoidance, neglect of information, and low joint performance (Walton, 1969).

Those taking the opposite view (i.e., information processing perspective supporters), have suggested conflict may be detrimental to innovation and

problem solving. As result of conflict, team members purportedly undergo an attention shift away from the task and instead to one another. Additionally, members are thought to experience heightened negative physiological and psychological states, such as elevated stress, that inhibit analytic thinking (Brown, 1983; Wall & Callister, 1995). Wall et al. (1987) elaborate:

> Conflict is detrimental if it escalates beyond initial causes, takes on a life of its own, drains a group of needed energy, or motivates any of the involved parties to try to destroy the other. Conflict clearly is harmful…if [it] threatens to tear a group apart, or actually succeeds in doing so. (p. 33)

With divided views of conflict, it became apparent that efforts would be needed to resolve these theoretical paradoxes in order to illuminate the mechanisms by which conflict may be positively or negatively related to group outcomes.

Looking to move beyond original black-and-white views of conflict, some researchers considered that the intensity of conflict might account for such differences. The notion of an optimal level of cognitive-emotional strain that lies somewhere between "too little" and "too much" takes root in the curvilinear association between arousal level and task achievement, a classic association that has been coined the "Yerkes–Dodson Law" (Yerkes & Dodson, 1908). Walton (1969) was among the first to propose that the influence of conflict on complex thinking capacity appears to operate similarly in a curvilinear (i.e., inverted U-shaped) pattern. Since then, several lines of theory and research have suggested that conflict at moderate, but not low or high levels, improves team performance

(Brown, 1983; De Dreu, 2006; Jehn, 1995, 1997a; Levi, 1981; Rahim, 1992; Robbins, 1974).

Walton (1969) proposed three tension levels involving conflict (i.e., low, moderate, high), each having differential effects on team performance outcomes. At low conflict levels, individuals tend to become stagnant and nonconfrontational, thereby not engaging in optimal information exchange and overlooking divergent perspectives. Alternately, at high conflict levels, members encounter cognitive overload, as they are overly focused on managing and resolving conflict, thereby operating at a reduced information processing capacity. This is likely to lead to increased aggressiveness and defensiveness, which ultimately impede group effectiveness outcomes (Van de Vliert & De Dreu, 1994). Consequently, moderate intragroup conflict levels are purported to be optimal, as members can seek and integrate information while having also considered various alternatives. At moderate levels of conflict, members are thought to achieve a balance in which they are sufficiently motivated toward generating unique solutions that address diverse work-related differences while not triggering so much stress as to impede cognitive functioning (Carnevale & Probst, 1998). Among teams performing both routine and nonroutine tasks, research has supported a curvilinear association between task conflict and innovation (De Dreu, 2006), creativity (Farh et al., 2010), and performance (Jehn, 1992, 1995; Porter & Lilly, 1996; Wall et al., 1987), though the same cannot be said of relationship conflict. Therefore, with these suppositions in mind, the following hypothesis is proposed:

Hypothesis VI. Task conflict will have a curvilinear association with group effectiveness outcomes involving creativity, innovation, or group decision making quality. At moderate levels of task conflict, team effectiveness outcomes will be superior in comparison to when task conflict is low or high.

Also, given the aim of the current dissertation, which is to expound upon the associations between various stages of the conflict dynamic and team effectiveness, the association between task conflict and team effectiveness will be compared vis-à-vis that of the association between information exchange and effectiveness. Because task conflict is often the byproduct of the information exchange process, and, may not be as directly responsible for positive team effectiveness outcomes, it is expected that group information exchange will be more strongly related to team effectiveness outcomes than task conflict, even when examined in its curvilinear form. Given this reasoning, the following hypothesis is proposed:

Hypothesis VII. Group information exchange will have a stronger (positive) association with group effectiveness outcomes involving creativity, innovation, or group decision making quality than will (curvilinear) task conflict.

Intragroup Trust amidst Conflict

Disagreement among team members has been conceptualized as having a task-, relationship-, or process-nature (Jehn, 1992). Members are not always able to differentiate between the various types of conflict (Torrance, 1957), and even if they are able to make these distinctions, often one form of conflict can inevitably lead to another form. Because of the pernicious nature of relationship conflict (De

Dreu & Weingart, 2003), researchers have sought to uncover conditions in which there may be productive task conflict while at the same time keeping relationship conflict levels from escalating. In describing this process, Simons and Peterson (2000) note that reports of task conflict are very often accompanied by reports of relationship conflict (a finding corroborated in the meta-analysis of De Dreu & Weingart, 2003), the cause of which they believe may be a process of misattribution. In the event of ambiguous behaviors, members infer the intentions of others in a manner consistent with their own expectations. Trust has been proposed to play an instrumental role in the interpretation of ambiguous behaviors and hence becomes a critical component in the attribution (or misattribution) process. For instance, in cases where members distrust one another, ambiguous behaviors are likely to be interpreted as antagonistic, malicious, or threatening; however this is not the case when members trust each other (Simons & Peterson, 2000). To uncover the mechanisms by which conflict can be productive, researchers suggest intragroup trust to be essential for positive team effectiveness outcomes (Simons & Peterson, 2000).

With respect to the conflict typology, task conflict occurring under low levels of trust may be perceived as an act of hostility. The perception that one is under attack is likely to conjure reactions of defensiveness and may lead to reciprocated hostility (Jehn, 1997a). The phenomenon of members acting in accordance with their preconceived expectations, leading another party to reciprocate behaviors in line with the original expectations, and ultimately resulting in the genuine fulfillment of the original expectations, is known as the

self-fulfilling prophesy (see Fiske & Taylor, 1991). Bergman's (2007) example illustrates how a self-fulfilling prophesy involving the interplay between relationship conflict and task conflict might occur within a work team. Person A makes a statement of disagreement with Person B. Person B, perceiving that Person A is in disagreement and not trusting A, interprets it as a personal attack, and responds with a sarcastic or insulting remark in retaliation. Person A now also perceives a personal attack, and dysfunctional relationship conflict has been generated from initial task conflict. However, the same would *not* be the case if Person B had *trusted* the intentions of Person A, and would have been more likely to perceive the disagreement as good teamwork, and hence reciprocated with a clarifying explanation rather than a retaliatory comment. Kennedy and Pronin (2008) found support that this phenomenon is real and likely reoccurring, coining the phrase *bias-perception conflict spiral* to describe similar occurrences. In summary, disagreement engenders biases between those engaged in disagreement, whereby these perceptions eventually lead to conflict-escalating actions against one another, thereby further escalating perceptions of bias and exacerbating the conflict situation in a cyclically destructive manner.

Research generally supports the notion that task conflict coincides with relationship conflict (De Dreu & Weingart, 2003). This may be due to a process of misattribution in which trust moderates the extent relationship conflict and task conflict coincide. Previous research highlights that trust can act as a moderator in the association between task conflict and behavioral attributions; when trust is high, the association between task conflict and relationship conflict is

considerably lower, whereas when trust is low, members are more likely to perceive relationship conflict in the presence of task conflict (Amason & Sapienza, 1997; Simons & Peterson, 2000). Edmonson (1999) proposes that team members have a concern for psychological safety, which, in the presence of conflict may be compromised. With trust and openness present, members can work toward solving problems and reaching consensus while maintaining psychological safety, even amid task conflict. De Dreu and Weingart (2003) suggest that "only at relatively high levels of within-team trust, openness, and psychological safety can task conflict have any positive effects on team performance" (p. 747). Empirical evidence suggests that with trust, the detrimental influences of conflict on performance can be alleviated (Simons & Peterson, 2000). In summary, trust appears instrumental to achieve optimal operational success in the midst of intragroup conflict.

Researchers investigating trust in relation to conflict suggest that trust is a multidimensional construct, despite that it is not always depicted or described in a uniform manner throughout the literature. Costigan, Insinga, Berman, Ilter, Kranas, and Kureshow (2006) note that trust can manifest in two forms, which are *cognition-based trust* and *affect-based trust*. Members who experience cognition-based trust experience a rational urge to trust or withhold trust based on a group member's past performance history and other displays of competencies (Costigan, Ilter, & Berman, 1998; Lewis & Weigert, 1985; McAllister, 1995). In other words members trust one another's work capabilities; members feel assured that work-related ideas, duties, and responsibilities will be conducted or performed in a

competent and professional manner. Members who experience affect-based trust have emotional feelings of endearment toward the other party and concern for the other party's wellbeing, often something that develops over a period of time (Costigan et al., 1998, Lewis & Weigert, 1985; McAllister, 1995). Members trust one another's intentions and feel assured that the other party will not intentionally direct harm toward them. Confirmatory factor analysis and model fit indices testing theoretical propositions support this two-factor representation of trust, suggesting cognition-based trust and affective-based trust are distinct (McAllister, 1995).

Despite that some authors now distinguish between cognition-based trust and affect-based trust, it was not uncommon to speak of trust in more general terms prior (e.g., Porter & Lily, 1996; Simons & Peterson, 2000). As result, the manner in which these unique components of trust impact the conflict–performance association and to what extent each should be desired or promoted is somewhat blurred. However, an explanation proposed by Ilgen et al. (2005) may account for the mechanisms by which trust moderates the conflict–performance association. Ilgen et al. (2005) describe two byproducts of trust that appear related to the two-factor conceptualization of trust proposed by Costigan et al. (2006). The first factor, *potency*, appears to manifest from cognition-based trust, in that members feel confident about the group's effectiveness (Guzzo, Yost, Campbell, & Shea, 1993). The second factor, *safety*, seems to manifest from affect-based trust in that members dismiss the fear that teammates will harm their interests (Ilgen et al., 2005). Lira, Ripoll, Peiró and González (2007) suggest that Ilgen et

al.'s (2005) distinction accounts for trust as a moderator of the association between task conflict and group effectiveness. Thus, in the presence of task conflict, those with high cognition-based trust will possess greater feelings of safety, and as result will be less likely to attribute conflict to ill intentions or personal attacks. Also, in the event of task conflict, those with high affect-based trust will have higher levels of potency, thereby acknowledging merit in group disagreements, understanding that one's group may arrive at better quality decisions after deliberating over ideas. With these suppositions in mind, the following hypotheses are proposed:

Hypothesis VIII. Task conflict will be positively associated with relationship conflict.

Hypothesis IX. Trust will moderate the association between task conflict and relationship conflict. When intragroup trust is low, task conflict will have a stronger (positive) association with relationship conflict, whereas when intragroup trust is high, task conflict will have a weaker association with relationship conflict.

Conflict Management (Behavioral Process)

Returning to the question of whether conflict is productive or destructive (with respect to group effectiveness) is the notion of *how* conflict is managed. Once initiated, conflict has the potential to escalate to harmful levels if not resolved properly (Bergman, 2007; Jehn, 1997a; Kennedy & Pronin, 2008). To prevent further escalations, such as harmful retaliatory actions, conflict management becomes integral within the scope of ongoing intragroup conflict.

Marks et al. (2001) describe conflict management as a behavioral process by which teams *prevent* conflict from emerging or *react* in such a way as to resolve task, process, or interpersonal disagreements between group members. These authors state:

> We believe the degree to which conflict emerges and eventually interferes with (or enhances) the productivity of work teams, is a function of the conflict management process, which involves how the team handles conflict situations that have arisen or have the potential to arise. (p. 368)

I distinguish conflict management from conflict resolution, which while related, depict different foci—the former encompassing behavioral aspects, the later outcomes. This distinction recognizes the possibility of "agreeing to disagree," so to speak, which may not necessarily involve conflict resolution despite that conflict may be managed actively, tactfully, and in good faith between conflicting parties. Such scenarios often arise in a negotiation, and may subsequently be handled by third party mediation or arbitration if members are ultimately unable to reach an agreement.

Conflict management has been frequently studied due to its role in determining group outcomes (e.g., Lee, 1990; Pilkington, Richardson, & Utley, 1988; Ting-Toomey, Gao, Trubisky, Yang, Kim, Lin, & Nishida, 1991). Despite the prevalence of conflict management research, and notwithstanding the popularity of Jehn's tripartite conflict typology, relatively few studies have coalesced task conflict and conflict management literatures, rendering empirical examinations of their interrelation somewhat limited (Greer, Jehn, & Mannix,

2008; see for exceptions DeChurch & Marks, 2001; Lovelace et al., 2001). According to Tjosvold (1985), "it is not simply open, expressed conflict, but the skillful management of conflict, that is productive" (p. 22). Thus, including conflict management appears to be theoretically, empirically, and practically necessary in understanding the overarching dynamic of intragroup conflict. Despite this, no studies to my knowledge have concurrently examined information exchange, task conflict, and conflict management. This dissertation attempts to synthesize these literatures in order to attain a more comprehensive understanding of how the conflict dynamic operates within the context of groups.

Through present, most studies examining task conflict have relied on the Jehn (1995) intragroup conflict measure, yet have not given consideration to conflict management (Greer et al., 2008; Liu, Fu, & Liu, 2009). Because Jehn's (1995) measure does not capture conflict management or resolution, the role of conflict management is unclear. Conflict studies have not addressed concerns such as whether respondents' perceived conflicts have been successfully managed and/or resolved, despite obvious implications (Jehn, 1995; Somech, 2008; Sutterfield, Friday-Stroud, & Shivers-Blackwell, 2007). The majority of conflict management research does, however, echo the sentiment that conflict may be productive if effectively managed, whereas if not may be detrimental (Alper, Tjosvold, & Law, 2000; DeChurch & Marks, 2001; De Dreu & Weingart, 2003; Greer et al., 2008; Jehn & Bendersky, 2003; for exception see Weingart, Todorova, & Cronin, 2010). In summary, the majority of task conflict research examines levels of perceived conflict while ignoring whether members were able

to successfully manage disputes, potentially omitting an integral contingency by which conflict may or may not be beneficial. It stands to reason that conflict may offer more productive outcomes to the extent it is managed properly and ultimately resolved successfully. Resultantly, conflict management will be integrated in the current dissertation in an effort to uncover a mechanism by which conflict may positively or negatively affect group outcomes.

Conflict Management Dimensionality

Researchers often study intragroup conflict management, which has been defined as "behavior oriented toward the intensification, reduction, and resolution of the tension" (De Dreu et al., 1999, p. 371). Most research and theory of this nature is in some manner rooted in the original taxonomy of the dual concern theory (Pruitt & Rubin, 1986), which is a derivation of the conflict management grid (Blake & Mouton, 1964). Dual concern theory posits that there are two underlying dimensions of managerial concern by which conflict handling styles originate, namely *concern for relationships/people* and *concern for tasks/ production* (Blake & Mouton, 1964). From these researchers derived the dimensions *agreeableness* and *activeness*, respectively, to represent specific behavioral conflict management tendencies (Van de Vliert & Euwema, 1994). Agreeableness is defined as "the extent to which conflict behaviors make a pleasant and relaxed rather than unpleasant and strainful impression" (Van de Vliert & Euwema, 1994, p. 676). Activeness is defined as "the extent to which conflict behaviors make a responsive and direct rather than inert and undirect impression" (Van de Vliert & Euwema, 1994, p. 676). Despite variations in

labeling, there exists a commonality of themes that classifies conflict management into one of five styles using the two aforementioned dimensions: (a) collaborating (high agreeableness, high activeness), (b) competing (high activeness, low agreeableness), (c) accommodating (low activeness, high agreeableness), (d) avoiding (low activeness, low agreeableness), and (e) compromising (moderate activeness, moderate agreeableness; DeChurch, Hamilton, & Haas, 2007; Rahim, 1983).

As opposed to information exchange processes or conflict perceptions, conflict management describes how individuals or groups typically respond to disagreement. A closer look at the four individual styles will illustrate how this is done.

> Contending [aka competing]—trying to impose one's will onto the other side—involves threats and bluffs, persuasive arguments, and positional commitments. Conceding [aka accommodating], which is oriented toward accepting and incorporating the other's will, involves unilateral concessions, unconditional promises, and offering help. Avoiding, which involves a passive stance, is aimed at reducing and downplaying the importance of the conflict issues, and at suppressing thinking about them. Collaborating, finally, is oriented toward achieving an agreement that satisfies both one's own and the other's aspirations as much as possible, and involves an exchange of information about priorities and preferences, showing insights, and making tradeoffs between important and unimportant issues. (De Dreu & Beersma, 2005, p. 107)

DeChurch and Marks (2001) explain that using the two-dimensional conceptualization of conflict management (i.e., agreeableness and activeness) has two advantages over the five style approach. First, researchers may examine conflict behavior as continuums along the two dimensions rather than be restricted to studying each of the five styles separately and independently of one another. Referring to Blake and Mouton's (1964) original managerial grid and Van de Vliert and Euwema's (1994) synthesis of the conflict management literature, it is apparent that there may be "intermediate" levels between "high" and "low" on dimensions agreeableness and activeness, with which the two-dimension approach is in alignment. Second, the model is a concise metataxonomy of higher order factors that account for the five styles of conflict management, allowing researchers to better integrate past research with future research by focusing more closely on the two underlying dimensions (DeChurch & Marks, 2001). Van de Vliert and Euwema (1994) were able to map the five conflict management styles according to their absolute levels on agreeableness and activeness, noting the "ladder of disagreeableness" proceeds in the following manner (from least to most disagreeable): accommodating, problem solving, indirect fighting, avoiding, compromising, issue fighting, and outcome fighting. Likewise, the "ladder of activeness" proceeds as follows (from least to most active): avoiding, accommodating, indirect fighting, outcome fighting, issue fighting, compromising, and problem solving. In summary, the two-dimension approach allows for collapsing the five styles into continuums comprised of the two behavioral dimensions that underlie them.

While originally conceptualized as behavioral tendencies of individuals, conflict management behaviors are often studied at the team level of analysis (e.g., Behfar et al., 2008; Kuhn & Poole, 2000; Sambamurthy & Poole, 1992). Somech (2008) describes how team variations in conflict management patterns may be indicative of meaningful team characteristics. Research by Kuhn and Poole (2000) found that 82% of teams observed exhibited a relatively stable conflict management style. Olekalns, Putnam, Weingart, and Metcalf (2008) concur that conflict management styles are relatively stable across time. Collectively, this suggests that teams develop typical behavioral response styles, or norms, of addressing conflict. This provides rationale for examining conflict management at the aggregate level of the team. At the team level, conflict management behaviors represent how the team tends to deal with internal conflict. Such tendencies, should they exist, would allow for team-level aggregation in order to examine the consequences of conflict management at the team level (Simons & Roberson, 2003).

Relationship Conflict and Conflict Management

Conflict management consists of both preventative and reactionary measures (Marks et al., 2001). Prevention implies precluding conflict from escalating to harmful levels, such as preventing relationship conflict from transpiring as result of task conflict (Simons & Peterson, 2000). Reaction implies that when faced with conflict, conflict management is a means to resolve conflicts productively so that group may remain effective and achieve successful task completion (DeChurch & Marks, 2001). Pertaining to task conflict, resolution is

often necessary for groups to proceed on task accomplishment and to prevent impasses from occurring, as members must ultimately make decisions and subsequently implement these decisions. Additionally, once relationship conflict occurs, it is important that levels not escalate to harmful so that group members may coexist successfully in a productive and psychologically healthy environment (Amason, 1996; Evan, 1965; Jehn, 1997a). The role of conflict management may be especially important in understanding how and why task conflict transforms into relationship conflict. Thus, conflict management is an important step to consider for maintaining productive group outcomes in the midst of intragroup conflict.

The influence of conflict management on relationship conflict. Returning to the notion of the bias-perception conflict spiral (Kennedy & Pronin, 2008), it is likely that the association between conflict management and relationship conflict is bidirectional. Evidence suggests that conflict management strategies influence subsequent levels of relationship conflict, and vice versa. DeChurch et al. (2007) highlight that relationship conflict is higher when managed by competing strategies than collaborating strategies. Their explanation follows that the use of harsher, more aggressive conflict management has the effect of exacerbating existing relationship conflict (Simons & Peterson, 2000). To illustrate, when task conflict resolution involves heated emotional displays, belittling of people or ideas, assuming unchanging perspectives, or unwillingness to compromise, relationship conflict is likely to develop. Interpersonal animosity in the form of anger has been linked to several adverse outcomes, including reaching early

impasse, perpetuated relationship conflict, and poorer group effectiveness (Allred, 1999; Allred, Mallozzi, Matsui, & Rai, 1997; Barry, 1999; Pillutla & Murnighan, 1996). Ultimately, poor handling of conflict, such as emotional outbursts and anger displays, appears likely to further engender relationship conflict and other detrimental outcomes.

How groups address and resolve conflict influences the issue at hand and sets a precedent for future conflict resolution. Parties have been found to shift their conflict management behaviors in response to ongoing resolution activities; individuals who no longer believe conflict resolution is likely may shift from problem-solving approaches to more inert and contentious strategies (McCready & Roberts, 1996). Oppositely, conflict efficacy can develop when groups are successful in managing conflict; in turn such groups will be more confident in their ability to handle future conflict episodes (Alper et al., 2000). Conflict efficacy researchers have examined the role of successful conflict management on member perceptions of the group's ability to deal with future conflict episodes as well as other emergent states. Jehn, Greer, et al. (2008) linked conflict resolution efficacy to better communication and levels of interpersonal respect. These factors enact positive emergent states that enhance team effectiveness (e.g., open communication, trust, and respect), reducing the likelihood that task conflict escalate into harmful levels of relationship conflict (Simons & Peterson, 2000). In this manner it is apparent that successful conflict management and resolution can have a positive sequential impact on intragroup relationship conflict.

Focusing on specific conflict management behaviors, DeChurch and Marks (2001) explain that when task conflict ensues, it is best handled by active management. The activeness dimension of conflict management is associated with positive results as it brings disagreement to the surface and allows for thorough deliberation and consensus (Van de Vliert & Euwema, 1994). Conversely, ignoring conflict management allows for disagreement over ideas to fester and be left unresolved, leaving members to indecision and unsettled contention. This sentiment is reflected in Weingart and Jehn (2000), who propose collaboration to be the ideal conflict management style when dealing with task-related disagreements. Collaboration entails high levels of both agreeableness and activeness, which can be beneficial for both task and non-task conflict. However, these authors are specific in recommending that task conflict be managed collaboratively, and not eliminated or ignored, but rather encouraged and managed actively and in an agreeable manner. Collaboration is proposed to maximize the possibility that a mutually beneficial solution will be discovered through proper discussion and increased understanding of group issues. The activeness component of collaboration ensures groups are focused on issues, increasing the likelihood of obtaining optimal solutions (Greer et al., 2008). Additionally, active conflict management suggests to members that the issues at hand are important and not trivial matters. The agreeableness component of collaboration is likely to foster positive interpersonal relations such that disagreement over ideas does not translate into rudeness or heated emotional displays that might otherwise facilitate relationship conflict. Conflict norms

promoting openness can increase the benefits of task conflict on performance, so long as it remains concentrated on work-related issues (Jehn, 1995; Murnighan & Conlon, 1991). Thus in the midst of task conflict it seems favorable that groups address work-related discrepancies both actively and in an agreeable manner.

The influence of relationship conflict on conflict management. In accordance with the I-M-O-I framework proposed by Ilgen et al. (2005), outputs at some stages can become inputs at others (e.g., emergent states), implying that team dynamics operate in a complex reciprocal pattern over time. This is in alignment with the bias-perception conflict spiral (Kennedy & Pronin, 2008), which postulates that poor interpersonal perceptions can facilitate poor conflict management. Thus, while conflict management is likely to influence levels of relationship conflict, the reverse is also likely, that is, relationship conflict influencing the manner in which groups manage conflict.

In the midst of relationship conflict, group members often become prone to avoidant conflict responses, such as avoiding issues that would engender further disagreement in order to avoid perpetuating animosity and discord (Janssen et al., 1999; Rahim, 1983). While such strategies may be aimed at pacifying existing turmoil, it may come at the expense of critical thinking. Additionally, such strategies may allow disputed issues to linger, leaving members disconcerted and work-related conflicts unresolved. Such tendencies allow for less active task conflict management, which may prohibit members from confronting flaws in logic and other erroneous assumptions. Desivilya and Yagil (2005) found avoiding conflict management behaviors to be aligned negatively

with task conflict ($r = –.09$, though p = n.s.) and positively associated with negative affect ($r = .18$). As result, avoidant conflict responses may unduly influence performance outcome quality in comparison to groups that are more active in resolving task conflicts, the latter of which being more likely to work through problem and ultimately resolve conflict. In summary, active conflict resolution appears to be superior to more passive conflict resolution behaviors.

When confronting disagreement, people with high levels of relationship conflict are more likely to use harsher, more insensitive conflict management styles than those not experiencing relationship conflict. To illustrate, relationship conflict often stems from retaliatory actions directed at others with whom an individual is in conflict. Kennedy and Pronin (2008) suggest the way in which people react to disagreement is influenced by how individuals characterize their opponents in the conflict process. When opponents are perceived as biased, conflict may be exacerbated and conflict resolution becomes less likely (Pronin, Gilovich, & Ross, 2004; Ross & Ward, 1995). Evidence supports that people tend to perceive their opponents as biased; it is thought that perceptions of bias (more so than the issue at hand) cause individuals to act in ways that are competitive, aggressive, and conflict escalating (Kennedy & Pronin, 2008). Individuals experiencing relationship conflict are especially likely to be considered opponents, as interpersonal incompatibilities such as dislike, tension, animosity, and annoyance exist between such persons (Jehn, 1995). Research by Desivilya and Yagil (2005) highlights that the association between relationship conflict and dominating conflict strategies (i.e., low in concern for others and high in

activeness) is positive (r = .14). Oetzel, Myers, Mears, and Lara (2003) found that employees with whom there is one-way or mutual concern for the other party's maintaining face are more likely to use integrating, obliging, and compromising styles. This aligns with social motives research, in that concern for the wellbeing of others promotes more collaborating conflict management behaviors (De Dreu, Weingart, & Kwon, 2000). Collectively, groups having harmonious interpersonal relations are less likely to utilize harsher, more abrasive conflict management tactics compared to groups experiencing relationship turmoil. With these suppositions, the following hypothesis is proposed:

Hypothesis X. Collaborative conflict management will be negatively associated with relationship conflict.

Trust and Conflict Management

Trust has been a frequently studied emergent state in the context of teams research, due to its influence on group discussions and decision outcomes (Zand, 1972). There is reason to believe conflict management is influential toward the development of intragroup trust, and also vice versa. When managing conflict, the style of conflict management can impact the likelihood that task conflict will be perceived as relationship conflict (DeChurch et al., 2007). The mechanism by which this is attained may be through the development, or lack thereof, of intragroup trust. Conflict management appears influential toward the development of intragroup trust, rendering it a critical component of the conflict process with regard to group outcomes.

The influence of conflict management on intragroup trust. Within the context of work groups, trust entails confidence in the intentions or competencies of fellow team members. Weingart and Jehn (2000) propose that intragroup trust is instilled when group members are able to successfully work through conflict using agreeable and active conflict management behaviors (i.e., collaboration). Collaboration is characterized by "high levels of interdependence, information exchange, and therefore high reliance among team members" (Weingart & Jehn, 2000, p. 230). Intragroup trust is facilitated to the extent members can depend on other members to behave reasonably and toward a mutually acceptable solution amidst group conflict. Also, by achieving mutually acceptable solutions, cognition-based trust may develop toward perceptions of team problem solving capabilities, that is, the team's capacity for internal reasoning and information processing while working toward viable, mutually desirable solutions. Research supports that accommodating and problem solving, which are related to agreeable conflict management, are positively associated with beneficial outcomes like mutual trust and the quality of interpersonal relationships (Van de Vliert, Euwema, & Huismans, 1995). Conversely, forcing and avoiding, both disagreeable tactics, are negatively related to relational outcomes (Van de Vliert et al., 1995). Lovelace et al. (2001) surmise that when group members feel it is acceptable and appropriate to discuss their differences, disagreements are more likely to have beneficial effects on group process and performance outcomes than if disagreement is discouraged or avoided. Openness norms are instrumental in the development of trust, which is an emergent state that "must be allowed to

develop over time — through positive experiences group members will grow more comfortable engaging in collaboration" (Weingart & Jehn, 2000, p. 230). Therefore, it appears that norms of communication develop from prior group conflict episodes and shape whether or not conflict management behaviors proceed under conditions of trust and openness.

In describing the impact of intragroup trust on top management team strategic decision making, Parayitam, Olson, and Bao (2010) explain that team members who view other top management team executives as trustworthy will be less inclined to take offense at outbursts resulting from disagreements. Their explanation follows that high trust will alleviate emotional reactions during conflict management, and as result members will be able to maintain focus on the substance of messages and will be less distracted by the intonation of the messenger. Trust enables members to better confront, not ignore, existing task conflict, which should better ensure substantive issues are adequately addressed and ultimately that disagreements are resolved successfully. Additionally, by focusing on substance and not interpersonal animosity, members can better resolve task conflicts and will be less likely to become entangled in a conflict escalating spiral.

The influence of intragroup trust on conflict management. While conflict management appears to impact trust, the influence of trust on conflict management should not be ignored when studying group processes in conjunction with organizational outcomes (Langfred, 2004). Zand (1972) suggests that "in low-trust groups, interpersonal relations interfere with and distort perceptions of

the problem … and in high trust groups, problems are solved more effectively" (p. 238). In a study of Chinese executives, Parayitam et al. (2010) found that the presence of interpersonal trust affects conflict responses positively, benefiting the organization. They found that intragroup trust moderates the relationship between agreement-seeking behaviors and collaborating responses, such that groups having high levels of trust will have greater collaboration than teams with lower levels of trust. Parayitam et al. (2010) suggest that the extent to which members resort to avoiding techniques or utilize third party resolution tactics is contingent on levels of intragroup trust. With intragroup trust, members will be more likely to attempt harmonious conflict resolution rather than to let problems persist ignored (Mayer, Davis, & Schoorman, 1995).

One mechanism by which trust between team members develops is through cooperative conflict management (Deutsch, 1973). When individuals engage in cooperative conflict management, they frame conflict as a shared problem requiring mutual consideration and striving for solutions that are fitting for both parties. This strategy entails that despite conflict, as one party moves toward goal accomplishment, so too do other group members. Trust is likely to develop in such contexts, as problems are actively addressed with mutually beneficial goals in mind, or at least goals both parties find satisfying. After such instances, it is more likely that future compromises will be reciprocated and that mutually desirable solutions will be sought, which may be interpreted as affective concern for the other party's well-being (Alper et al., 2000). Alper et al. (2000) suggest such patterns to be a basis by which groups develop *conflict efficacy*—

confidence that the group can deal with their conflicts effectively. Conflict management behaviors that confirm positive expectations about group conflict resolution strengthen the efficacy of group members toward future conflict resolution. Jehn, Greer, et al. (2008) found that when team members are confident that conflict can be resolved, their communication and levels of interpersonal respect increase, which enacts several positive emergent states that enhance team effectiveness. These positive emergent states—open communication, trust, and respect—are thought to reduce the likelihood of members taking conflicts personally or allowing conflict to damage interpersonal relationships (Simons & Peterson, 2000). Ultimately it appears that the group's ability to manage conflicting situations may be dependent on intragroup trust.

In summary, intragroup trust appears to play a role in the management of conflict. In the midst of intragroup trust, conflict management behaviors are likely to be higher in both active and agreeable dimensions than when trust is lacking. When an individual trusts another's intentions (i.e., affect-based trust), he or she will be less likely to attribute malicious or antagonistic motives to the opposing party. Resultantly, conflict management behaviors are likely to be harmonious, with conflicting parties undertaking more agreeable communication patterns, such as communicating with greater openness and politeness. Additionally, individuals with whom there is cognition-based trust are less likely to consider one another's opposing views as erroneous, illogical, or biased. Such individuals will be more inclined to work through task-related discrepancies with whom they trust in order to make sense of disparities or to maintain a common understanding of present

and future work-related issues. With these suppositions, the following hypothesis is proposed:

Hypothesis XI. Collaborative conflict management will be positively associated with intragroup trust.

Conflict Management and Group Effectiveness Outcomes

The influence of conflict management on team outcomes appears to be considerably important. Researchers and theorists alike have argued that conflict management is a significant predictor of the association between group (or dyadic) conflict and effectiveness outcomes (Easterbrook et al., 1993; Jehn & Bendersky, 2003; Marks et al., 2001; Rahim, 1983; Somech, 2008). In explaining the significance of conflict management, Behfar et al. (2008, p. 170) describe that "managing conflict can help to reduce the negative impact of all types of conflict by restoring fairness, process effectiveness, resource efficacy, working relationships, and/or satisfaction of parties (e.g., Thomas, 1992)." Successful conflict management has been linked to increases in perceptions of procedural justice (Tjosvold, Wong, & Wan, 2010), reduction of retaliatory actions (Wall & Callister, 1995), and positive expectations of future interactions (Lind & Tyler, 1988). In summary, considerable arguments suggest active and agreeable conflict management dimensions are related to positive emergent states (e.g., increased trust, reduced relationship conflict), which are associated with group performance effectiveness.

Research has been supportive of theoretical propositions promoting the importance of conflict management. Behfar et al. (2008) found that groups with

greater satisfaction and performance were those that engaged in collaborative and integrative conflict management as opposed to contending and avoiding patterns. Among a sample size of 96 business school project groups, DeChurch and Marks (2001) found that active conflict management was associated with group performance in the direction predicted ($r = .10$) albeit weakly, and that agreeable conflict management was related to satisfaction ($r = .46$, $p < .01$). These studies are in concordance with others that have consistently found integrative and collaborative approaches to conflict management to be superior to disagreeable and avoidant approaches (e.g., De Dreu & Van Vianen, 2001; Pruitt & Rubin, 1986; Tjosvold, Hui, & Yu, 2003). With these suppositions the following hypothesis is proposed.

Hypothesis XII. Collaborative conflict management will be positively associated with group effectiveness outcomes involving creativity, innovation, or group decision making quality.

Nature of the Group Task and Situation

The accumulated arguments thus far suggest that informational diversity, substantive conflict, information exchange, task conflict perceptions, and conflict management play critical roles in the context of group operations. Given the broad nature of teams, one may consider the extent to which this line of theorizing applies across different types of work teams or groups. Prior research efforts have differentiated teams by various team composition typologies (e.g., Devine, 2002; Steiner, 1972; Sundstrom, de Meuse, & Futrell, 1990). Others have differentiated teams in terms of the routineness characterizing their tasks (Jehn, 1995). In

promoting and managing conflict within the boundary conditions of its effectiveness, it behooves practitioners to understand the nature and task-requirements of a team with consideration to aims and objectives. Conflict should not be promoted solely for the sake of conflict nor should conflict be eliminated solely for the sake of harmony. Rahim (2000) describes such myopic foresight as "inconsistent with the recognition of scholars," equating it to "throwing out the baby with the bath water" (p. 5). In managing conflict, consideration to the team's purpose and tasks appears warranted as groups with dissimilar aims and objectives require different conflict management foci.

The categorization-elaboration model proposed by van Knippenberg et al. (2004) addresses the benefit of work group diversity on performance outcomes. These authors conclude that "task requirements moderate the relationship between diversity and performance such that diversity may be positively related to performance when performance requires information processing and creative, innovative solutions" (p. 1012). Kearney and Gebert (2009) similarly assert that:

> Particularly when the teams' tasks require creativity, innovation, and high-quality decision-making, it is this cross-fertilization of perspectives that enhances team performance and enables propitious effects of diversity through positive synergies—that is, collectively developed group solutions that are superior to the solutions generated by the best individual in the team (Michaelsen, Watson, & Black, 1989). Hence, we posit that the elaboration of task-relevant information is positively related to team performance. (pp. 80-81)

Collectively, these excerpts reflect the underlying rationale of utilizing diverse groups, which is to gain additional and unique perspectives. In terms of decision making quality, teams can generally only outperform individuals to the extent that dissimilar information becomes dispersed and synthesized at the team level (Brodbeck, Kerschreiter, Mojzisch, & Schulz-Hardt, 2007). This sentiment is also in alignment with the underlying rationale of constructive conflict. Constructive conflict is predicated on the notion that information exchange leads to more thorough deliberation of ideas, allowing members to weigh and consider unique perspectives in addition to being able to contribute their own personal views (Tjosvold, 2008). Many have theorized that the byproduct of dissimilar ideas being expressed—dissent and conflict—may prevent premature consensus, and ultimately facilitate better quality decisions or ideas (e.g., Janis & Mann, 1977; Schulz-Hardt et al., 2002). It is this logic that buttresses the majority of constructive conflict research; studies of the effects of conflict on group outcomes typically (but not always) incorporate groups whose task completion objectives involve the following dimensions: creativity, innovation, or group decision-making quality.

Bell et al. (2011), in their meta-analysis, examined the effects of various diversity manifestations (both surface- and deep-level) across a set of unique team effectiveness outcomes (e.g., creativity or innovation, efficiency, general team performance). Their findings highlight that the positive impact of informational diversity may be dependent on the type of team examined, and varies as a function of the team's performance objectives. Specifically, Bell et al. (2011)

found a stronger association between functional background variety and creativity or innovation ($k = 5$, $\rho = .18$) in comparison to efficiency ($k = 17$, $\rho = .03$), of which the latter gives consideration to production in relation to time elapsed. Additionally, a small positive effect of functional background variety on general performance was found ($k = 12$, $\rho = .12$). In relation to team type, functional background variety was positively related to team performance for design teams ($k = 6$, $\rho = .16$) and (although the 95% confidence interval around *SWMr* included zero) in the direction predicted for top management teams ($k = 16$, $\rho = .07$) in comparison to other teams ($k = 9$, $\rho = –.01$). These results were either fully or partially supportive of their hypotheses.

Additionally, Bell and her colleagues (2011) found positive associations between educational background variety and creativity and innovation ($k = 3$, $\rho = .23$) but not for efficiency ($k = 5$, $\rho = –.02$). There appeared to be no association between educational background variety and general team performance ($k = 5$, $\rho = –.03$). The association between educational background variety and team performance was stronger for top management teams ($k = 6$, $\rho = .13$) and (although the 95% confidence interval around *SWMr* included zero) in the direction predicted for design teams ($k = 3$, $\rho = .07$) in comparison to other teams ($k = 4$, $\rho = –.05$). Collectively, these findings underscore that informational diversity should be promoted to the extent teams are assembled for intellectual endeavors, such as when performance objectives require creative, innovative, or problem-solving outcomes.

In an effort to de-myth and debunk practitioners on the equivocal nature of conflict, De Dreu (2008) describes three situational conditions necessary in order for conflict to be beneficial to group performance outcomes. First, the situation must be one in which groups share cooperative goals and must reach joint decisions (see Wittenbaum, Hollingshead, & Botero, 2004). Second, all or most members must have some degree of suboptimal pre-discussion preferences, by which group discussion serves to illuminate the group's most optimal choice(s) (see Schulz-Hardt et al., 2006). Thirdly, the effects of intragroup conflict must be considered with regard to lost time, that is, conflict may result in delayed decision making as members must devote time toward considering multiple viewpoints and also resolving debated issues (see De Dreu, 2006). In reality, there may be some instances in which groups will remain in a state of impasse beyond allotted deadlines, having been unable to reach a decision. De Dreu (2008) argues that the costs associated with delayed production, procrastinations, and indecision must be weighed in light of the benefits of conflict. This theorizing, in conjunction with the results of Bell et al. (2011), suggests that when consideration to time is of upmost importance, informational diversity may pose an impediment to the extent task completion is delayed as members coordinate communication, disseminate ideas, and deliberate over disagreements.

In their meta-analysis examining the association between task-conflict and team performance, De Dreu and Weingart (2003) found the negative effects of task conflict to be stronger in studies examining decision-making and project teams compared to those examining production teams or a variety of teams. These

authors conclude against the proposition that task conflict is beneficial for teams performing complex tasks, and instead support the information processing perspective—task conflict leading to cognitive overload and ultimately performance deficiencies. Conversely, in their meta-analysis, Bell et al. (2011) found positive associations between functional background and educational background diversities (variety) and team performance, and additionally, that these positive associations were stronger in intellectual teams (e.g., top management teams, design and development) compared to others (e.g., production). How does one make sense of these seemingly contradictory findings? On the one hand perceived differences of ideas are linked to futile performance outcomes. On the other hand, divergent perspectives are associated with creativity, innovation, and enhanced decision making.

This apparent paradox may be resolved via three avenues. First, researchers should pay close attention to the types of outcomes examined in relation to the team's overarching purpose, such as whether team effectiveness outcomes are comprised of creativity, innovation, and group problem-solving components, or conversely, general effectiveness (e.g., productivity), efficiency (i.e., with consideration to time or other resource inputs), or other affective variables (e.g., satisfaction, viability, cohesion). Empirical evidence delineates that it may be invalid to assume a universal set of benefits apply across dissimilar outcome modalities. Second, researchers should critically reassess whether the emergent state of task conflict is the primary mechanism by which positive group outcomes are attained (Moye & Langfred, 2004). This logic can be facilitated by

differentiating task conflict and information exchange, both in espoused theory and research, by simultaneously examining these two distinct, yet often entangled constructs vis-à-vis. Third, researchers can include additional process variables (e.g., conflict management) in combination with emergent states (e.g., trust) in an effort to elucidate "black box" mechanisms linking critical inputs and outputs (van Knippenberg et al., 2004). While De Dreu and Weingart (2003) claim support for the information processing perspective, this conclusion may be unfounded to the extent information exchange and conflict management mitigate the conflict–performance association, as these critical factors had not been considered in their analysis. Despite enlightening efforts examining task conflict and performance outcomes, without consideration to other vital process variables, researchers may be presenting an incomplete picture of the conflict dynamic. In lieu of his original meta-analytic conclusion, De Dreu (2006) later acknowledged that conflict may operate as a "double-edged sword," in that it affects some performance parameters negatively whereas others seem to be positively impacted. In order to more accurately illuminate the complexities of conflict, research is needed that comprehensively investigates the overarching conflict dynamic, by simultaneously including informational diversity, the information exchange process, perceptions of task conflict, and the conflict management process.

Rationale

In 1967, Pondy first proposed an overarching model of the conflict dynamic. While components of Pondy's model have influenced conflict

researchers over the past four decades, the model has not yet been tested completely. The present study is designed to test a conceptual model of the conflict dynamic similar to that proposed by Pondy (1967). By including numerous variables internal to the conflict dynamic, I intend to better elucidate "black box" processes via the empirical interrelations of these components, which has yet to be embarked upon as of present. The present model (see Figure 2) includes several distinct testable components of the conflict dynamic, including informational diversity (cognitive input), information exchange (behavioral process), perceptions of task and relationship conflict (perceptual emergent states), conflict management behaviors (behavioral process), as well as the emergent state of trust in relation to group effectiveness. Due to measurement challenges in settings outside of the laboratory (Mannes, 2009) theoretical consideration will be given to role of substantive conflict (cognitive input) as well. Collectively, the present model examines various aspects comprising the conflict dynamic in an effort to clarify misalignments of terminology, theory, and empirical conclusions that exist presently. As such, a set of testable hypotheses and theoretically driven (non-tested) propositions are offered to explicate the proposed model and assess its applicability.

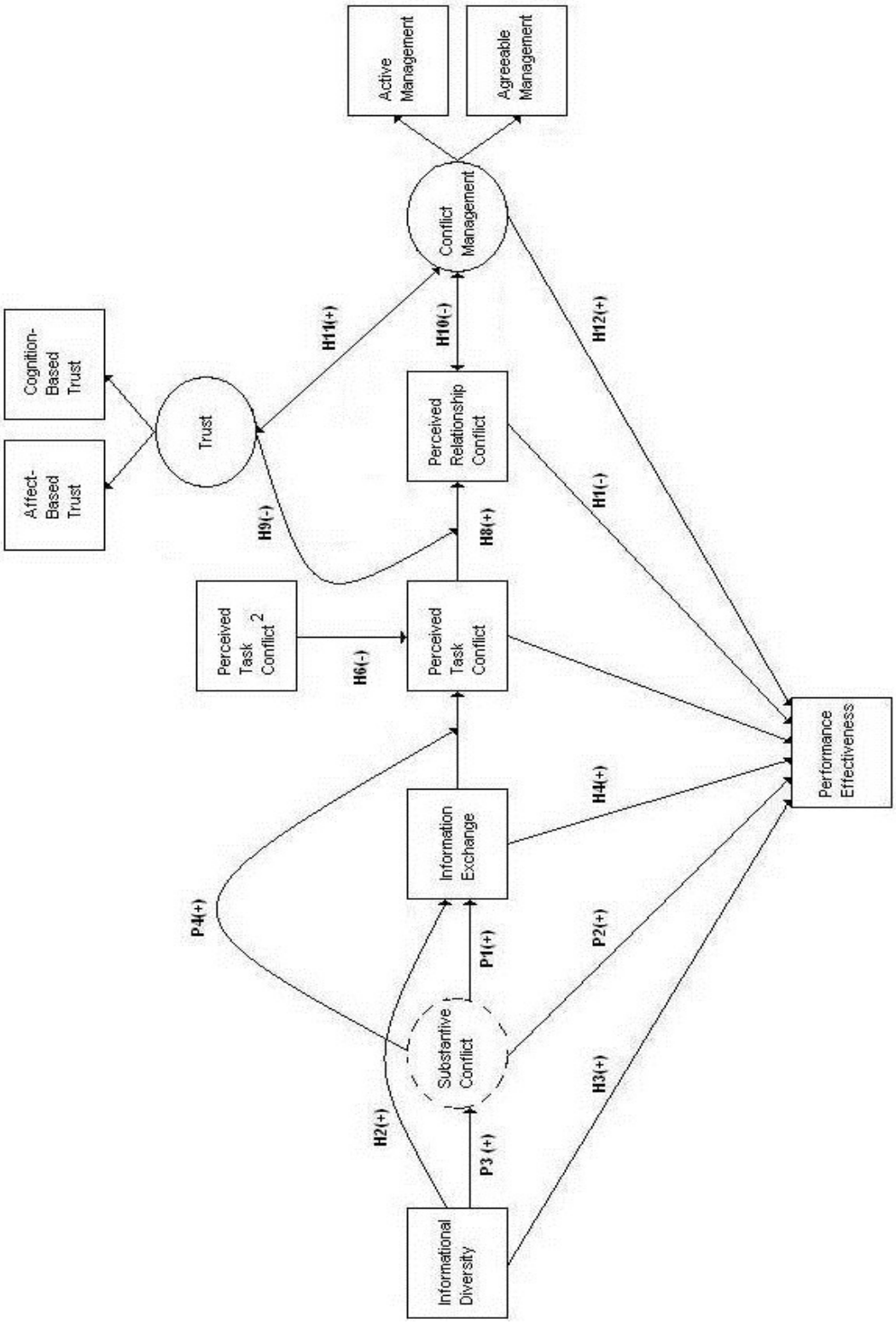

Figure 2. Theoretical Model of the Intragroup Conflict Dynamic.
H = tested hypothesis. P = non-tested proposition. "+" = positive prediction. "–" = negative prediction. Dashed oval = unmeasured variable.

Statement of Propositions and Hypotheses

Hypothesis I. Relationship conflict will be negatively associated with group effectiveness outcomes.

Proposition I. Substantive conflict will be positively associated with group information exchange.

Proposition II. Substantive conflict will be positively associated with group effectiveness outcomes involving innovation, creativity, or decision-making quality.

Proposition III. Intragroup informational diversity will be positively associated with substantive conflict.

Hypothesis II. Intragroup informational diversity will be positively associated with group information exchange.

Hypothesis III. Intragroup informational diversity will be positively associated with group effectiveness outcomes involving creativity, innovation, or group decision making quality.

Proposition IV. Substantive conflict will moderate the association between group information exchange and task conflict. With greater substantive conflict present, group information exchange will be more positively related to task conflict.

Hypothesis IV. Group information exchange will be positively associated with group effectiveness outcomes involving creativity, innovation, or group decision making quality.

Proposition V. Group information exchange will mediate the association between substantive conflict and positive group effectiveness outcomes involving creativity, innovation, or group decision making quality.

Hypothesis V. Group information exchange will have a stronger (positive) association with group effectiveness outcomes involving creativity, innovation, or group decision making quality than will task conflict.

Hypothesis VI. Task conflict will have a curvilinear association with group effectiveness outcomes involving creativity, innovation, or group decision making quality. At moderate levels of task conflict, team effectiveness outcomes will be superior in comparison to when task conflict is low or high.

Hypothesis VII. Group information exchange will have a stronger (positive) association with group effectiveness outcomes involving creativity, innovation, or group decision making quality than will (curvilinear) task conflict.

Hypothesis VIII. Task conflict will be positively associated with relationship conflict.

Hypothesis IX. Trust will moderate the association between task conflict and relationship conflict. When intragroup trust is low, task conflict will have a stronger (positive) association with relationship conflict, whereas when intragroup trust is high, task conflict will have a weaker association with relationship conflict.

Hypothesis X. Collaborative conflict management will be negatively associated with relationship conflict.

Hypothesis XI. Collaborative conflict management will be positively associated with intragroup trust.

Hypothesis XII. Collaborative conflict management will be positively associated with group effectiveness outcomes involving creativity, innovation, or group decision making quality.

CHAPTER II

METHOD

In this study the association between informational diversity, information exchange, conflict perceptions, and conflict management were examined in relation to performance effectiveness. An overview of the methodology is presented in this chapter. This study utilized the voluntary participation of university students engaged in team-oriented class projects. Data collection took place at the class project's conclusion, and was done using questionnaires administered electronically or by paper and pencil. Exact details outlining the measures and procedures utilized are further elaborated.

Participants

Participants were ($\sum_j n_j = 481$) student volunteers from a large private urban Midwest university located in the United States. Participants were recruited from university classes in which there was a team project embedded in the design of the course, whereby instructors presented students with the option of voluntarily participating in the study near the project's conclusion. The sample utilized course projects from a variety of academic disciplines, with psychology (30.6%), theatre (17.0%), computer science (12.7%), and communication studies (10.4%) being most represented in the sample (see Table 4 for a complete listing of participants by academic discipline). The sample was comprised of individuals enrolled in undergraduate (84.6%) and graduate (15.4%) courses, representing a variety of academic backgrounds (48 undergraduate majors and 10 graduate programs in total).

Table 4

Academic Disciplines of Courses Comprising Team Projects

	Number of Teams (N)		Participants (n_j)		Percent of Participants
	Grad	Under	Grad	Under	Total
Communication Studies	—	18	—	50	10.4 %
Computer Science	—	19	—	61	12.7 %
Environmental Science	—	2	—	2	0.4 %
Finance	4	—	8	—	1.7 %
Game Design	—	1	—	1	0.2 %
Human-Computer Interaction	9	—	18	—	3.7 %
Information Systems	10	—	27	—	5.6 %
Management	3	7	5	34	8.1 %
Management Development	—	3	—	5	1.0 %
Marketing	4	3	16	3	4.0 %
Music	—	1	—	1	0.2 %
Physical Education	—	13	—	43	8.9 %
Psychology	—	49	—	147	30.6 %
Public Relations and Advertising	—	8	—	18	3.7 %
Scientific World	—	7	—	14	2.9 %
Theatre	—	8	—	82	17.0 %
Total	30	139	74	407	100%

Note. Grad = graduate course. Under = undergraduate course.

As the associations examined in this study concern the group level of analysis, the sample was comprised of $N = 169$ teams. This sample size is above the minimum number of $N = 77$ teams required, as determined by a power analysis of a linear multiple regression F-test with three predictors having the following input parameters: medium effect size (i.e., f^2) = .15, $\alpha = .05$, and power (i.e., $1 - \beta$) = .80. Team projects varied in duration from a few weeks to the entire

11-week quarter. For all projects, most groups were comprised of more than two members, whereby the project grade received comprised, on average, 22.0% (*SD* = 11.7) of one's final course grade (ranging from 5% to 65%). According to instructors, projects required approximately *more so than not* amounts of creativity or innovativeness (*M* = 4.64, *SD* = 1.44) and group decision-making effectiveness (*M* = 4.75, *SD* = 0.99), which were measured on a scale of 1–7, with higher values indicating higher levels of the construct. Again on a 1–7 scale, instructors reported that project grades were on average *more so than not* dependent upon the contribution of other group members (*M* = 4.43, *SD* = 1.87).

Because of the voluntary nature of this study, not all individuals presented with the option to complete the questionnaire chose to do so. Courses with response rates of 0% were omitted from further analyses, although this was rare. The overall student participation rate was 54.2% from courses having at least one respondent. Participants reported that their actual team size included on average 4.36 (*SD* = 1.18) members; data was provided by a mean of 2.85 (*SD* = 1.34) respondents per team, rendering a group response rate of 65.3%. A summary of the number of participating project team members can be found in Table 5.

Participant demographic information was collected regarding the following variables: age, gender, race, class standing, educational major, academic discipline of courses comprising the team project. Mean participant age was 23.8 years (*SD* = 6.5), with 29 (6.0%) responses missing. The majority of participants were female (60.7%, *n* = 292), while the rest were male (39.1%, *n* = 188), with one (0.2%) participant not reporting his or her gender. The majority of

Table 5

Number of Respondents Comprising Project Teams

	Number of Teams (*N*)	Participants (n_j)	Percent of Participants
1-person team	40	40	8.3%
2-person team	27	54	11.2%
3-person team	47	141	29.3%
4-person team	36	144	29.9%
5-person team	13	65	13.5%
6-person team	10	60	6.2%
7-person team	1	7	1.5%
Total	169	481	100%

Note. Data includes only responding members of teams, with responses provided from *x*-number of persons from the team. Totals do not include non-participating team members.

participants reported their race as White (59.9%, *n* = 288), whereas the next largest percentages reported Asian (13.1%, *n* = 63) and some other race (13.1%, *n* = 63), followed by Black or African American (6.7%, *n* = 32), multiracial (6.2%, *n* = 30), American Indian or Alaska Native (0.4%, *n* = 2), and Native Hawaiian or other Pacific Islander (0.4%, *n* = 2); there was one (0.2%) missing response regarding race. Participant class standings were the following: freshman (8.7%, *n* = 42), sophomore (11.4%, *n* = 55), junior (27.4%, *n* = 132), senior (34.1%, *n* = 164), graduate student (15.8%, *n* = 76), and other (2.1%, *n* = 10), with 0.4% (*n* = 2) not responding.

Measures

Informational Diversity

Informational diversity is intended to capture differences in team member knowledge or perspectives (Jehn et al., 1999). Within the context of this study, which focuses on college students, variations in academic major provide a means by which students are likely to attain divergent perspectives. Hence, informational diversity is operationalized as the team's aggregate level of educational background diversity; this is defined as group members having variety with respect to their academic majors. Responses were collected by an open-ended item indicating participants' academic major. In line with past research, the heterogeneity index proposed by Blau (1977) was used to calculate educational background diversity. Given the categorical nature of academic majors, Blau's index is a measure of variety, and is calculated as: $1 - \sum p_i^2$. In this formula, p refers to the proportion of a team in a respective category (i.e., academic major) and i refers to the amount of different categories represented by members of the team. Blau's index ranges from 0, indicating no diversity, to 1, indicating maximum diversity. In calculating Blau's index, double majors were treated as a unique major.

Information Exchange Process

Information exchange was assessed using the 4-item measure developed by Kearney and Gebert (2009), with the intent to capture what van Knippenberg et al. (2004) describe as elaboration of task-relevant information (see Appendix B). This instrument was chosen because elaboration of task-relevant information

captures the essence of group information exchanges involving problem solving and decision making. Items utilized a 5-point response scale having anchors 1 (S*trongly Disagree*) to 5 (S*trongly Agree*). All items were worded in such a way to add positively to an overall score, with higher values indicating greater information exchange. A sample item read, "The members of this group carefully consider all perspectives in an effort to generate optimal solutions." This instrument has been justified for use at the team level in prior research (Kearney & Gebert, 2009).

Conflict Perceptions

Task conflict. Despite the popularity of Jehn's (1994, 1995) intragroup conflict measure, Pearson, Ensley, and Amason (2002) noted several measurement-based criticisms. In their publication, they propose and substantiate revisions to Jehn's measure in order to improve the psychometric properties of the instrument. Hence, their revisions were incorporated in the current study. Accordingly, task conflict was measured using the 3-item task conflict subscale derived from Jehn's intragroup conflict scale as revised by Pearson et al. (2002; see Appendix C, items 1–3). Items utilized a 5-point response scale having anchors 1 (*Almost None*) to 5 (*A Great Deal*). All items were worded in such a way to add positively to an overall task conflict score, with higher values indicating greater task conflict. A sample item read, "How much disagreement over different ideas were there?" Much like the original, the revised scale has been shown to demonstrate high internal consistency (e.g., $\alpha = .89$; Pearson et al.,

2002) and, in conjunction with the original, is the most widely used measure of task conflict in the psychological literature.

Relationship conflict. Following the recommendations of Pearson et al. (2002), relationship conflict was measured using the 3-item relationship conflict subscale, which was originally developed by Jehn (1994, 1995). The relationship conflict subscale was comprised of items 4–6 of the revised Jehn intragroup conflict measure (see Appendix C). Items utilized a 5-point response scale having anchors 1 (*Almost None*) to 5 (*A Great Deal*). All items were worded in such a way to add positively to an overall relationship conflict score, with higher values indicating greater relationship conflict. A sample item read, "How much personal friction was there in the group during decisions?" Much like the original, the revised scale has been shown to demonstrate high internal consistency (e.g., α = .87; Pearson et al., 2002) and, in conjunction with the original, is the most widely used measure of relationship conflict in the psychological literature.

Process conflict. Because some researchers consider process conflict as distinct from task and relationship conflict (e.g., Jehn, 1997a; Jehn et al., 1999) this variable was collected for exploratory purposes. Process conflict was measured by adding items 7–9 (of Jehn et al., 1999) to the revised conflict scale (see Appendix C). These items utilized a 5-point response scale having anchors 1 (*Almost None*) to 5 (*A Great Deal*) for items involving intensities of conflict and 1 (*Almost Never*) to 5 (*Very Frequently*) for items involving frequencies of conflict. All items were worded in such a way to add positively to an overall process conflict score, with higher values indicating greater process conflict. A sample

item read, “How often do members of your work unit disagree about who should do what?” This scale has been shown to demonstrate high internal consistency (e.g., α = .78; Jehn et al., 1999) and is the most widely used measure of process conflict in the psychological literature.

Trust

Previous research has provided sound rationale for studying trust as a team-level phenomenon, both theoretically and empirically (Simons & Peterson, 2000). In the present study, trust was measured using nine items from the scale used by Costigan et al. (2006; see Appendix D). Items 1–4 were borrowed from McAllister’s (1995) scale measuring affect-based trust. Additionally, items 5–9 were borrowed from McAllister’s (1995) scale measuring cognition-based trust. Because these items were originally oriented at the individual level, items required rewording to be oriented toward the group. The 5-point response scale was anchored by 1 (*Strongly Disagree*) and 5 (*Strongly Agree*). All items added positively to their respective trust subscale score, with higher values indicating greater trust. A sample item from the affect-based subscale read, “If I share my problems with my group members, I can count on them to respond constructively and caringly.” Additionally, a sample item from the cognition-based subscale read, “I trust the group to do things I can’t do myself.” Both subscales have been shown to demonstrate high internal consistency (affect-based trust: α = .88, cognition-based trust α = .89; Costigan et al., 2006).

Conflict Management & Resolution

Conflict management. Conflict management was assessed using a 12-item measure comprised of self-developed items as well as items derived from the Rahim Organizational Conflict Inventory (ROCI–II; Rahim, 1983; see Appendix E for amalgamate measure). Items were specifically designed to map upon Blake and Mouton's (1964) original two-dimensional conflict management conceptualization of agreeable (items 1–6) and active (items 7–12), with higher values corresponding to more positive (i.e., constructive) conflict management (Wall et al., 1987; Weingart & Jehn, 2000). While others have successfully studied conflict management as a two-dimensional group-level phenomenon (e.g., Chanin & Schneer, 1984; DeChurch & Marks, 2001; Volkema & Bergman, 1995), the current approach may be advantageous for four reasons with respect to this study. First, the current approach omits items sharing conceptual overlap with over examined variables, such as information exchange and perceived task conflict, thereby reducing measurement redundancy. Second, items appear to be more face valid than previous approaches in their reflecting the two overarching dimensions of interest. Third, the current measure is abbreviated, reducing the amount of time needed for participants to complete the questionnaire. Fourth, this approach simplifies the calculations necessary to compute dimension scores.

As in previous assessments of intragroup conflict management, all items were oriented toward the group as a referent (e.g., DeChurch & Marks, 2001). Given that the concentration of this dissertation is on the management of task conflict, instructions were provided clearly indicating that task conflict, not

relationship conflict, should be the focus of responses. Responses were provided on a 5-point scale anchored by 1 (*Not At All*) to 5 (*To A Great Extent*), in order to reflect the applicability of behavioral responses characterizing task conflict management. Items 3, 4, and 12 required reverse coding in order to add positively to total scores of the dimension of interest. A sample item measuring agreeable conflict management read, "Members maintain a polite and tactful demeanor during task disagreements." Conversely, a sample item measuring active conflict management read, "When task disagreement occurs, members are active in trying to reach a compromise." Because this amalgamate measure is being used for the first time, measurement properties of the instrument will be examined and reported. Previously, DeChurch and Marks (2001) found evidence of internal consistency reliability for group conflict management styles (α = .72 to .84 on five dimensions) in addition to justification for examination at the group level ($r_{WG(J)}$ = .92 to .96 on five dimensions).

Conflict resolution. Greer et al. (2008) define conflict resolution as "a team's perception that conflicts were resolved" (p. 285; see also Alper, Tjosvold, & Law, 2000; Jehn, Greer, et al., 2008). While conflict management and conflict resolution appear highly related, the two may be distinguishable with respect to their foci on behaviors and outcomes, respectively. When conflict resolution is perceived, it implies (but does not guarantee) that resolution strategies have been effective (Jehn, 1997a). Despite concerted efforts to manage conflict, resolution perceptions are not a guarantee, however. As result, it was considered potentially

informative to examine conflict resolution in addition to conflict management. Thus, conflict resolution perceptions were collected for exploratory purposes.

Conflict resolution was measured by the 3-item scale developed by Jehn (1995; see Appendix F), which has displayed high internal consistency reliability ($\alpha = .84$). Items were based on the tripartite dimensionality of conflict, and reflect the extent to which members perceive distinct forms of conflict as being resolved. A sample item measuring relationship conflict resolution read, "Emotional conflicts are usually resolved in my work unit." Responses were provided on a 5-point scale anchored by 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). On this measure, higher scores indicate greater levels of perceived conflict resolution.

Performance Effectiveness

Instructor evaluations. By nature, student project teams (or groups) are comprised of students working interdependently for the purpose of completing a mutual objective—their course project. Completing a group project is a common requirement in many collegiate courses. The outcome of such projects may substantially influence a student's final course grade, as many instructors treat such projects with considerable weight relative to other graded assignments. Students are ultimately provided a grade on the project that reflects the quality of the work completed, as determined by the course instructor or other informed grader (e.g., teaching assistant). As noted by Tekleab, Quigley, and Tesluk (2009), student project teams share much commonality with ad hoc committees in organizations, as both are temporary and dissolve after objectives have been attained. Additionally, both usually involve high levels of responsibility and task

involvement amidst member interdependence. The results of student project teams and work groups are comparable in many ways (see Van Vianen & De Dreu, 2001). Thus instructors with student project teams embedded in their course design were recruited for participation in the current study (see Appendix G for recruitment email).

In the current study, performance effectiveness was assessed by the grade assigned by instructors to student group projects. In order to be included in this study, student projects must have included outcomes assessing at least one of the following dimensions: creativity, innovation, and/or group decision effectiveness. This was ensured by stating these outcome requirements in the original and follow-up instructor recruitment emails (see Appendix G and Appendix H, respectively) as well as through a personal assessment made by this author based on the instructor's description of the project (see Appendix I). According to Hackman (1987), most organizational tasks do not have clear right or wrong answers, thereby making it essential for experts to review work output in order to appraise performance according to some standard. Therefore, the assigned grade and a subjective performance appraisal issued by instructors constituted the dependent variables of performance effectiveness examined in the model. In cases where students in the same team did not receive the same assigned grades, scores of individual members were averaged to form a group-level score. Grades were collected as percentages (0% minimum – 100% maximum). For the purpose of attaining a common metric, in cases where only letter grades are available, grades were converted into the following percentages: A+ = 100%, A = 95.5%, A– =

91%, B+ = 87.5%, B = 84%, B– = 81%, C+ = 77.5%, C = 74%, C– = 71%, D+ = 67.5%, D = 64%, D– = 61%, F = 57.5%. For the subjective performance appraisal, a 7-point anchored rating scale was provided using endpoints of 7 (*Among the very best quality projects submitted; met or exceeded virtually all expectations*), indicating good performance, and 1 (*Quality was unacceptable; not at all up to standards; unable to demonstrate much competence*), indicating poor performance.

In addition to providing grades and performance appraisals, instructors provided preliminary information describing the scope of the course project. Instructors were asked to provide a brief description of the scope of the course project. They were asked to assess the extent to which project grades would entail (a) creativity or innovativeness outcomes, (b) quality of decision making, and also whether there is (c) "one best way" to complete the project, using anchors 1 (*Entirely Not*) to 7 (*Entirely So*). An additional item assessed the weight of the group project assignment on the student's final grade. Lastly, an item ascertained the extent to which student's grades were determined or dependent upon the contributions of others in the group, using anchors 1 (*Entirely Not*) to 7 (*Entirely So*). A copy of the instructor evaluation form can be found in Appendix I.

Student evaluations. Because not all teams can be assessed using objective performance measures, subjective measures are generally considered important (Lau & Murnighan, 2005) and have been found to predict actual performance (Bandura, 1997). As result, additional subjective measures of performance effectiveness were collected, as there is theoretical rationale to believe

performance effectiveness may consist of several distinct dimensions (Ancona, 1990; Curşeu & Schruijer, 2010; Tekleab et al., 2009). In as much as defining performance effectiveness depends on the nature of the team, team performance assessments may attend to a variety of conceptually distinct criteria, including goal attainment, efficient work processes, effective interpersonal coordination, (perceived) customer satisfaction, future team viability, and team member satisfaction (De Dreu, 2006; Hackman, 1987). As a result, additional single item performance effectiveness indicators were used to gauge participants' subjective perceptions of their group's effectiveness (see Appendix J), including timeliness/ speed of work, satisfaction with group, creativity/innovativeness, outcome satisfaction, future group viability, estimated outcome quality compared to other groups, and student estimated project grade.

Procedure

The current study proceeded in five phases. In phase one, the collaboration of instructors having group projects embedded in their course design was sought. Instructors identified characteristics of their course group project for eligibility purposes in this phase. In phase two, student volunteers provided feedback regarding their group project experiences. In phase three, instructors provided student performance outcomes (e.g., project grades assigned) of consenting participants. In phase four, student responses (collected in phase two) were linked to performance outcomes (collected in phase three). In phase five, a raffle took place to award one instructor and one participant an electronic gift card as a token of gratitude for their participation.

Phase One – Instructor Recruitment

In order to gather a sufficient sample size of student project teams, outside instructor collaboration was sought. The current study was initiated by a recruitment email (see Appendix G) sent to instructors at the participating university during the Summer and Autumn Quarters of 2011. There was no systematic inclusion criteria based on departmental affiliation, as it was thought that a sample comprised of a variety of disciplines would reflect the versatile nature of organizational project teams, which may vary considerably with respect to function, department, organization, or industry. Hence, all university instructors teaching courses during the time of data collection were contacted via email as prospective collaborators.

In order to qualify for the current study, student project teams must have had: (1) three or more members, (2) members who recognize themselves as part of a group, (3) members that work together to complete a task or tasks, (4) members that operate within an organization (including non-profits, universities, student group projects, and volunteer organizations), and (5) a project entailing at least one of the following outcomes: innovation, creativity, or group decision making effectiveness. These qualifications were assessed by the instructor in the second recruitment email (see Appendix H). Subsequently, using instructor responses collected in an email attachment denoting the scope of the project (see Appendix I) a determination of project eligibility was made based on an open-ended item response (i.e., "In a sentence or two please describe briefly the scope of the student project, including mention of the outcome being assessed") and also

by examining multiple choice items (e.g., "To what extent would you describe the group's final assigned grade as being a direct reflection of the group's creativity or innovativeness?"). Projects having responses at or above the midpoints of the scale on innovation/creativity or decision making effectiveness (with an accompanying description that coincided with this determination) were considered for inclusion. All instructors who replied with interest were thanked and told of their project's eligibility status.

Prospective instructors provided their contact information, the course departmental affiliation, and both the course and section number of the class for which the group project was being conducted. Instructors were provided with a script (see Appendix K) and a flyer outlining the participation instructions to students (see Appendix L); these were presented to students (either via hard copy or via email) on or approaching the day in which projects were to be submitted. I also offered to instructors the option of the experimenter personally announcing the study to classes and presenting as a guest speaker. Lastly, instructors were provided an estimated date that they could be contacted for phase three, which was approximately one week after students were provided a final grade on their group project submission (see item 8 of Appendix I).

Phase Two – Student Questionnaire Administrations

Prospective participants were recruited by their instructor using a recruitment script (see Appendix K) and recruitment flyer (see Appendix L). The flyer provided students an Internet link to complete the study questionnaire upon their project's completion. All participation was voluntary. Students were told of

an allotted time span of one week to complete the questionnaire, beginning from the time the project was submitted, in order to provide a reasonable time frame for data collection. Alternately, for instructors wishing to use class time to complete the study, the study was completed after projects were submitted. Students not wishing to participate were given the option to leave without penalty. Instructors were offered the suggestion of providing extra credit to those who completed the survey. Additionally, all participants (both instructors and student volunteers) were provided with the incentive of being eligible to win a raffle of a $50 Amazon.com gift card at the conclusion of the study (the award selection procedure is outlined in phase five).

Prior to data collection, participants were provided information outlining the nature of the study and the extent of participation (see Appendix M). It informed participants that the study would take approximately 15 minutes to complete and that participation would be completely voluntary, with no negative consequences resulting from nonparticipation or from wishing to opt out at any time. Additionally the confidential nature of the study was explained. Participants were advised to print or save the informed consent page for their records. Participants were then directed to a new page, further outlining the nature of the study and release of confidential information. Participants could indicate their informed consent by explicitly providing their name and student ID and by checking a box next to a statement labeled “I have read the above statement and I consent to participate in this study” before proceeding further. For web surveys, the consent process had an added component; to verify the authenticity of student

electronic consent, students were instructed to email their consent from their university verified email address to the researcher before continuing. For web studies, checkboxes indicating consent, student names, and student IDs were required in order to proceed. In the case of paper and pencil surveys, the consent form was distributed and explained, and was then returned to the researcher after being signed. After consenting, participants continued to the data collection portion of the study. Students wishing to not participate were allowed to discontinue with no penalty.

In the data collection portion, participants were presented with a 73-item questionnaire (as outlined in the Measures subsection). The questionnaire had no established time limit and contained the study variables (see Appendices A-F, J), followed by the raffle contact information for the gift card (see Appendix N), and lastly the debrief/information page thanking participants for their participation (see Appendix O). For questionnaires administered via paper and pencil, debrief information sheets were physically handed to participants for their records, after which any questions about the study were directed to the primary investigator. All participants having questions or concerns related to the study or their participation thereof had the option of contacting the primary researcher or his advisor via phone or email.

Phase Three – Instructor Performance Effectiveness Assessments

Instructors were contacted again on the date provided in the instructor evaluation form (see item 8 of Appendix I), which approximated one week after students were provided a final grade on their group project submission. The intent

of waiting one week was to allow for a reasonable window of time for students to complete the questionnaire. After this time instructors were sent a spreadsheet listing participant IDs (see Appendix P) and copies of student consent forms. This information was used to collect assigned project grades and performance evaluations for those students that consented to partake in the study. This is in compliance with the Family Educational Rights and Privacy Act (FERPA) of 1974; due to instructors disclosing private identifiable information regarding student grades, student consent forms were included in an email to instructors upon request, compiled in a .zip file. Instructors were instructed to identify the grade (percentage preferably) and performance effectiveness (using a 7-point scale) of those students listed in the updated spreadsheet, and to re-attach the completed form in a reply email. Instructors were thanked for their cooperation in the data collection process.

Phase Four – Linking Student Responses to Instructor Assessments

Student information provided in phase two was matched with student performance effectiveness provided in phase three. This resulted in a data spreadsheet containing individual student responses, indicators of group membership, and corresponding performance effectiveness information (e.g., instructor assigned grade).

Phase Five – Determining Prize Recipients

As a token of appreciation for assisting in the study's data collection, one participating student and one participating instructor were randomly chosen as prize recipients. Recipients were chosen using a computerized random number

generator, in which one case was selected out of a range of values corresponding to the total participant (and instructor) sample size. The generated number was used to select the matching participant (and instructor) ID number. These individuals were sent a $50 Amazon.com gift card through email. Prizes were funded by a grant awarded by the university. After awarding prize winners, all participant identifiers (i.e., names, email addresses, course numbers, section numbers) were replaced with unidentifiable descriptors and code numbers, rendering all participant information anonymous.

CHAPTER III

RESULTS

The aim of this study is to test a theoretical model of the dynamic of group conflict. Because the study concerns the group level of analysis (with group data constituting responses from multiple members) all teams having less than two participating members were omitted from further analysis, reducing the number of teams to $N = 129$. All statistical significance testing henceforth were conducted using a Type I error rate (i.e., α) of .05 using two-tailed significance testing.

Preliminary Statistical Analyses

Data were aggregated to the team level for hypothesis testing and statistical analyses. Pertaining to the team level, descriptive statistics and scale properties of study variables are reported in Tables 6. Pearson product-moment correlations among study variables are reported in Table 7.

Testing for Hierarchical Dependence (i.e., Instructor Effects)

Because groups are nested in the setting of the classroom, with dependent measures being derived from the same source (i.e., instructor), it is incumbent to examine whether dependent measures display a statistical dependence by instructor. The vast majority of data from instructors teaching multiple sections were from the same course (e.g., PSY105). Therefore *instructor* was used as a predictor, as opposed to *course designation* or *class section*, as instructors indicated that grading criteria were applied consistently across sections. It was suspected that measures of output quality might vary depending on instructor grading tendencies (e.g., leniency, severity, central tendency), or that there may

Table 6

Descriptive Statistics and Scale Properties of Study Variables

	Descriptives			Scale Properties [b]	
Variable	*N*	*M*	*SD*	Min	Max
Informational Diversity (Blau's Index)	129	.31	.28	0	1
Information Exchange	129	3.97	0.52	1	5
Task Conflict	129	1.87	0.54	1	5
Relationship Conflict	129	1.36	0.45	1	5
Process Conflict	129	1.48	0.47	1	5
Affective-Based Trust	129	3.53	0.52	1	5
Cognition-Based Trust	129	3.83	0.46	1	5
Agreeable Conflict Management	129	4.20	0.47	1	5
Active Conflict Management	129	3.70	0.51	1	5
Conflict Resolution	129	4.00	0.51	1	5
Timeliness/Speed of Work	129	5.08	0.86	1	7
Satisfaction with Group	129	5.64	0.98	1	7
Creativity/Innovativeness	129	5.56	0.76	1	7
Outcome Satisfaction	129	5.78	0.89	1	7
Future Group Viability	129	5.27	1.00	1	7
Outcome Quality Comparison	129	5.78	0.89	1	7
Student Estimated Project Grade	129	11.22	0.83	1	12
Assigned Project Grade [a]	129	91.26	8.34	0	100
Estimated Project Grade [a]	129	5.75	1.04	1	7

Note. For all measures higher values indicate higher levels of a construct.

[a] Rating provided by instructor. [b] Represents the potential range of values.

be differential variability in output quality of submissions across courses (e.g., graduate course project grades being consistently higher, and thus displaying less variability in scores, compared to undergraduate project grades). In such cases, ordinary least squares regression (OLS) can lead to inaccurate estimates (Cohen, Cohen, West, & Aiken, 2003). To test for an instructor effect, analyses of variance (ANOVAs) with instructor as the independent variable and performance effectiveness output measures as the dependent variable were computed. In

Table 7

Correlations among Study Variables at the Team Level

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Informational Diversity (Blau's Index)	–											
2. Information Exchange	.06	**(.87)**										
3. Task Conflict	.27**	-.18*	**(.82)**									
4. Relationship Conflict	.10	-.45**	.69**	**(.85)**								
5. Process Conflict	.10	-.45**	.51**	.68**	**(.77)**							
6. Affective-Based Trust	-.03	.62**	-.12	-.26**	-.36**	**(.84)**						
7. Cognition-Based Trust	.06	.64**	-.20*	-.47**	-.55**	.73**	**(.86)**					
8. Agreeable Conflict Management	-.09	.39**	-.41**	-.55**	-.59**	.40**	.53**	**(.81)**				
9. Active Conflict Management	-.08	.52**	-.35**	-.40**	-.47**	.49**	.50**	.65**	**(.79)**			
10. Conflict Resolution	.06	.39**	-.03	-.27**	-.37**	.45**	.51**	.48**	.43**	**(.78)**		
11. Timeliness/Speed of Work	-.02	.50**	-.13	-.35**	-.40**	.48**	.57**	.34**	.43**	.33**	–	
12. Satisfaction with Group	.01	.67**	-.28**	-.52**	-.56**	.68**	.74**	.45**	.51**	.41**	.63**	–

con't

Variable	1	2	3	4	5	6	7	8	9	10	11	12
13. Creativity/Innovativeness	.08	.46**	-.28**	-.35**	-.41**	.46**	.52**	.37**	.43**	.26**	.44**	.64**
14. Outcome Satisfaction	-.02	.59**	-.32**	-.44**	-.51**	.53**	.68**	.50**	.51**	.37**	.60**	.74**
15. Future Group Viability	.04	.64**	-.15	-.50**	-.47**	.63**	.69**	.44**	.47**	.40**	.66**	.79**
16. Outcome Quality Comparison	-.05	.43**	-.34**	-.40**	-.41**	.45**	.51**	.39**	.42**	.25**	.68**	.64**
17. Student Estimated Project Grade	.05	.55**	.26**	.39**	.42**	.40**	.58**	.43**	.46**	.32**	.55**	.61**
18. Assigned Project Grade [a]	.27**	.07	.11	.00	.05	.06	.11	-.04	.04	.00	.03	.08
19. Estimated Project Grade [a]	.29**	.19*	.12	.03	.02	.12	.22*	-.01	.12	.01	.17*	.21*

Variable	13	14	15	16	17	18	19
13. Creativity/Innovativeness	–						
14. Outcome Satisfaction	.67**	–					
15. Future Group Viability	.64**	.76**	–				
16. Outcome Quality Comparison	.60**	.76**	.58**	–			
17. Student Estimated Project Grade	.61**	.79**	.65**	.66**	–		
18. Assigned Project Grade [a]	.18*	.17	.15	.15	.32**	–	
19. Estimated Project Grade [a]	.34**	.33**	.32**	.28**	.47**	.74**	–

Note. Internal consistency reliabilities (Cronbach's α) in bold on diagonal unless single item measure (–).

N = 129 teams. [a] Rating provided by instructor.

*p < .05. **p < .01. Two-tailed significance testing.

addition, to assess the amount of variance accounted for by instructor, intraclass correlations (Bliese, 2000) were computed for performance output measures. Separate ANOVAs and ICC1s were run for the four indicators of output quality (i.e., instructor assigned project grade, instructor estimated project grade, student estimated project grade, and student estimated outcome quality compared to other groups). To determine statistical dependence, Bliese's (2000) criteria were applied, including the presence of high ICC1 values (i.e., approaching ICC1 = .30) and significant ICC1 *F* ratio *p*-values. Results indicated the presence of instructor effects for instructor assigned project grade, $F(22, 418) = 5.43$, $p < .001$, $\eta^2 = .22$, ICC1 = .16, and instructor estimated project grade, $F(22, 418) = 6.05$, $p < .001$, $\eta^2 = .24$, ICC1 = .20. These results suggest dependence of grade appraisals on course instructor (LeBreton & Senter, 2008). Evidence for an instructor effect was less salient for student estimated project grade, $F(22, 413) = 2.25$, $p < .01$, $\eta^2 = .11$, ICC1 = .06, and was virtually nonexistent for student estimated outcome quality compared to other groups, $F(22, 412) = 1.40$, $p = .11$, $\eta^2 = .07$, ICC1 = .03, suggesting that student assessments may not be dependent on course instructor. Because instructors' appraisals displayed statistical dependence on instructor, hierarchical linear modeling (HLM) was chosen for subsequent analyses thereof. Following the guidelines of Hofmann and Gavin (1998), variables were centered using the grand mean for HLM analyses.

Data Aggregation for Team Level Variables

In order to study the current research topic at the team level, individual student responses were aggregated. To test the variance accounted for by work

group membership and to assess the reliability of group means, ICC1 and ICC2 (Bliese, 2000) were calculated, respectively. As shown in Table 8, ICC1 values were generally above 0, with several approaching or even exceeding .30, with the majority of ICC1 *F* ratio *p*-values showing statistical significance. Collectively, these ranges across study variables demonstrate medium-to-high amounts of variance attributable to group membership. Exceptions were cognition-based trust (ICC1 = .08, $p = .11$), active conflict management (ICC1 = .00, $p = .97$), and creativity/innovativeness (ICC1 = .06, $p = .21$) which displayed less evidence of being a shared property of the group. Given that the majority of group-level variables appeared to be shared group properties, and given at least some variance could be attributable to group membership for most, dimensions were averaged within the group and treated as group-level properties.

Factor Structure Examination of Amalgamate Conflict Management Instrument

With this being the first administration of the amalgamate conflict management instrument (see Appendix E), exploratory measurement qualities of the instrument were examined in line with the recommendations of Pett, Lackey, and Sullivan (2003). Principle axis factoring analysis (PAF) was conducted on the correlation matrix to attest the measure's factor dimensionality using the sample of 481 participants. The interitem correlation matrix of the amalgamate conflict measure shows the majority of items correlated $\geq | .30 |$ with at least three other items in the matrix, with the exceptions being items that required reverse coded (see Table 9). No interitem correlations exceeded $| .70 |$, indicating no multicollinearity among items.

Table 8

Data Aggregation by Group Membership and Reliability of Group Means

Variable	ICC1	ICC2	α	*p*-value[b] of ICC1 *F* ratio
Information Exchange	.12	.31	–	.022
Task Conflict	.31	.59	.82	.000
Relationship Conflict	.34	.62	.85	.000
Process Conflict	.36	.65	.77	.000
Affective-Based Trust	.15	.36	.84	.005
Cognition-Based Trust	.08	.23	.86	.108
Agreeable Conflict Management	.16	.39	.81	.004
Active Conflict Management	.00	.01	.79	.969
Conflict Resolution	.10	.27	.78	.048
Timeliness/Speed of Work	.15	.37	–	.005
Satisfaction with Group	.14	.35	–	.017
Creativity/Innovativeness	.06	.18	–	.210
Outcome Satisfaction	.28	.55	–	.000
Future Group Viability	.19	.43	–	.002
Outcome Quality Compared	.20	.46	–	.000
Student Estimated Project Grade	.29	.57	–	.000
Assigned Project Grade[a]	.46	.73	–	.000
Estimated Project Grade[a]	.59	.82	–	.000

Note. [a] Rating provided by instructor. [b] Two-tailed.

Examining the factor analysis, a determinant of .009 was attained, with significant Bartlett's Test of Sphericity, $\chi^2(66) = 2154.7$, $p < .001$, confirming the analyzed correlation matrix to be neither singular nor an identity matrix, thus rendering the solution factorable. The Keiser-Meyer-Olkin measure of sampling adequacy value of .836 indicated "meritorious" sampling adequacy (Kaiser, 1974, p. 35), with anti-image correlation matrix diagonals (i.e., measures of item sampling adequacy) ranging from .61 to .89, with the majority of values greater than .80. Items 3, 4, and 12 were dropped from further analysis due to low

Table 9

Interitem Correlations of Amalgamate Conflict Measure

Items	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11
Item 1											
Item 2	.67**										
Item 3	.15**	.23**									
Item 4	.21**	.21**	.60**								
Item 5	.46**	.57**	.12*	.11*							
Item 6	.31**	.39**	.18**	.18**	.44**						
Item 7	.54**	.57**	.13**	.15**	.47**	.43**					
Item 8	.49**	.47**	.06	.12**	.45**	.27**	.65**				
Item 9	.49**	.40**	.07	.09	.35**	.28**	.47**	.57**			
Item 10	.56**	.48**	.13**	.18**	.46**	.30**	.65**	.66**	.67**		
Item 11	.15**	.12**	-.12*	-.09*	.16**	.13**	.20**	.33**	.34**	.31**	
Item 12	.04	.09	.16**	.14**	.01	.00	.03	.03	.07	.06	-.17**

Note. Full item descriptions can be found in Appendix E. Items 3, 4, and 12 were reverse coding prior to analyses.

$\Sigma_j n_j = 481$ participants.

*$p < .05$. **$p < .01$. Two-tailed significance testing.

interitem correlations (i.e., $r <$ | .30 | with most items) and low anti-image correlation measures of sampling adequacy (i.e., MSA < .70).

Factor extraction proceeded by combining several commonly used methods throughout the literature. Examination of the 5% variance per factor rule, scree plot (see Figure 3), and cumulative variance explained rule (see Kline, 2005) suggest the possibility of a one-factor or two-factor solution ($\lambda_1 = 4.25$, 47.1% of variance; $\lambda_2 = 0.72$, 8.0% of variance). A maximum likelihood significance test, however, indicated a five-factor solution ($\chi^2[1] = 3.01$, $p = .08$) to be superior to a four-factor solution ($\chi^2[6] = 21.6$, $p < .01$). Ultimately, a two-factor solution was chosen due to parsimoniously accounting for at least 50% of the common variance in the items, with each factor uniquely accounting for more than 5%, and aligning with the a priori rationale of the proposed two-factor solution.

Oblique factor rotation using the direct oblimin technique was used to enhance factor interpretability. Item 7 was dropped due multiple-loadings (i.e., loadings >.30 across multiple factors in the pattern matrix, and loadings >.60 across multiple factors in the structure matrix) and aligning less strongly to the proposed factor than to the other. Factor loadings of the remaining items were sufficiently strong (i.e., ranging from .47 to .93 in the pattern matrix) and loaded onto only one factor when controlling for the other factor. Pattern and structure matrices can be found in Table 10. The derived two-factor solution is reflective of active (items 1, 2, 5, & 6) and agreeable (items 8, 9, 10, & 11) conflict management, with items loading as expected to their respective factors.

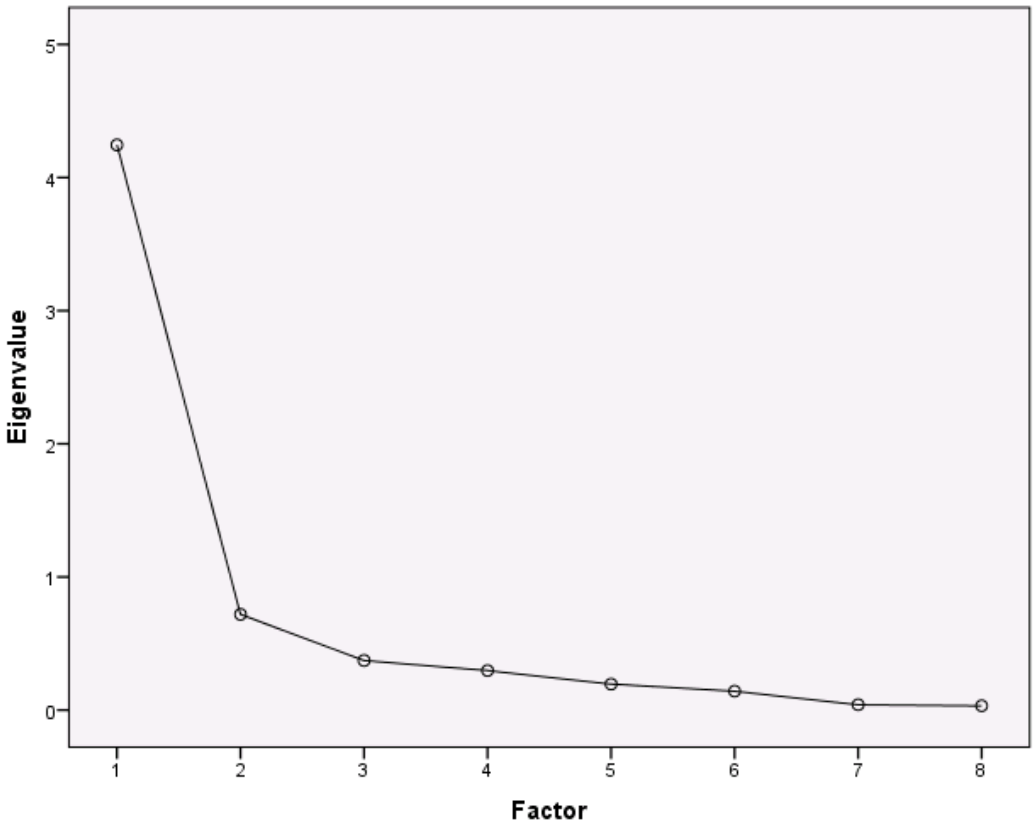

Figure 3. Scree Plot of Amalgamate Conflict Management Factor Structure using Extracted Sum of Squared Loadings.

To further examine properties of the amalgamate conflict management instrument, confirmatory factor analysis was conducted on the derived two-factor solution using a maximum likelihood estimation with standardized latent factors. Tests of model fit were the following: $\chi^2(19) = 85.4$, $p < .001$, CFI = .96, TLI = .94, RMSEA = .09 (90% confidence interval: .07–.10), SRMR = .04. Together, these indices are consistent with standards of a good model fit. Additionally, both agreeable (items 1, 2, 5, 6; $\alpha = .77$) and active (items 8, 9, 10, 11; $\alpha = .77$) dimensions of conflict management displayed conventionally acceptable internal consistency. Factor-based scale scores were generated for subsequent analyses by

Table 10

Pattern and Structure Matrices of Amalgamate Conflict Management Measure

	Pattern Matrix		Structure Matrix	
	Agreeable Conflict Mgmt.	Active Conflict Mgmt.	Agreeable Conflict Mgmt.	Active Conflict Mgmt.
Item 1	.66		.74	.50
Item 2	.93		.87	.41
Item 5	.64		.67	.41
Item 6	.47		.49	
Item 8		.58	.59	.73
Item 9		.68	.53	.76
Item 10		.67	.64	.82
Item 11		.50		.44

Note. Extraction method was principal axis factoring. Rotation method was oblimin with Kaiser normalization. Factor loadings <.30 are suppressed. This final factor solution omits items 3, 4, 7, and 12.

averaging the scores of the items for each factor.

Hypothesis Testing

Hypothesis I

Hypothesis I asserts that relationship conflict will be negatively associated with group effectiveness outcomes.

Instructor-provided outcomes. In examining the association between relationship conflict and instructor assessments of output quality, random coefficient regressions in HLM were used, with instructor as the higher order predictor. Results indicate the level 1 predictor, relationship conflict, to be unrelated to instructor estimated project grade ($\gamma = 0.11$, $SE = 0.21$), $t(127) = 0.51$, $p = .61$. Regarding instructor assigned project grade, due to its highly

negatively skewed distribution (skewness = –2.65), this outcome variable was normalized using a squared component transformation (i.e., X^2) in order to comply with the assumption of normally distributed residuals when conducting linear regression. Using (squared) instructor assigned project grade as the focal outcome, it was found that relationship conflict was not a significant predictor of instructor assigned project grade ($\gamma = 175.5$, $SE = 261.1$), $t(127) = 0.67$, $p = .50$.

Student-provided outcomes. Pearson product-moment correlations were used to test this hypothesis for student-provided assessments of outcome quality. In relation to the group effectiveness outcomes examined, relationship conflict was significantly negatively related to timeliness/speed of work ($r = –.35$, $p < .001$), future group viability ($r = –.50$, $p < .001$), satisfaction with group ($r = –.52$, $p < .001$), satisfaction with outcome quality ($r = –.44$, $p < .001$), creativity/ innovation ($r = –.35$, $p < .001$), student estimated outcome quality compared to other groups ($r = –.40$, $p < .001$), and student estimated project grade ($r = –.39$, $p < .001$).

Summary. Hypothesis I was thus partly supported, as student-provided performance effectiveness outcomes were associated with relationship conflict in the predicted direction whereas instructor-provided assessments were not.

Hypothesis II

Hypothesis II states that intragroup informational diversity will be positively associated with group information exchange. This correlation was found to be not statistically significant ($r = .06$, $p = .52$). Thus, Hypothesis II was not supported.

Hypothesis III

Hypothesis III states that intragroup informational diversity will be positively associated with group effectiveness outcomes involving creativity, innovation, or group decision making quality.

Instructor-provided outcomes. Using random coefficient regressions in HLM, with instructor as the higher order predictor, informational diversity was found to be positively related to instructor estimated project grade ($\gamma = 1.10$, $SE = 0.33$), $t(111) = 3.27$, $p < .01$. Likewise, (squared) instructor assigned project grade exhibited a significant positive association with informational diversity ($\gamma = 1170.8$, $SE = 432.4$), $t(116) = 2.71$, $p < .01$.

Student-provided outcomes. Using bivariate correlations, informational diversity was not significantly correlated with the following student-provided outcomes: satisfaction with group ($r = .01$, $p = .90$), timeliness/speed of work ($r = –.02$, $p = .85$), satisfaction with outcome ($r = –.02$, $p = .80$), ratings of creativity/ innovation ($r = .08$, $p = .36$), group viability ($r = .04$, $p = .66$), estimated outcome quality compared to other groups ($r = –.05$, $p = .60$), or student estimated project grade ($r = .05$, $p = .55$).

Summary. Thus, Hypothesis III was partly supported, as instructor assessments of output quality were in line with predictions concerning informational diversity whereas student-provided outcomes were not.

Hypothesis IV

Hypothesis IV states that group information exchange will be positively associated with group effectiveness outcomes involving creativity, innovation, or

group decision making quality.

Instructor-provided outcomes. Using random coefficient regressions in HLM, with instructor as the higher order predictor, information exchange was found to be marginally related to instructor estimated project grade ($\gamma = 0.30$, $SE = 0.17$), $t(127) = 1.76$, $p = .08$. Subsequently, (squared) instructor assigned project grade did not exhibit a significant association with information exchange ($\gamma = 85.1$, $SE = 218.9$), $t(126) = 0.39$, $p = .70$.

Student-provided outcomes. Information exchange was significantly positively correlated with the following student-provided outcomes: satisfaction with group ($r = .67$, $p < .001$) timeliness/speed of work ($r = .50$, $p < .001$), satisfaction with outcome ($r = .59$, $p < .001$), ratings of creativity/innovation ($r = .46$, $p < .001$), group viability ($r = .64$, $p < .001$), estimated outcome quality compared to other groups ($r = .43$, $p < .001$), and student estimated project grade ($r = .55$, $p < .001$).

Summary. Collectively, student-provided data were supportive of Hypothesis IV, whereas instructor-provided data were only partly supportive. This suggests information exchange to be beneficial indicators of group effectiveness, especially when ratings are provided by group members themselves.

Hypothesis V

Hypothesis V asserts that group information exchange will have a stronger (positive) association with group effectiveness outcomes involving creativity, innovation, or group decision making quality than will task conflict. The

following equation (Howell, 1997, p. 264) was used to test the difference between these two nonindependent correlations (i.e., *r*-values; see *Equation 1*).

$$t = (r_{12} - r_{13}) \sqrt{\frac{(N-1)(1+r_{23})}{2\left(\frac{N-1}{N-3}\right)|R| + \frac{(r_{12}+r_{13})^2}{4}(1-r_{23})^3}} \quad (1)$$

$$\text{where } |\mathrm{R}| = (1 - r_{12}^2 - r_{13}^2 - r_{23}^2) + (2\, r_{12} r_{13} r_{23})$$

Strength of correlation comparisons between information exchange and task conflict by performance outcomes can be found in Table 11.

Instructor-provided outcomes. Associations among instructor-provided ratings will be addressed first. For the outcome variable instructor assigned project grade, the correlation was not significantly different with information exchange (r = .07, p = .45) than with task conflict (r = .11, p = .22), $t(128)$ = –0.30, p = n. s. Additionally, for the outcome variable instructor estimated project grade, the correlation was not significantly stronger with information exchange (r = .19, p = .03) than with task conflict (r = .12, p = .19), $t(128)$ = –0.53, p = n. s. However, I caution interpretation of these results as instructor-provided outcomes were shown to display dependence on instructor as indicated in the subsection titled “Testing for Hierarchical Dependence (i.e., Instructor Effects)” of this Results section, calling into question the appropriateness of conclusions derived from correlations between instructor- and student-provided variables.

Table 11

Strength of Correlation Comparisons between Information Exchange and Task Conflict by Performance Outcomes

Performance Outcomes	Information Exchange	Task Conflict	*t*-value
Satisfaction With Group	$r = .67^{***}$	$r = -.28^{**}$	$t = 9.23^{***}$
Timeliness/Speed of Work	$r = .50^{***}$	$r = -.13$	$t = 5.29^{***}$
Satisfaction with Outcome Quality	$r = .59^{***}$	$r = -.32^{***}$	$t = 8.44^{***}$
Creativity/Innovativeness	$r = .46^{***}$	$r = -.28^{**}$	$t = 6.18^{***}$
Group Viability	$r = .64^{***}$	$r = -.15$	$t = 7.26^{***}$
Estimated Outcome Quality Compared	$r = .43^{***}$	$r = -.34^{**}$	$t = 6.49^{***}$
Student Estimated Project Grade	$r = .55^{***}$	$r = -.26^{**}$	$t = 7.07^{***}$
Assigned Project Grade [a]	$r = .07$	$r = .11$	$t = -0.30$
Estimated Project Grade [a]	$r = .19^{*}$	$r = .12$	$t = -0.53$

Note. A two-tailed *t*-test (*df* = 128) was used to test the difference between each pair of nonindependent correlations.

[a] Rating provided by instructor.

$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Student-provided outcomes. For student-provided ratings (see Table 11 for summary), correlations with performance outcomes between information exchange and task conflict were consistent; in all cases performance outcomes were (significantly) positively related to information exchange and (all but two were significantly) negatively related to task conflict. Additionally, in all cases coefficients were more strongly related to information exchange than to task conflict at the level of $p < .001$, as indicated by *t*-test results.

Summary. Among student-provided ratings, information exchange was positively associated with group effectiveness outcomes whereas task conflict, in contrast, was negatively associated. Associations between student-provided outcomes and information exchange were stronger in comparison to associations between student-provided outcomes and task conflict. Thus, it appears for student-provided outcomes, information exchange is a stronger predictor than task conflict. In lieu of this, no significant differences in the associations between information exchange and task conflict were found for instructor-provided assessments of output quality. Collectively, these patterns partly support Hypothesis V.

Hypothesis VI

Hypothesis VI asserts that task conflict will have a curvilinear association with group effectiveness outcomes involving creativity, innovation, or group decision making quality. Specifically, at moderate levels of task conflict, team effectiveness outcomes are expected to be superior in comparison to when task conflict is low or high.

Instructor-provided outcomes. Because multilevel dependency was found for instructor-provided outcomes, HLM was required for testing thereof, with instructor as the higher order predictor. Examined concomitantly, HLM analyses indicate a marginally significant association between (squared) instructor assigned project grade and task conflict ($\gamma = 479.8$, $SE = 255.9$), $t(126) = 1.88$, $p = .06$; nonsignificant patterns were found with task conflict's quadratic term ($\gamma = –211.4$, $SE = 226.5$), $t(121) = –0.93$, $p = .35$). Pertaining to instructor estimated project

grade, when examined concomitantly, a significant positive association was found when examining task conflict as a predictor ($\gamma = 0.46$, $SE = 0.20$), $t(125) = 2.29$, $p = .02$; however, task conflict's quadratic term was not a significant predictor ($\gamma = -0.29$, $SE = 0.18$), $t(121) = -1.62$, $p = .11$).

Student-provided outcomes. For student-provided assessments, hierarchical regression was used; analyses included task conflict in step 1, and its quadratic term in step 2, in order to test for a negative curvilinear association with group effectiveness outcomes. There were no curvilinear associations between task conflict and student-provided outcomes after adding the quadratic task conflict interaction block to the model; this includes the following outcomes: satisfaction with group ($\Delta R^2 = .00$, $\Delta F[1, 126] = 0.05$, $p = .82$), timeliness/speed of work ($\Delta R^2 = .00$, $\Delta F[1, 126] = 0.13$, $p = .72$), satisfaction with outcome ($\Delta R^2 = .00$, $\Delta F[1, 126] = 0.06$, $p = .80$), ratings of creativity/innovation ($\Delta R^2 = .00$, $\Delta F[1, 126] = 0.05$, $p = .83$), group viability ($\Delta R^2 = .01$, $\Delta F[1, 126] = 0.92$, $p = .34$), estimated outcome quality compared to other groups ($\Delta R^2 = .02$, $\Delta F[1, 126] = 2.27$, $p = .13$), and student estimated project grade ($\Delta R^2 = .01$, $\Delta F[1, 126] = 1.08$, $p = .30$).

Summary. Hypothesis VI was not supported, as task conflict was not related to performance effectiveness in a negative curvilinear pattern.

Hypothesis VII

Hypothesis VII asserts that group information exchange will have a stronger (positive) association with group effectiveness outcomes involving

creativity, innovation, or group decision making quality than will (curvilinear) task conflict.

Instructor-provided outcomes. Because multilevel dependency was found for instructor-provided outcomes, HLM was required for testing thereof, with instructor as the higher order predictor. In order to conduct significance testing by examining absolute values of 95% confidence intervals surrounding estimates of fixed effects, all variables were standardized as *z*-scores prior to analyses.

Examined concomitantly, HLM analyses indicate task conflict to be the strongest predictor of (squared) instructor assigned project grade ($\gamma = 0.20$, $SE = 0.09$, $t[123] = 1.96$, $p = .05$, 95% C.I. = 0.00 to 0.41) with information exchange following ($\gamma = 0.06$, $SE = 0.09$, $t[124] = 0.71$, $p = .48$, 95% C.I. = –0.11 to 0.24) and squared task conflict ($\gamma = -0.08$, $SE = 0.09$, $t[120] = -0.84$, $p = .40$, 95% C.I. = –0.27 to 0.11). The inclusion of estimates of fixed effects within respective confidence intervals suggests information exchange to not differ significantly in magnitude as a predictor of (squared) instructor assigned project grade compared to task conflict or its curvilinear term.

Examined concomitantly, HLM analyses likewise indicate task conflict to be the strongest predictor of instructor estimated project grade ($\gamma = 0.27$, $SE = 0.10$, $t[122] = 2.62$, $p = .01$, 95% C.I. = 0.07 to 0.48) with information exchange following ($\gamma = 0.18$, $SE = 0.09$, $t[125] = 2.05$, $p = .04$, 95% C.I. = 0.01 to 0.35) and squared task conflict ($\gamma = -0.13$, $SE = 0.10$, $t[120] = -1.37$, $p = .17$, 95% C.I. = –0.32 to 0.06). The inclusion of estimates of fixed effects within respective confidence intervals suggests information exchange to not differ significantly in

magnitude as a predictor of instructor estimated project grade compared to task conflict or its curvilinear term.

Student-provided outcomes. For student-provided assessments, multiple regression was used for testing thereof; analyses included information exchange, task conflict, and squared task conflict, examined concomitantly, in order to compare vis-à-vis the strength of association with group effectiveness outcomes. In order to conduct significance testing by comparing beta weights to absolute values of 95% confidence intervals, all variables were standardized as *z*-scores prior to analyses. Data are presented in Table 12.

When examined concomitantly with task conflict and its quadratic term, information exchange was the predictor of strongest magnitude for all student-provided outcomes. Additionally, due to the nonoverlap of β-weights with confidence intervals, information exchange could be considered significantly stronger than task conflict and its quadratic term as a predictor of the following outcomes: satisfaction with group, timeliness/speed of work, satisfaction with outcome quality, creativity/innovativeness, group viability, and student estimated project grade. However, there was overlap of β-weight and confidence intervals for the outcome, estimated outcome quality compared to other groups, indicating nonsignificant differences in predictability between task conflict and information

Summary. Hypothesis VII was mostly supported. The majority of student-provided outcomes coincided with predictions regarding information exchange as the strongest predictor of outcomes, instructor provided outcomes were also partly supported. Information exchange was significant (or in the case of [squared]

Table 12

Multiple Regression of Student-Provided Performance Outcomes on Information Exchange, Task Conflict, and Squared Task Conflict

Performance Outcome	Predictor	β	*t*-value[a]	95% C.I. for β
Satisfaction With Group	Info Exch	0.65	9.76***	0.52 to 0.78
	TC	–0.20	–2.77**	–0.35 to –0.06
	TC^2	0.09	1.21	–0.06 to 0.24
Timeliness/Speed of Work	Info Exch	0.51	6.52***	0.36 to 0.67
	TC	–0.10	–1.13	–0.27 to 0.07
	TC^2	0.12	1.42	–0.05 to 0.30
Satisfaction with Outcome Quality	Info Exch	0.56	7.82***	0.42 to 0.70
	TC	–0.25	–3.22**	–0.41 to –0.10
	TC^2	0.07	0.91	–0.09 to 0.23
Creativity/ Innovativeness	Info Exch	0.44	5.52***	0.28 to 0.60
	TC	–0.24	–2.76**	–0.42 to –0.07
	TC^2	0.10	1.09	–0.08 to 0.27
Group Viability	Info Exch	0.64	9.08***	0.50 to 0.78
	TC	–0.04	–0.51	–0.19 to 0.11
	TC^2	0.02	0.19	–0.14 to 0.17
Estimated Outcome Quality Compared	Info Exch	0.37	4.66***	0.21 to 0.53
	TC	–0.24	–2.68**	–0.41 to –0.06
	TC^2	–0.08	–0.89	–0.25 to 0.10
Student Estimated Project Grade	Info Exch	0.51	6.78***	0.36 to 0.66
	TC	–0.16	–1.92	–0.33 to 0.01
	TC^2	–0.01	–0.15	–0.18 to 0.15

Note. Info Exch = information exchange. TC = task conflict.

[a] *df* = 128, two-tailed.

*$p < .05$. **$p < .01$. ***$p < .001$.

exchange.

instructor assigned project grade, marginally significant, $p = .05$) as a predictor of all outcomes, and was the strongest of the three predictors for all student-provided outcomes. Task conflict, not information exchange, was the strongest predictor of instructor-provided outcomes, although overlap of β-weights with confidence intervals indicates that the magnitude of difference was not significantly greater than these other predictors.

Hypothesis VIII

Hypothesis VIII states that task conflict will be positively associated with relationship conflict. This hypothesis was supported by the present data ($r = .62$, $p < .001$), and corroborates previous meta-analysis findings that indicate a strong positive association between these variables (i.e., $k = 24$, $\rho = .54$; De Dreu & Weingart, 2003).

Hypothesis IX

Hypothesis IX asserts that trust will moderate the association between task conflict and relationship conflict. Specifically, when intragroup trust is low, task conflict is expected to have a stronger (positive) association with relationship conflict, whereas when intragroup trust is high, task conflict is expected to have a weaker association with relationship conflict. Two hierarchical regression analyses were used to test this association, one for each dimension of trust (i.e., affective- and cognition-based). Using relationship conflict as the outcome, task conflict and trust dimension were added as predictors in step 1, with an interaction term (i.e., task conflict × dimension of trust) added in step 2.

Affective-based trust. The model was significant in step 1 (R^2 = .42), F(2, 126) = 45.15, p < .001, suggesting task conflict (β = 0.60, t = 8.69, p < .001) and affective-based trust (β = –0.19, t = –2.75, p < .01) to be significantly predictive of relationship conflict. There was, however, no significant model improvement after adding the task conflict × affective-based trust interaction term (β = –0.04, t = –0.63, p = .53) in step 2 (ΔR^2 = .00), ΔF(1,125) = 0.39, p = .53. This suggests that affective-based trust does not moderate the association between task conflict and relationship conflict.

Cognition-based trust. The model was significant in step 1 (R^2 = .52), F(2, 126) = 63.69, p < .001, suggesting task conflict (β = 0.55, t = 8.53, p < .001) and cognition-based trust (β = –0.35, t = –5.52, p < .001) to be significantly predictive of relationship conflict. There was also significant model improvement after adding the task conflict × cognition-based trust interaction term (β = –0.14, t = –2.30, p < .05) in step 2 (ΔR^2 = .02), ΔF(1,125) = 5.27, p < .05, with predictors task conflict (β = 0.52, t = 8.15, p < .001) and cognition-based trust (β = –0.36, t = –5.34, p < .001). Specifically, in conditions of low cognition-based trust, the association between task conflict and relationship was stronger in comparison to when cognition-based trust was high. This suggests that cognition-based trust moderates the association between task conflict and relationship conflict.

Summary. Despite that affective-based trust was not a significant moderator of the association between task conflict and relationship conflict, cognition-based trust did moderate this association. As result, Hypothesis IX was partly supported.

Hypothesis X

Hypothesis X asserts that collaborative conflict management will be negatively associated with relationship conflict. Using multiple regression, relationship conflict was regressed on the two dimensions of collaborative conflict management, namely scores of active and agreeable conflict management scales. The regression model was significant ($R^2 = .31$), $F(2, 126) = 28.00$, $p < .001$, suggesting that relationship conflict may be abated by collaborative styles of conflict management. However, while agreeable conflict management was significant as a predictor ($\beta = –0.51$, $t = –5.21$, $p < .001$), active conflict management ($\beta = –0.07$, $t = –0.66$, $p = .51$) was not when examined concomitantly. Therefore, while Hypothesis X was generally supported, the data suggest agreeable conflict management to play a substantial role in reducing relationship conflict in comparison to active conflict management.

Hypothesis XI

Hypothesis XI asserts that collaborative conflict management behaviors will be associated with perceptions of intragroup trust. Using multiple regression, intragroup trust dimensions (i.e., affective- and cognition-based trust) were regressed on the two dimensions of collaborative conflict management, namely scores of active and agreeable conflict management scales.

Affective-based trust. In the first analysis, with affective-based trust as the dependent variable, the regression model was significant ($R^2 = .25$), $F(2, 126) = 21.31$, $p < .001$, suggesting affective-based trust to be related to collaborative conflict management behaviors. However, while active conflict management was

significant as a predictor in a positive direction (β = 0.40, t = 4.01, p < .001), agreeable conflict management (β = 0.13, t = 1.28, p = .20) was not significantly predictive when examined in tandem.

Cognition-based trust. In the second analysis, with cognition-based trust as the dependent variable, the regression model was significant (R^2 = .32), F(2, 126) = 30.23, p < .001, suggesting cognition-based trust to be related to collaborative conflict management behaviors. Both active conflict management (β = 0.36, t = 3.69, p < .001) and agreeable conflict management (β = 0.27, t = 2.77, p < .01) were significant as predictors in a positive direction.

Summary. Hypothesis XI was generally supported. The data suggest collaborative conflict management behaviors to be positively associated with perceptions of intragroup trust. It should be noted, however, that despite the bivariate association between agreeable conflict management and affective-based trust (r = .40, p < .001), this association was not significant after including active conflict management simultaneously as a predictor via multiple regression.

Hypothesis XII

Hypothesis XII asserts that collaborative conflict management is positively associated with group effectiveness outcomes involving creativity, innovation, or group decision making quality.

Instructor-provided outcomes. Because multilevel dependency was found for instructor-provided outcomes, HLM was required for testing thereof, with instructor as the higher order predictor. When examined concomitantly, HLM analyses indicate there to be no significant association between instructor

estimated project grade and active conflict management ($\gamma = 0.30$, $SE = 0.23$), $t(123) = 1.28$, $p = .20$, and no significant association with agreeable conflict management ($\gamma = –0.29$, $SE = 0.25$), $t(123) = –1.16$, $p = .25$. Nonsignificant patterns of association were also found between (squared) instructor assigned project grade and active conflict management ($\gamma = 189.1$, $SE = 293.9$), $t(122) = 0.64$, $p = .52$, as well as between (squared) instructor assigned project grade and agreeable conflict management ($\gamma = –363.7$, $SE = 315.5$), $t(122) = –1.15$, $p = .25$, when examined concomitantly.

Student-provided outcomes. For student-provided outcomes, group effectiveness indicators were each regressed on conflict management dimension scores of active and agreeable conflict management, concomitantly. With satisfaction with group as the dependent variable, the regression model was significant ($R^2 = .28$), $F(2, 126) = 24.60$, $p < .001$, suggesting collaborative conflict management behaviors to be significantly predictive thereof. Active conflict management ($\beta = 0.38$, $t = 3.78$, $p < .001$) was significant as a predictor of satisfaction with group, and agreeable conflict management ($\beta = 0.20$, $t = 2.00$, $p < .05$) was marginally significant.

With timeliness/speed of work as the dependent variable, the regression model was significant ($R^2 = .19$), $F(2, 126) = 15.00$, $p < .001$, suggesting collaborative conflict management behaviors to be significantly predictive thereof. However, while active conflict management ($\beta = 0.37$, $t = 3.49$, $p < .001$) was significant as a predictor of timeliness/speed of work, agreeable conflict management ($\beta = 0.10$, $t = 0.92$, $p = .36$) was not.

With satisfaction with outcome as the dependent variable, the regression model was significant ($R^2 = .31$), $F(2, 126) = 15.74$, $p < .001$, suggesting collaborative conflict management behaviors to be significantly predictive thereof. Both active conflict management ($\beta = 0.33$, $t = 3.34$, $p < .01$) and agreeable conflict management ($\beta = 0.29$, $t = 2.92$, $p < .01$) were significant predictors of satisfaction with outcome.

With ratings of creativity/innovation as the dependent variable, the regression model was significant ($R^2 = .20$), $F(2, 126) = 15.71$, $p < .001$, suggesting collaborative conflict management behaviors to be significantly predictive thereof. However, while active conflict management ($\beta = 0.34$, $t = 3.19$, $p < .01$) was significant as a predictor of creativity/innovation, agreeable conflict management ($\beta = 0.15$, $t = 1.41$, $p = .16$) was not.

With group viability as the dependent variable, the regression model was significant ($R^2 = .25$), $F(2, 126) = 20.86$, $p < .001$, suggesting collaborative conflict management behaviors to be significantly predictive thereof. Active conflict management ($\beta = 0.32$, $t = 3.14$, $p < .01$) was significant as a predictor of group viability, as was agreeable conflict management ($\beta = 0.23$, $t = 2.23$, $p < .05$).

With estimated outcome quality compared to other groups as the dependent variable, the regression model was significant ($R^2 = .20$), $F(2, 126) = 15.71$, $p < .001$, suggesting collaborative conflict management behaviors to be significantly predictive thereof. However, while active conflict management ($\beta = 0.30$, $t = 2.85$, $p < .01$) was significant as a predictor of estimated outcome quality

compared to other groups, agreeable conflict management ($\beta = 0.19$, $t = 1.79$, $p = .08$) was only marginally significant.

With student estimated project grade as the dependent variable, the regression model was significant ($R^2 = .24$), $F(2, 126) = 19.96$, $p < .001$, suggesting collaborative conflict management behaviors to be significantly predictive thereof. Active conflict management ($\beta = 0.31$, $t = 3.00$, $p < .01$) was significant as a predictor of student estimated project grade, as was agreeable conflict management ($\beta = 0.23$, $t = 2.25$, $p < .05$).

Summary. Hypothesis XII was partly supported in examining conflict management behaviors as predictors of group effectiveness. All omnibus models involving student-provided assessments aligned with a priori predictions. Additionally, in the majority of cases, both conflict management factors of active and agreeable either met or, in several instances, approached the threshold of statistical significance as individual predictors of student-provided group effectiveness outcomes. Notwithstanding, predictions were not supported when examining conflict management behaviors in relation to instructor-provided performance effectiveness outcomes.

Consolidated Summary of Results

Of the 12 hypotheses tested, 10 were either fully or partly supported. Collectively this suggests the current conflict model to be relatively successful in explanatory and predictive properties. A listing of study hypotheses with summaries of statistical support can be found in Table 13.

Table 13

Summarized Statistical Support for Hypotheses

Hypothesis	Support	Summary
Hypothesis I	Partly supported	Relationship conflict predicted student-provided outcomes, but not instructor-provided outcomes.
Hypothesis II	Not supported	Informational diversity was not predictive of information exchange.
Hypothesis III	Partly supported	Informational diversity predicted instructor-provided outcomes, but not student-provided outcomes.
Hypothesis IV	Mostly supported	Information exchange predicted student-provided outcomes, and marginally predicted one of two instructor-provided outcomes.
Hypothesis V	Partly supported	Information exchange was stronger (and directionally dissimilar) compared to task conflict as a predictor of student-provided outcomes. Instructor-provided outcomes did not show significant differences.
Hypothesis VI	Not supported	Task conflict was not predictive of performance effectiveness in a negative curvilinear pattern.
Hypothesis VII	Partly supported	Among student-provided outcomes, information exchange was stronger as a predictor than task conflict and curvilinear task conflict. Information exchange was not more strongly predictive of instructor-provided outcomes compared to task conflict and curvilinear task conflict.
Hypothesis VIII	Supported	Task conflict was associated with increased relationship conflict.

Hypothesis IX	Partly Supported	Cognition-based trust moderated the association between task conflict and relationship conflict. Affective-based trust did not.
Hypothesis X	Generally supported	Collaborative conflict management, comprised of active and agreeable dimensions, was associated with reduced relationship conflict. However, when combined with the agreeable dimension, active conflict management did not predict collaborative conflict management.
Hypothesis XI	Mostly supported	Collaborative conflict management, comprised of active and agreeable dimensions, was associated with both affective-based trust, and cognition-based trust. However, when combined with the agreeable dimension, active conflict management did not predict affective-based trust.
Hypothesis XII	Partly supported	Collaborative conflict management, comprised of active and agreeable dimensions, positively predicted student-provided outcomes; in most cases both dimensions were predictive when examined together. Instructor-provided outcomes were not significantly predicted by collaborative conflict management dimensions.

CHAPTER IV

DISCUSSION

The majority of the hypotheses tested in this dissertation were supported or partly supported, with the exceptions being Hypotheses II and VI, which were not supported. These findings reinforce several associations found in the literature while shedding new light upon others.

Results of Hypothesis Testing

Relationship Conflict and Performance Outcomes

Relationship conflict was found to be negatively associated with virtually all student provided outcomes, as expected. These outcomes include perceptions of satisfaction with the group, outcome satisfaction, future group viability, and outcome quality, among others. However, relationship conflict was not significantly associated with instructor-provided performance effectiveness outcomes. This sheds light upon the nature of relationship conflict and outcomes associated with its presence. While groups may be engaged in relationship conflict, workers may yet be able to remain productive amidst interpersonal tension and animosity, though they may perceive discomfort and judge the workflow process as less than optimal. Counterintuitively, relationship conflict was associated with increased student estimated project grades (i.e., $r = .39$, $p < .001$). It is difficult to imagine scenarios in which relationship conflict would directly result in better project grades (or grade estimations). It could be that students with higher levels of relationship conflict tend to overestimate their project grade, although this is only speculative. Perhaps more conceivably, greater

time spent interacting as a group may have coincided with higher grade expectancies as well as increased relationship conflict.

Informational Diversity and Information Exchange

Unexpectedly, although the correlation was positive in direction (i.e., r = .06, p = .52), informational diversity was not found to be significantly associated with information exchange. The absence of a significant correlation has several potential implications. First, considering the context of this study, it is important to note that all student projects took place within the time constraints of an academic quarter. This begets questioning whether there is an upper or lower limit on the amount of information exchange to transpire, and whether this is dependent on the nature of the course design. For example, the structure imposed as result of project deadlines, class time reserved for project work, and course requirements may reduce the amount of variation in information exchange, and in particular when considering *within* compared to *between* classrooms. Additionally, whereas self-reported information exchange (not actual) was measured, it is unknown the extent to which *unique* information was exchanged in relation to *shared* information. Intuitively, one may suspect that among groups having diversity of information a greater proportion of unique information would be exchanged. However, some research suggests otherwise. Using hidden profile tasks, Schulz-Hardt et al. (2006) found that groups having informational diversity introduce a higher proportion of information into discussions compared to groups with homogenous information; additionally, the former was found to repeat mention of information more often and spend longer deliberating.

Thus it appears difficult for groups with informational diversity to incorporate and also process diverse perspectives without discussion, which may result in longer deliberations. In the current study, informational diversity was not related to perceptions of timeliness/speed of work ($r = –.02$, $p = .85$), but information exchange was positively related to perceptions of timeliness/speed of work ($r = .50$, $p < .001$). I conjecture that information exchange could lead to more expedited outcomes if groups are better apprised of deadlines and are facilitated toward task completion during group discussions. However, information exchange should also be weighed against the amount of time taken *away* from taskwork completion.

Information Exchange and Performance Outcomes

In addition to timeliness/speed of work, information exchange was significantly positively related to all other student provided outcomes, including satisfaction with the group, satisfaction with outcome, ratings of creativity/ innovation, group viability, estimated outcome quality compared to other groups, and estimated project grade. However, instructor-provided outcomes equivocally related to information exchange, with instructor estimated grade being marginally significantly related to information exchange and instructor assigned grade not related to information exchange.

The discrepancy between instructor-provided outcomes in relation to information exchange is initially perplexing. However, in understanding the impact of information exchange on performance it may be helpful to compare instructor assigned and estimated project grade. Instructor estimated grade was

included because of factors thought to potentially influence actual assigned grades, such as leniency, lateness penalty, or other rigidities of grading rubrics. Estimated project grade was meant to circumvent problematic appraisal issues and represent a more candid judgment of student output quality, bearing no repercussion on students' academic outcomes. Past research guided this logic, highlighting differences between administrative and developmental performance appraisals, with administrative appraisals being more lenient and less candid (Harris, Smith, & Champagne, 1995). In the current study instructor estimated and assigned grades are similar though not identical ($r = .74$, $p < .001$), and (prior to transformation) assigned grade had a larger negative skewness value than estimated grade (i.e., –2.65 and –1.10, respectively). In brief, estimated project grade appears to be a less lenient and more candid assessment and may better reflect outcome quality than assigned project grade. Given this reasoning, it is not surprising that estimated project grade was more closely aligned with predictions relating to information exchange than was assigned project grade.

I conjecture that team members generally appreciate the information exchange process, which is associated with a host of positive outcomes. Member ratings suggest this group process to be fundamental to group worth and generally not a hindrance to task accomplishment, but rather a facilitator thereof. Information exchange appears likely to enhance the psychological well-being of the group, eradicate flawed logic, and facilitate optimum decision-making and perceptions thereof. Interdependent groups that are anchored on discussion as a

forum of collaboration should bring members together with confidence for group accomplishment in this manner.

Informational Diversity and Performance Outcomes

Empirical testing of the association between informational diversity and group effectiveness outcomes involving creativity, innovation, or group decision making quality yielded conflicting results. Instructor-provided assessments were significantly positively related to informational diversity, including assigned and estimated project grades, supporting predictions. However, student-provided outcomes were not supportive of predictions, as the following outcomes were not related to informational diversity: satisfaction with group, timeliness/speed of work, satisfaction with outcome, ratings of creativity/innovation, group viability, estimated outcome quality compared to other groups, and estimated project grade. As operationalized in the current study, informational diversity conceptualizes variety in terms of student academic background. This group-level input is thought to enhance the pool of cognitive resources of the team. Several authors propose informational diversity to be a facilitator of creativity and new discovery (Damon, 1991; Levine & Resnick, 1993; Nonaka & Takeuchi, 1995). However, it seems likely that information exchange is needed for this to be realized (van Knippenberg et al., 2004). In investigating this proposition, a series of exploratory analyses were conducted to control for the amount of information exchange, treating it as a covariate, in explaining how informational diversity would impact performance outcomes. Informational diversity was not significant in predicting student assessments, even after controlling for information exchange.

Student outcome assessments indicated no benefits associated with informational diversity whereas teacher outcome assessments highlighted informational diversity to be beneficial. These data suggest that regardless of whether subjective perceptions of performance are affected, informational diversity can potentially have some rewarding effects on performance output quality. This may be explained by the categorization elaboration model (CEM) proposed by van Knippenberg et al. (2004), which states that conceptualizations of diversity can have both positive and also negative implications. The social categorization perspective supports diversity giving rise to differences, which may reduce member satisfaction to the extent group dissimilarity and discordant perspectives are perpetuated, leading to in- and out-groups (Mannes, 2009; Williams & O'Reilly, 1998). It could be that members do not always realize the benefits of informational diversity, perhaps because of unwelcomed conflict that sometimes ensues. Divergent perspectives increase the likelihood of others arriving at discord with one's own set of preferences or beliefs, causing a greater demand for cognitive attention in order to resolve. Members may dislike the discomfort created by such conflicts or take action to avoid confrontation, which may lead to the phenomenon commonly referred to as groupthink if at the expense of critical thinking (Janis, 1971). The current data indicate some support for these conclusions. Informational diversity and task conflict were significantly positively associated ($r = .27$, $p < .01$), suggesting informational diversity to be a precursor to task conflict due to temporal precedence. Also of note, and although these associations did not reach the threshold for statistical significance, there is

some data alignment with aspects of the categorization-elaboration model and groupthink, as informational diversity was positively associated with relationship conflict ($r = .10$, $p = .24$) and negatively associated with active conflict management ($r = –.07$, $p = .42$). In summary, informational diversity appears to be potentially beneficial to certain performance outcomes, particularly to formal evaluations of group submission quality, although such benefits may come at the expense of affective or interpersonal types of outcomes.

Information Exchange and Task Conflict Juxtaposed

Because of the lack of consistency in theorizing, labeling, and measurement across literatures, information exchange was compared directly to task conflict across several analyses to distinguish between these often convoluted constructs. Student-provided outcomes provide clear evidence that the constructs are indeed unique and differentially predictive of performance outcomes. In summary, information exchange was significantly positively related to performance outcomes whereas task conflict was generally negatively associated. Additionally, the magnitudes of correlations between information exchange and outcomes were significantly stronger than correlations between task conflict and outcomes. These findings support speculation that information exchange and task conflict are unique predictors of group effectiveness, both quantitatively and qualitatively. In theory, information exchange, as a primary group process behavior, is expected to coincide with task conflict to the extent substantive conflict is expressed. However, under the presumptions of the input-mediator-output-input I-M-O-I model (Ilgen et al., 2005), it is important to consider both

directions of effects, including the effects of task conflict on information exchange, as well as reciprocal effects that information exchange might have on task conflict. While this cyclical association could be further studied, the current findings reinforce that task conflict is generally not welcomed by group members and can be perceived as a disturbance to group harmony and an impediment to output quality and outcome satisfaction.

Instructor-provided outcomes depict somewhat of a different account with respect to the vis-à-vis comparison of information exchange and task conflict with performance effectiveness outcomes. The associations between task conflict and instructor-provided outcomes were uniformly positive, although not statistically significant. Additionally, information exchange and task conflict were not significantly different in direction or magnitude with respect to their correlations with instructor-provided performance effectiveness outcomes, including assigned and estimated project grade.

While the discrepancy between student- and instructor-provided outcomes may be initially perplexing, it may be worthwhile to consider past research, which suggests self- and supervisor-provided performance ratings are not always in alignment (Harris & Schaubroeck, 1988). Some researchers argue that members do not always realize the benefits of task conflict, as conflict of one form is likely to lead to another, where misattribution may take place (Simons & Peterson, 2000; Torrance, 1957). If the benefits of task conflict go unrealized or, for example, contribute to taskwork (i.e., performing equipment- and task-related job functions) at the expense of teamwork (i.e., favorable team interactions and

understanding member abilities), conflict may be accompanied by reductions in performance outcome appraisals (Lukasik; 2009; for a review of this phenomenon see Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000). Schulz-Hardt et al. (2008) evaluate that "even if dissent is expressed, the recipients might fail to react on it due to ignorance, lack of motivation, or lack of capacity or skills. In these cases, dissent is not transformed into beneficial outcomes" (p. 165).

Thus it appears that diagnosing benefits associated with task conflict remains challenging due to the complexities surrounding the nature of the conflict as well the unpredictability of member reactions. In the current study there may have been neutral or slight benefits to performance in the presence of task conflict as gauged through appraisal sources other than group members themselves, that is, instructor-provided outcomes. These contrast with team member assessments, which were unanimously negatively related to task conflict. This discrepancy highlights the importance of considering the source of performance evaluations. This aligns with the meta-analysis of de Wit, Greer, and Jehn (2012), who reinvestigate the conflict-performance association including data accumulated subsequent to the De Dreu and Weingart (2003) meta-analysis. These authors recommend taking a contingency approach to conflict research by paying close attention to specific outcome associations. For one, all forms of conflict (i.e., relationship, task, and process) related more closely to proximal (e.g., satisfaction and cohesion) compared to distal outcomes (e.g., group performance). Also, they conclude that task conflict and performance outcomes do not share as strong a

negative association as was previously believed, with the association being equivocal and sometimes even positive depending on situational variables.

In explaining the results of the current study, it is conceivable for instructors to view elevated conflict as a source of disharmony that detracts from teamwork. In cases of conflict escalation, instructors would likely observe member disharmony or trepidation, be notified by members of concern for these existences, or in cases of impasse, be called upon to arbitrate member disputes. It should be noted, however, that elevated conflict levels were exceedingly rare according to member self-reports, and resultantly may not have been observed to a great magnitude by instructors. If task conflict, via the benefits of the information exchange process, enhance group outcome quality without the psychological discomfort of being in contention, it may be beneficial. With consideration to appraisal sources, this may help explain why task conflict was positively related to instructor assessments and not to student assessments; students experienced the discomfort of task conflict, instructors did not. In contrast to task conflict, information exchange may have been less readily observable by instructors, as the intricacies of group deliberation would likely not have been monitored, and would likely not involve instructor intervention. Given these fundamental properties, instructors may have been susceptible to observing a general lack of task conflict, and would also not have fully viewed the information exchange process. These factors may help in explaining some of the discrepancies between instructor-provided associations in comparison to those provided by students with respect to information exchange and task conflict.

Of additional interest, in no instance did task conflict share a negative curvilinear association with a given performance effectiveness outcome. This contradicts previous lines of research in which task conflict at moderate amounts coincided with optimal outcomes, including innovation (De Dreu, 2006), creativity (Farh et al., 2010), and performance (Jehn, 1992, 1995; Porter & Lilly, 1996; Wall et al., 1987). Collectively, these findings cast reservation on whether task conflict is particularly beneficial, or instead, and perhaps more conceivably, an erratic byproduct of the information exchange process. The current findings suggest task conflict to be negatively received by group members and further suggest that task conflict shares, at best, an equivocal association with performance measures from sources other than group members. Even when focused on task-related issues, members perceived conflict to be detrimental to satisfaction with the group, timeliness of work completion, satisfaction with output, and estimates of output quality. To reiterate, it may be most accurate to purport that conflict, to be at all advantageous, is constructively limited to instances where creativity, innovation, and group decision making effectiveness can be improved by offering and deliberating over diverse perspectives, and even then remains at great risk for members disdain. It appears well advised to advocate comprehensive information exchange in such contexts, including openly sharing knowledge and unique ideas, carefully considering different perspectives, and synthesizing across resultant information.

Relationship Conflict, Task Conflict, and Trust as a Moderator

The findings of this study further support earlier empirical associations

between relationship conflict and task conflict. In the current study, relationship and task conflict were positively associated to a moderate magnitude (i.e., $r = .62$, $p < .001$), which is in line with previous meta-analysis results (i.e., $k = 24$, $\rho = .54$; De Dreu & Weingart, 2003). As can be seen across every study examined by De Dreu and Weingart (2003) in their meta-analysis, there is a strong tendency for relationship and task conflict to coincide. While causal precedent cannot be established with correlational data, it appears quite convincing that conflict of one type is likely to manifest in other forms. The findings of this study corroborate this notion.

In examining more closely the association between relationship and task conflict, trust was examined as a moderator. Trust was hypothesized to moderate the strength of the relationship and task conflict association such that in conditions of low intragroup trust, task conflict was predicted to have a stronger (positive) association with relationship conflict, whereas in conditions of high intragroup trust, task conflict was expected to have a weaker association with relationship conflict. Previous research by Simons and Peterson (2000) indeed found trust to moderate the association between task and relationship conflict, as proposed. However, their analyses were performed by combining the two-dimension conceptualization of trust (Costigan et al., 2006; McAllister, 1995), namely affective- and cognition-based trust, into one general trust dimension. In the current study, these two aforementioned dimensions of trust were tested independently with respect to their properties as a moderator of the association between relationship and task conflict. Results support cognition-based trust as a

moderator of the association between relationship and task conflict, as predicted. Contrary to expectations, however, affective-based trust did not moderate the relationship and task conflict association.

These results suggest that individuals are more accepting of task-related discrepancy when they believe that parties in disagreement are functionally competent. In cases of strong cognition-based trust, relationship conflict is less likely to coincide. This reinforces the idea that that task expertise is valued among group members, serving well the original purpose of leveraging diverse viewpoints; information diversity can be valuable to the extent differences are resolved between functional experts. Ilgen et al. (2005) highlight the importance of trust, suggesting that member competencies can lead to team efficacy and potency, or specific and general team confidences, respectively. Various studies have found both types of confidences to be predictive of a number of group performance behaviors (Campion, Papper, & Medsker, 1996; Hecht, Allen, Klammer, & Kelly, 2002; Little & Madigan, 1997). Collectively these findings reinforce the benefits of staffing teams with talented and competent individuals as well as fostering a shared awareness of member functional knowledge or expertise, often dubbed *shared mental models* (Mathieu et al., 2000). In their study of team mental models, Mathieu et al. (2000) distinguish between task and team mental models and highlight that sharedness relates to team performance outcomes, albeit mediated by the quality of team processes. In summary, trust of the group's functional expertise is a valuable commodity in preventing relationship conflict from transpiring amidst task-related disagreement. Members

appear to be more accepting of work disagreement when cognition-based trust is present.

Whereas cognition-based trust was found to be a moderator of the association between relationship and task conflict, affective-based trust did not act to moderate this association. To explain this I call to attention the bivariate associations found between conflict types and dimensions of trust. Results indicate a stronger negative association between task conflict and cognition-based trust ($r = –.20$, $p < .05$) than between task conflict and affective-based trust ($r = –.12$, $p = .17$). This makes intuitive sense based on the emphasis of work issues and work competencies that dually concern task conflict and cognition-based trust. In lieu of this, the associations between dimensions of trust and relationship conflict were not as straight forward. Results indicate a stronger negative association between relationship conflict and cognition-based trust ($r = –.47$, $p < .001$) than between relationship conflict and affective-based trust ($r = –.26$, $p < .01$). This is initially perplexing given that relationship conflict and affective-based trust both entail a greater interpersonal than work-related focus, which, in theory, would appear to be more closely related.

However, in understanding these findings I call to attention the time frame by which teams in the current study operated. Affective-based trust, or feelings of emotional endearment and sustained concern for others' wellbeing, develops over time (Costigan et al., 1998; Lewis & Weigert, 1985; McAllister, 1995). Given the short duration of projects (i.e., 11 weeks maximum, or as brief as 4 or 5 weeks in some cases) and a reduced amount of contact in some cases (e.g., classes meeting

only once per week), there may have been limitations regarding the amount of affective-based trust able to manifest over said short periods of time. As seen in the descriptive statistics presented in Table 6, affective-based trust levels (M = 3.53, SD = 0.52) were, on average, below those of cognition-based trust (M = 3.83, SD = 0.46). Because relationship conflict levels were low on average and because affective-based trust is thought to develop gradually, the strength of association between these variables may have been reduced by virtue of a restriction of range. This could also effectively reduce the extent to which affective-based trust moderates the association between task and relationship conflict. Perhaps these associations would appear quantitatively dissimilar among teams having sustained longevity in comparison to those of ephemeral durations. De Dreu and Gelfand (2008) uphold the importance of considering time elements when studying conflict, expressing that "although studies of time and conflict… are relatively rare, they clearly illustrate that time is of the essence in the study of conflict" (p. 37). Further research explicitly gauging team longevity would be needed to test such speculations.

Trust and Collaborative Conflict Management

Generally speaking, results indicate that collaborative conflict management is significantly predictive of intragroup trust. Attending to the nature of this association, and with respect to the I-M-O-I framework (Ilgen et al., 2005), it is ostensible that trust and conflict management share a cyclical association. That is, trust engenders collaborative forms of conflict management, and likewise,

that collaborative conflict management furthers the development of intragroup trust.

In the analyses of this study, overarching constructs of trust and conflict management were separated into specific factors, and subsequently examined in tandem. For cognition-based trust, both active and agreeable conflict management remained significantly positively predictive thereof. These findings imply that trust in team member competencies facilitates constructive group problem solving, including confronting and deliberating over disagreement as well as doing so in a tactful and respectable manner. It seems that with greater cognition-based trust, members are better assured that disagreements can be confronted and resolved, with logic prevailing. Frustration is also likely to be minimized to the extent members trust that their arguments will be acknowledged, comprehended, and taken into consideration. Also, relating to the role of cognition-based trust is the classic leadership framework proposed by French and Raven (1960). Their taxonomy highlights that *expert power* results from subject matter expertise, and tends to lead to deferment to those perceived as having expert judgment. This suggests that members tend to be more compliant and less resistant when others, with whom disagreement is present, are perceived as experts.

Likewise, these findings may also indicate that intellectual superiority coincides with successful conflict resolution strategies. Active and tactful conflict resolution behavior may be manifestations of what some researchers believe to be *emotional intelligence*, representing "the ability to read and understand others in social contexts, to detect the nuances of emotional reactions, and to utilize such

knowledge to influence others through emotional regulation and control" (Prati, Douglas, Ferris, Ammeter, & Buckley, 2003, p. 21). These authors underscore emotional intelligence as a critically important competency for team performance, describing effective teams as "communicative, cohesive, innovative, and grounded with individual member support" (p. 22). Intuitively, individuals with higher levels of emotional intelligence would be likely to pursue constructive approaches to conflict management and would also be likely to work toward resolving disagreement in order to successfully complete team objectives. Active and agreeable approaches to resolving team disagreement appear to reinforce one's problem solving expertise and call attention to being a logical and considerate teammate. Such behaviors could effectively instill and reinforce cognition-based intragroup trust.

For affective-based trust, when examined concomitantly, active conflict management remained significantly positively predictive thereof whereas agreeable conflict management did not. Given the bivariate correlation between agreeable conflict management and affective-based trust (i.e., $r = .36$, $p < .001$), it appears that there is some amount of common variance shared between active and agreeable conflict management. These findings allow for several inferences, including the presence of a bidirectional association between active conflict management and affective-based trust. First, active conflict resolution tactics appear to further engender affective-based trust. Members, perceiving the value of intragroup consensus, appear to appreciate discrepancy resolution actions, such as searching for compromise. Members are likely at greater ease from the

discomforts of conflict when attempts for resolution are taken, including considering opposing arguments and seeking mutually acceptable solutions. Conversely, refusing to negotiate is a tactic likely to spawn affective discord within the group and may leave the group at impasse.

While conflict management behaviors appear to influence intragroup trust, the reverse is also likely, that is, trust impacting conflict management behaviors. With greater trust of the intentions of fellow group members, individuals appear to be more active in resolving disagreements. The presence of psychological safety (Edmondson, 1999) allows members to voice disagreement and pursue deliberation with less reservation, as the fear of reprisal is mitigated. Hence, members can be more comfortable and confident bringing up controversial issues because they do not fear repercussions will follow for differing. Intragroup psychological safety therefore allows for an open forum to entertain constructive criticism and debate, whereby members can express opinions with greater earnest. With affective-based trust present, members can be better assured that even in the face of disagreement positive interpersonal relationships can be maintained, and thus members can be more active in confronting and resolving differences.

As mentioned, counter to expectations, agreeable conflict management was not significantly predictive of affective-based trust when regressed together with active conflict management. In attempting to understand these results, it is important to consider factors that could potentially nullify the association between agreeable conflict management responses and affective-based trust. One explanation stems from a measurement concern discovered during the data

collection process. In a handful of paper and pencil questionnaires, team members supplemented conflict management items with written text in the margin indicating that sometimes rudeness, harsh language, or condescending remarks were used "only jokingly" or "for fun." In such cases it is clear that members recognized a set of typically unfavorable conflict management behaviors; group members acknowledged that said behaviors, while present in their group, were not interpreted negatively. From a measurement perspective this is considered contamination due to the measure capturing something other than what is intended, as it is apparent such behaviors were not indicative of disagreeable conflict management, the construct of interest. It is likely that participants taking online administrations also shared similar sentiments but were unable to voice their concerns due to limitations imposed by the medium of data collection.

With respect to the paradigm of the conflict escalating spiral (see Kennedy & Pronin, 2008), it may be insufficient to assume it possible to differentiate successful versus unsuccessful conflict management by simply examining a set of isolated behaviors. Given the dynamic nature of trust, it may be incomplete to assume isolated behaviors alone act to induce/reduce trust; this approach effectively neglects how behaviors are *interpreted*, which is at the core of intragroup conflict and trust, and a most crucial component (Bergman, 2007). Marital conflict literature corroborates this sentiment, highlighting the instrumentality of the attribution process in determining whether a set of potential conflict-inducing behaviors will lead to constructive or destructive outcomes (Fincham & Beach, 1999; Karney & Bradbury, 2000). With high levels of trust

present, behaviors such as the use of abrasive language, emotional outbursts, or even deprecating sarcasm, can be interpreted facetiously, and may even be welcomed, if thought to be communicated with humorous rather than malicious intent. In cases where uncouth jovial reactions are well received by fellow members, such behaviors would not be to the detriment of group functioning and may instead serve as a humorous coping mechanism for the group when faced with trepidation (du Pré, 1998; van Wormer & Boes, 1997). In hindsight, the conflict management measure of the current study may be deficient by exclusively focusing on behaviors while omitting elements of member interpretation. Future research could use revised conflict management items to better incorporate perceptual components, including gauges of intentionality or attributions related to conflict management behaviors. For example, a revised item might read, "During task disagreement, members may use rudeness, harsh language, or condescending remarks *in a manner that is hurtful (i.e., excluding jokes*)."

A final explanation is offered in explaining why agreeable conflict management did not significantly predict affective-based trust after being combined with active conflict management. Early in the group lifespan, members may tend to act disproportionately agreeably with one another, which Jehn and Mannix (2001) describe as group politeness norms. Initial group interactions often consist of unfamiliar individuals in formation stages of trust development. In the event that agreeable conflict management is the norm during early group interactions, groups may experience limits in disagreeable behavior until feelings

of novelty subside. Thus, early group interactions may contain restricted levels of disagreeable conflict management behaviors, which may help to explain why affective-based trust tends to develop gradually over time (Weingart & Jehn, 2000), wherein members become better acquainted with the forthright personas of fellow members. Pertaining to the data of the current study, this could present a ceiling effect on disagreeable conflict management behaviors, as groups existed only a short time. The distribution of agreeable conflict management scores seems to confirm this notion, displaying a mean near the high end of the (5-point) scale ($M = 4.34$, $SD = 0.39$) with negative skew (skewness = –.74).

Relationship Conflict and Collaborative Conflict Management

As individual predictors of reduced relationship conflict, agreeable ($r = –.64$, $p < .001$) and active ($r = –.45$, $p < .001$) dimensions of collaborative conflict management were as expected. When combined into one regression model, the overall model remained significantly predictive of relationship conflict, although active conflict management became no longer significant as a predictor. This suggests there to be shared variance between active and agreeable conflict management, and while both are important in reducing relationship conflict, the latter appears to be particularly salient. Tjosvold (1985) stresses the importance of skillful conflict management in maintaining team productivity. Amidst work disagreement, members that are tactful and pleasant assuage interpersonal discomfort that could otherwise transpire into relationship conflict. Maintaining respect for others and their views, even when disagreeing, can prevent ill feelings from developing. Thus, negotiating in good faith and with respect for the other

party is highly recommended should members arrive at disagreement. Contemptuous conflict management, on the other hand, is likely to foster further animosity and dissent.

In examining the association between conflict management and relationship conflict it is important to consider bidirectional effects. Specifically, the impact of relationship quality on conflict management behaviors is of interest. According to Kennedy and Pronin (2008), and consistent with the I-M-O-I framework (Ilgen et al., 2005), bias-perception conflict spirals exist, whereby poor interpersonal relations can further facilitate detrimental conflict management behaviors. Given the nature of the correlational design utilized in the current study, it is equally likely to deduce support for both directions of association. Qualitative data collection approaches or laboratory manipulations are recommended to further explore the intertwinement of relationship conflict and conflict management in order to establish a better understanding of how this cycle operates, including probing for the genesis period of relationship conflict.

These findings support agreeable conflict management's role in preventing relationship conflict from transpiring, and likewise, that groups experiencing low relationship conflict tend to exhibit more tactful conflict management behaviors. In addition to agreeable conflict management, the bidirectional role of active conflict management with respect to relationship conflict is also notable. Empirically, in the current study active conflict management appears superior to passive conflict management with regard to preventing relationship conflict. Additionally, groups reporting low scores on *both* active and agreeable conflict

management behaviors reported the highest levels of relationship conflict. I interpret these results as follows: groups experiencing relationship conflict may be those that managed conflict poorly in previous episodes, such as with contemptuous undertones, fits of annoyance, or expressions of anger. Such behaviors could effectively lead to an aversion toward future conflict episodes, resulting in less active conflict management behaviors. The implications of this may be the development of a climate of avoidance, or inactivity, in the presence of controversy or disagreement. This can be harmful to the extent group members withhold criticism of flawed propositions or become inert in their expression of controversial, yet potentially valuable, ideas. In summary, agreeable and active conflict management behaviors *in conjunction* were associated with the lowest levels of relationship conflict, and hence are strongly advocated in the presence of disagreement, and likewise appear to help prevent future group disharmony. These findings fully support Weingart and Jehn (2000), who advocate for collaborative conflict management amidst work-related disagreement.

Collaborative Conflict Management and Performance Outcomes

Several performance effectiveness outcomes were examined in relation to the predictive properties of collaborative conflict management factors of active and agreeable. Outcomes were provided by multiple sources, including instructors (i.e., estimated and assigned project grade) and group members (i.e., satisfaction with group, timeliness/speed of work, satisfaction with outcome, creativity/ innovation, group viability, estimated outcome quality compared to other groups,

and estimated project grade). I turn to a discussion of instructor-provided outcomes first, followed by student-provided outcomes.

Instructor-provided outcomes were not aligned with predictions regarding collaborative conflict management. Instructor estimated project grade was not predicted by active conflict management. This is surprising, as activeness entails effort toward conflict resolution, whereby members attempt compromise and seek optimally acceptable work solutions. Intuitively, groups that are more active in resolving conflict could be expected to perform better to the extent optimal decision-making is reached via reasoning and deliberating through disagreement. Agreeable conflict management, also predicted to be beneficial, was not significantly related to instructor estimated grade either.

The association between instructor estimated grade and agreeable conflict management was not significant, contrary to what was expected. Effective group performance may be attained regardless of group norms of politeness or respect in some cases, as this data suggests. However, this conclusion neglects affective reactions to disagreeable group behaviors. Returning to an earlier point, it may be that conflict management items did not always clearly distinguish between successful and unsuccessful conflict management by including only behaviors, wherein interpretations of behaviors were omitted. Additionally, I speculate that although nonsignificant, the negative direction of association between agreeable conflict management and instructor estimated project grade may indicate traces of groupthink. Concerned with maintaining internal harmony, members may become overly polite and agreeable, rendering themselves less obstinate should

substantive conflict exist. Should criticality of flawed ideas become suppressed in some cases, agreeableness norms may ultimately lead to reduced levels of performance effectiveness. Given the measurement challenges of the current conflict management data, future research would be needed to further test these notions and to distinguish sound statistical conclusions from artifact.

In addition to instructor estimated project grade, (squared) instructor assigned project grade was analyzed with respect to conflict management as a predictor. Neither active nor agreeable conflict management was significantly predictive of assigned grade. Despite this, statistical relationships aligned with those of the instructor estimated grade-conflict management association, with directions and magnitudes being comparable. To reiterate, compared to assigned grade, instructor estimated grade was deemed a more candid and accurate reflection of student outcome quality. As result, instructor estimated project grade receives the majority of discussion focus.

Student-provided outcomes suggest collaborative conflict management to be associated with a host of positive performance effectiveness factors, including satisfaction with group, timeliness/speed of work, satisfaction with outcome, creativity/innovation, group viability, estimated outcome quality compared to other groups, and estimated project grade. For each student-provided effectiveness outcome, factors of collaborative conflict management (i.e., active and agreeable) were examined concurrently in a multiple regression model. Student-provided performance outcomes were significantly predicted by collaborative conflict management in all omnibus models. In all bivariate

correlations, associations between individual factors of active and agreeable conflict management were significantly positively related to student-provided performance outcomes. The same was not the case in the majority of multiple regression analyses; when combined with activeness, agreeable conflict management was no longer significant or, at best, marginally significant as a predictor of performance effectiveness.

Before discussing performance effectiveness outcomes in relation to conflict management, it is helpful to note the purpose behind examining these multiple associations. Bell et al. (2011) describe how it is unrealistic to expect *diversity* to exert uniformly "good" or "bad" effects across a number of performance effectiveness outcomes; I extend this logic to predictors *informational diversity*, *information exchange*, *conflict*-types, and *conflict management*. As result, a concerted effort was taken to identify several unique performance effectiveness outcomes, with an understanding that it may be unrealistic to expect all outcomes to be unvaryingly related to predictor variables. Due to the complex interdependent nature of teams, both taskwork and teamwork outcomes were considered in assessing overall effectiveness levels, as these dimensions have historically comprised what we understand to be team processes (McIntyre & Salas, 1995). To illustrate, whereas satisfaction and viability can encompass elements of both productivity and affectivity, timeliness/speed of work and estimated project grade are exclusively production oriented, each of which representing unique criterion variance.

The majority of student-provided performance effectiveness items were, to some extent, empirically distinguishable with regard to their bivariate associations with one another, as well as by the magnitude for which conflict management was a predictor. However, some outcomes were closely related (e.g., group viability and satisfaction with group; $r = .79$, $p < .001$), and subsequently exhibited similar magnitudes with conflict management as a predictor thereof. These findings have several potential implications. For one, this could imply collaborative conflict management to be generally beneficial to a host of outcomes, including both affective and production-based measures. This could imply also that outcome variables sharing similar bivariate associations, as well as similar predictive associations with conflict management, represent redundancy of actual criteria. However, given that all students-provided assessments were provided of the same source, common method variance is a potential limitation to either conclusion, and will be discussed further in the section devoted to study limitations.

Students provided an assessment of satisfaction with group, which was examined with respect to conflict management serving as a predictor. While there was a significant bivariate association between satisfaction with group and agreeable conflict management ($r = .45$, $p < .001$), agreeable conflict management was rendered marginally significant after activeness was added to the multiple regression model. This indicates the presence of shared variance between agreeable and active conflict management. Baring measurement issues related to agreeable conflict management (as discussed earlier), it seems activeness is the more influential conflict management component with respect to affective group

outcomes. Members appeared dissatisfied to the extent their group lacked attempts at compromising or the seeking of mutually acceptable solutions. This implies that members greatly value actions taken toward resolution and appreciate the merits of compromise and consensus attempts.

The value of active conflict management was reiterated when examining conflict management as a predictor of future group viability. Associations between future group viability and conflict management were virtually identical in strength and magnitude to associations between satisfaction with group and conflict management, described above. This is not completely unexpected, as the bivariate association between satisfaction and group viability was strong and positive ($r = .79$, $p < .001$). In examining these findings it is evident that both satisfaction and viability outcomes contain some degree of overlap with respect to affective and production-based components, albeit dealing with differences in the timeframe of reference, respectively, past and future. Consequently, while sharing a significant bivariate association between viability and agreeable conflict management ($r = .43$, $p < .001$), agreeable conflict management was rendered marginally significant after activeness was added to the multiple regression model. It is highly conceivable that after experiencing a given level of satisfaction with one's group, one might predict subsequent interactions to proceed in similar vein. Members appear to value collaborative conflict management approaches in assessing their preference to continue working with their group into the future, with a particular emphasis on the activeness component.

Timeliness/speed of work was examined next with respect to conflict management behaviors. Active conflict management was significant as a bivariate predictor of timeliness/speed of work ($r = .48$, $p < .001$) and also when combined with agreeable conflict management in multiple regression. Active conflict management entails considering opposing viewpoints, less resistance to compromise, and resultantly incurring fewer instances of impasse. Active conflict management prompts resolution of disagreement, ultimately facilitating forward progress toward the completion of group objectives through accepted means. Actionable steps toward conflict resolution ensure uncertainty is confronted and that goal pursuit is continued. Collectively, such qualities would appear to assist in timely and expedited group task completion, a finding corroborated by student reports in the current data. In contrast, intransigent conflict management behaviors facilitate impasse and lingering disagreement, resulting in reported delays in group task completion.

While agreeable conflict management was a significant predictor of timeliness/speed of work as a bivariate predictor ($r = .33$, $p < .001$), it was no longer significant when combined in a multiple regression equation with active conflict management. These findings highlight the shared variance of both conflict management dimensions in explaining timeliness/speed of work; agreeable conflict management appears related to both activeness and also timeliness/speed of work. It could be that members who resolve conflict timely and actively have a greater tendency to do by means of being tactful and respectful. The tendency to resolve conflict both actively and agreeably may

originate with the dimension of emotional intelligence (Prati et al., 2003). It would seem increasingly difficult to resolve conflict to the extent group members are rude or insensitive, which may lead to bickering, obstinacy, or avoidant preferences, which could lead to delays in work completion. Agreeable conflict management appears to promote expedited solutions to the extent members can focus on resolving work discrepancies without distractions arising from interpersonal conflicts.

Collaborative conflict management was predictive of members' outcome satisfaction. Both variables of active and agreeable conflict management were significant in their bivariate associations with satisfaction with outcome ($r = .55$, $p < .001$, and $r = .48$, $p < .001$, respectively), as well as when combined in multiple regression. It appears that both factors of conflict management are influential, in a unique manner, toward members' outcomes satisfaction. Presumably, this indicates active and agreeable conflict management are satisfying for unique reasons. Members appreciate when quality solutions have been reached and discrepancies have been resolved, while also appreciating conflict resolution approaches that are tactful and non-argumentative. This corroborates that collaborative management appears beneficial to members' perception of their group's outcome. It is also important to note that members' outcome satisfaction was predictive of instructor outcome quality estimates ($r = .33$, $p < .001$), indicating there to alignment between performance effectiveness outcomes across sources.

For the outcome creativity/innovation, agreeable conflict management was a significant bivariate predictor thereof ($r = .32$, $p < .001$) but was not when combined in a multiple regression equation with active conflict management. Active conflict management appears to be the dominant factor responsible for innovation and creativity of group outcomes. Activeness in resolving issues can help members work through differences, addressing gaps in solutions that can ultimately lead to better quality outcomes, including those that are more creative and innovative. These findings are aligned with two other measures of performance effectiveness, namely estimated outcome quality compared to other groups and student estimated project grade. The commonality of these outcomes is that agreeable conflict management is rendered nonsignificant as a predictor when combined in multiple regression with active conflict management. For estimated project grade, agreeable conflict management ($\beta = 0.19$, $t = 1.97$, $p = .05$) was a marginally significant predictor when combined in multiple regression with active conflict management. While agreeable conflict management is related to these measures of performance, active conflict management may be the primary driving force behind taskwork-oriented performance benefits that are realized. Additionally, groupthink (Janis, 1971) may also offer an explanation; when members censor themselves and do not offer creative input for fear of reprisal, decision-making effectiveness may suffer.

Intragroup Conflict Levels

Conflict levels among student project groups were low on average. Group response means on variables relationship, task, and process conflict were all well

below theoretical scale midpoints. Additionally, only five groups attained a task conflict mean at or above *a moderate amount* (i.e., 3.0 out of a possible 5.0), one group attained a mean above *a moderate amount* for process conflict, and no group achieved a score beyond *a moderate amount* on relationship conflict. Despite its low frequency, however, conflict episodes do appear to be present to some extent among groups, with conflict over work-related issues being the most prevalent source of disagreement. Such low conflict scores are not surprising given the temporary and relatively short duration of student project groups (i.e., 11 weeks or less), which may be brief in comparison to the longevity of other work groups. Jehn and Mannix (2001) summarize that early group interactions of high performing groups are often characterized by politeness norms, or conditions of low relationship conflict, allowing members to acquaint and better familiarize themselves (Jehn, 1995; Shah & Jehn, 1993). Also, although these factors were not measured, students may have been able to self-select into groups in some cases or may have had prior familiarity with group members before the onset of the project. Conflict levels may generally be higher among group members engaged in projects of a long-term nature and among those that were not self-selected, as conflicts tends to develops over time (Pondy, 1967) and among people with aversions (Jehn, 1997).

Significance of Contributions to Literature

Conflict is, as some describe, inevitable and highly prevalent across various workplace and life settings (e.g., Hayes, 2008; Pondy, 1967; Thomas & Schmidt, 1976). Despite this, the current dissertation and other studies (e.g., Jehn,

1995; Jehn & Mannix, 2001, Lukasik, 2009) have shown high conflict levels (of relationship- and task-nature) to be the exception rather than the norm for many teams. Yet conflict remains an oft studied topic, particularly within the context of work groups, due to the gravity of ramifications conflict may exert on both individual- and group-level outcomes. In attending to these byproducts, this dissertation emphasizes the encompassing conflict dynamic, and in doing so elucidates the cyclical nature of inputs, mediators, and outputs surrounding conflict. The conflict dynamic illustrated in this study incorporates informational diversity, substantive (or actual state of) conflict, the information exchange process, perceptions of task and relationship conflict, the emergence of trust, and conflict management behaviors in relation to group effectiveness outcomes.

The results of the present study show that although task conflict can be *positively* related to some performance effectiveness outcomes (e.g., student estimated project grade [$r = .26$, $p < .01$], and although not at the level of $p < .05$, instructor assigned project grade [$r = .11$, $p = .22$] and instructor estimated project grade [$r = .12$, $p = .19$]), with most other outcomes the association was *negative*. This reinforces the importance of not solely promoting conflict for the sake of conflict, which Rahim (2000) describes as ill advised, but rather allowing some room for work-related disagreement to take place and be resolved should it transpire from the information exchange process. The assumption that *conflict is beneficial* can be revised into the notion that *conflict can exist amidst benefits* to the extent diverse perspectives are confronted and flawed logic is overcome via

the process of information exchange, for tasks which involve creativity, innovation, or group decision making effectiveness.

This study uses several performance effectiveness criteria instead of just one, as the concept of team performance is thought to be multidimensional (Guion, 1961; Wall & Callister, 1995). Several performance effectiveness measures were obtained that specifically relate to group project work, including data provided from multiple sources (i.e., instructors and students). In examining performance effectiveness outcomes, notable differences emerged with respect to predictors, highlighting the importance of utilizing several unique measures. These data suggest it implausible to expect input and process predictor variables to relate uniformly across all team effectiveness gauges given the multidimensional nature of performance effectiveness criteria (e.g., timeliness/ speed of work, creativity/innovation, and satisfaction).

Limitations

This study should be considered with respect to several limitations. All data were obtained from student project teams, which in some respects may not generalize to work teams in organizations. Participants, being mostly young adults, represent a cohort younger than the general workforce. Regarding team longevity, the maximum duration of team projects was 11 weeks given that course projects were conducted during an academic quarter. In organizational settings teams may exist for considerably longer, although it would not be uncommon for ad hoc teams to last only a short duration and disband after completing project objectives. Given that several emergent state variables were collected (e.g., trust

and conflict), it would be interesting to see how the interrelations of study variables evolve over time, assessing the extent to which associations are stable or dynamic and pinpointing timings of emergence.

Empirical testing of the proposed conflict model relied heavily on data provided by work group members, whereby members provided responses to a number of behavioral and perceptual measures. Because in many instances raters jointly provided ratings for predictors and outcomes alike, the observed associations may be at least partially due to common method variance. Common method variance refers to a similar response pattern on measures that are in some way related, where the variance is due not to differences in the construct of interest but rather to the data collection method (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Thus, for bivariate conclusions derived from student-provided measures, the possibility of common method variance exists. It should be acknowledged, however, that perceptions (e.g., satisfaction, conflict, trust) are exclusive to the group and are not easily gauged by other sources, necessitating that raters be the members themselves. Attempts were made to circumvent common method variance with respect to association between student-provided perceptual or behavioral variables and performance effectiveness. Student-provided performance effectiveness measures were supplemented by utilizing instructors as an additional source (i.e., estimated and actual project grade), which provided an external assessment of outcome quality.

Instructor-provided outcomes are not without limitations as performance effectiveness criteria. Grading schemes and rubrics were unique to participating

courses due to the wide assortment of projects, rendering evaluation criteria dissimilar across courses. Given the current model's emphasis on outcomes relating to innovation, creativity, and decision-making effectiveness, inclusion criteria were used to ensure projects aligned with study objectives prior to participation. The extent to which assigned grade accurately differentiated performance levels also varied from instructor to instructor, with grading tending to be inflated or deflated depending on instructor, demonstrating hierarchical dependence. This was accounted for by modeling instructor as a higher order predictor via multilevel modeling.

Further variability was introduced by several additional factors, one of which being variation in grade assignment policy. Whereas some instructors assigned one project grade to all team members, others assigned grades on an individual-by-individual basis. Anticipating these factors, instructors were asked to gauge the extent individual grades could be influenced by other group members, whereby scores were aggregated to the team level provided there was justification. Given the voluntary nature of this project, student project team data were incomplete due to lack of full participation (e.g., project performance, educational major). It is likely that students who decided to participate had different qualities than students who chose not to participate, including personality traits as well as project experiences. I suspect that students who fared poorly on the project were less inclined to voluntarily release identifying information, including grade and name, and hence were less likely to participate compared to students who performed well. This is an inherent limitation given the

nature of participation being voluntary and the necessity of linking project grades to names and groups at later points in time. The researcher did, however, assure privacy and confidentiality of all information during study recruitment, and in many cases instructors offered extra credit as incentive, which may have abated this limitation. Lastly, because assigned project grade can be influenced by a host of factors other than elements of group decision-making (e.g., ability, oral presentation quality, lateness of submission, grading rubric requirements, instructor leniency/severity), estimated outcome quality (using behavioral anchors) was collected to serve as a more candid assessment, having no administrative repercussions to student grades. Consequently, instructor estimated project grade generally aligned more closely to hypothesized associations with student responses than instructor assigned project grade.

An obvious and important limitation of the present study is that causality cannot be established regarding the interrelation of study variables due to the study's correlational design. Temporal precedent and logic were however used to determine dependent and independent variable arrangements in the model. For example, it is logical to assume that variability in information exchange acts as a predictor of assigned project grade, and not the reverse, because project grade assignments were made at the culmination of course projects, and only after information exchange had transpired. However, in other cases time precedent determination was not so straightforward. The working conflict model of the current study is, however, in alignment with the I-M-O-I model (Ilgen et al., 2005), which underscores that complex group processes involve variables having

cyclical and bidirectional effects with one another. The current conflict model accounts for these possibilities, both empirically and in theory, and considers it likely that bidirectional effects transpire within the greater conflict dynamic. Furthermore, all hypotheses were grounded in theory and logic and based on previous empirical associations.

A limitation to the analyses of the proposed model is that substantive conflict was not measured, rendering associated propositions untested. While substantive conflict is difficult to gauge, and is relatively unobserved in settings other than the laboratory, its inclusion was warranted for theoretical and illustrative purposes. Awareness of substantive conflict, or actual differences of opinion, values, beliefs, or state of competition over resources, is thought to foster the majority of conflict episodes (Pondy, 1967). While substantive conflict is a crucial component of the conflict dynamic, its presence alone does not guarantee conflict perceptions will transpire, for example, if disagreements are unbeknownst or otherwise suppressed. In a lab setting, where substantive conflict can be manipulated, it can also be examined more closely with respect to associations it shares with the information exchange process, conflict management, and performance effectiveness outcomes.

Another limitation is that in the present study group conflict levels were relatively low, meaning caution should be used when applying these findings to groups experiencing high amounts of conflicts. The obtained low conflict levels could be due to the cooperative nature of student project teams, where *cooperative goal interdependence* is generally expected. Goal interdependence

encapsulates the extent to which team member believes that other team members' goal attainment facilitates movement toward one's own goals (Weldon & Weingart, 1993). Research highlights that *competitive goal interdependence* is linked to greater task and relationship conflict, whereas when goals are structured cooperatively conflict is less frequent (Lukasik, 2009). Thus, groups lacking cooperatively structured goals may differ with regard to the prevalence of intragroup conflict, trust levels, and conflict management strategies. Concerted efforts to study high conflict groups, including settings where goal interdependence is not cooperatively structured, are suggested as future research endeavors.

An additional limitation relating to the study's external validity may be due to the study's gender composition, being female majority. In 2009, the full-time year-round US workforce of earners was comprised of 56.1 million males (56.5%) and 43.2 million females (43.5%; U.S. Census Bureau, 2010). Whereas men outnumber women in the workforce, the gender composition of the current study was predominately female at 60.7%, with only 39.1% of the sample being male. According to Gordon (2008), gender-based stereotypes may emerge when managing conflict, which may play a role in group dynamics, including conflict resolution and affective group outcomes. Previous research highlights that men and women may have different experiences with conflict; while women tend to experience (or perceive) slightly less task conflict on average compared to males, in the presence of task conflict women have been found to display harsher reactions, including more severe performance ratings of their peers (Lukasik,

2012). These finding were to some extent corroborated by the data in the current study, where females (M = 1.83, SD = 0.78) reported marginally significantly less task conflict than males (M = 1.96, SD = 0.71), $t(477) = 1.92$, $p = .06$.

Collectively, these findings indicate that men and women may experience some differences with respect to their intragroup conflict experiences. In the current study, low task conflict was found, which may relate to the high proportion of females comprising the sample. Additionally, associations between task conflict and student-provided performance effectiveness outcomes showed slight patterns of being more strongly negative among female respondents compared to males, though these differences were not statistically significant; strength of correlation comparisons between performance outcomes and task conflict by gender can be found in Table 14, where Fisher r-to-z transformations were used to compare pairs of independent correlations. For future research, it may be beneficial to investigate whether outcomes such as satisfaction with group, satisfaction with outcome quality, group viability, estimated outcome quality, estimated project grade, and others experience gender difference with respect to correlations with task conflict. Further testing could highlight whether present discrepancies are indicative of weak effect sizes, statistical artifact, or coincidence. Consequently, group gender composition appears worthy of consideration for future conflict-related research, as there appear to be present subtle, yet potentially relevant, perceptual differences relating to gender.

Table 14

Strength of Correlation Comparisons between Performance Outcomes and Task Conflict By Gender

Performance Outcome	Gender	TC*r*	n_j	*z*-value
Satisfaction With Group	Male	–.20***	185	1.12
	Female	–.30***	290	
Timeliness/Speed of Work	Male	–.15*	186	–0.09
	Female	–.15*	290	
Satisfaction with Outcome Quality	Male	–.20**	185	1.28
	Female	–.32***	290	
Creativity/ Innovativeness	Male	–.20**	185	0.11
	Female	–.21***	290	
Group Viability	Male	–.15*	186	0.94
	Female	–.24***	289	
Estimated Outcome Quality Compared	Male	–.18**	185	0.87
	Female	–.26***	289	
Student Estimated Project Grade	Male	–.10	185	1.37
	Female	–.23***	289	
Assigned Project Grade [a]	Male	.05	188	0.48
	Female	.01	291	
Estimated Project Grade [a]	Male	.10	188	0.83
	Female	.02	291	

Note. TC*r* = correlation with task conflict.

[a] Rating provided by instructor.

*$p < .05$. **$p < .01$. ***p < .001.

Implications

This discourse contains several practical implications for both researchers and practitioners. For researchers, I advocate using precision of terminology when studying topics related to conflict, information exchange, and conflict management. For one, properly describing conflict as an emergent state, and *not* a group process variable, is of paramount importance, as this misnomer has led to qualitative and quantitative confusion throughout the literature. In light of this clarification, researchers should reconsider the role of task conflict within the group dynamic framework, and with respect to the information exchange process, expect vastly dissimilar implications for these sometimes entangled, yet distinct, constructs. Also, from a measurement standpoint, researchers may want to supplement perceptual measures of conflict with measures of the extent to which conflict has been effectively managed or resolved, as prevailing conflict measures tend to omit these relevant components. Researchers should continue to view conflict as a cyclical process, where outputs at some stages can become inputs at others, and should continue to examine the dynamic comprehensively.

For practitioners, when utilizing teams for initiatives involving creative, innovative, or effective decision-making, informational diversity can be beneficial, particularly to outcome quality evaluations. However, there are two accompanying caveats to this recommendation. First, members themselves may not always realize the performance benefits associated with informational diversity, and second, other outcomes may be adversely affected, particularly affective or interpersonal types of outcomes. In order to leverage diverse

viewpoints and utilize the contributions of different members, practitioners should promote information exchange, the interactive process by which interdependent teams are anchored. Practitioners should ensure ample time for group information exchange to take place, including information sharing, comprehensiveness of decision-making, as well as allowing a forum for debate when necessary to resolve work-related discrepancies. Information exchange is related to a host of positive performance- and affective-based outcomes, and is linked to reduced levels of relationship conflict. In spite of potential time taken away from task completion, information exchange appears to expedite rather than delay goal accomplishment, as it is needed to facilitate mission analysis, strategy formulation, goal specification, progress monitoring and coordination between members (Marks et al., 2001).

Practitioners should be made aware that despite their dissimilar foci, relationship and task conflict very often coincide. To mollify potentially unhealthy group environments, the current study highlights that trust is instrumental in moderating the association between relationship and task conflict, with cognition-based trust being particular salient in mitigating this association. Practitioners can utilize this information by calling to attention members' functional background expertise and by delegating work in alignment with member expertise areas, which should increase the likelihood of intragroup cooperative compliance (French & Raven, 1960). In addition to leader briefings (see Marks et al., 2000), Mathieu et al. (2000) suggest team-training to ensure high-quality team mental models are developed and that such models are shared

among teammates. In the event of work-related conflict, practitioners should promote and encourage collaborative conflict management, which entails actively confronting work-related disagreements while remaining tactful and respectful of differences. Collaborative conflict management appears to reinforce taskwork and teamwork competencies, enhancing team viability as well as a host of team effectiveness outcomes. The activeness dimension of collaborative conflict management is particularly salient toward performance quality and the development of both affective- and cognition-based trust. Collaborative conflict management's agreeable dimension is associated with reduced relationship conflict and cognition-based trust. Collectively, it is strongly recommended to confront disagreement proactively yet collaboratively, respectfully voicing divergent views when necessary, as these behaviors show alignment with optimized work group solutions.

Future Directions

To optimize team operations, researchers may wish to further investigate the utility of prophylactic team member selection variables in relation to conflict. The implications of these efforts could be especially useful to practitioners for staffing purposes, whereby the likelihood may be increased of members resolving conflicts skillfully and with increased tact. Teams having task conflict and low emotional intelligence climates may be more likely to encounter negative outcomes (Jordan & Troth, 2004), although few studies of this nature have been conducted in organizational settings (for exceptions see Ayoko, Callan, & Härtel, 2008; Shin & Susanto, 2010). Field studies examining the long-term effects of

team member selection variables in conjunction with conflict and performance outcomes appears to be a fruitful avenue for future research.

Recent evidence suggests that group perceptions may not be experienced to the same degree or in similar amounts within groups, with conflict being suggested as one such variable (Jehn, Rispens, & Thatcher, 2010; Lukasik, 2009). This calls into question the popular practice of aggregating perceptions to the team level in such cases. Bergman (2007) illustrates that conflict can have a large perceiver effect, whereby 33% of the variance in socio-emotional (i.e., relationship) conflict perceptions can be attributed to the reporting individual. In the current study, while conflict dimensions displayed strong variance attributable to the group level, cognition-based trust and active conflict management displayed weak evidence of being shared properties of the group. In explaining these weak variances, it may have been that some members of the group were trusted with respect to cognition-based competencies whereas others were not, thus altering group perceptions depending on which members were providing ratings (i.e., those higher or lower in cognition-based competencies). The same logic may be applied to active conflict management, as some members may have been more active than others in this regard. Future research may benefit from examining person-perceptions more closely, which may better highlight perceiver effects. An insightful and exemplary research endeavor of this type was conducted by Gregarus, Robie, Born, and Koenigs (2007), whereby they apply the framework of Kenny's (1994) social relations model toward intragroup perceptions in relation to performance ratings. Future research incorporating

person-perceptions is strongly encouraged, and is in alignment with the advice of Kenny and La Voi (1985), who warn against emphasis on only one level (i.e., group) to the exclusion of the other (i.e., individual).

In addition, it is advisable that future research examine predictor-outcome associations more closely by distinguishing between varieties of intellectual tasks that are typically encountered. Mesmer-Magnus and DeChurch (2009) highlight that intellectual tasks can vary on two dimensions, namely (a) the presence of absence of a hidden profile, and (b) the level of task demonstrability, that is, whether a task is intellective (i.e., having a correct answer available) or judgmental (i.e., consensual but having no correct answer). The combinations derived from these dimensions are thought to differ in terms of the information processing demands required for goal accomplishment. Determining which of a set of competing perspectives is superior may present teams with added cognitive demands and increasing challenges in comparison to tasks in which a correct solution exists that can be verified. I speculate intragroup conflict to be increasingly detrimental in situations requiring consent where there exists no correct answer.

Conclusion

This research endeavor revisits the unpredictability of intragroup conflict, specifically assessing *whether conflict is particularly beneficial* toward group effectiveness outcomes. Now arriving at the culmination of this project, the conclusion I have firmly deduced is, *probably not in most cases, but it may at times coexist among other group processes that tend to elicit certain benefits*.

This response is admittedly not straightforward, underscoring the volatile nature of conflict and its role in the greater intragroup dynamic. Some postulate that for task conflict to be beneficial in any sense, a narrow set of conditions is required (De Dreu, 2008). Such reasoning is accompanied by the caveat that different performance effectiveness outcomes are likely differentially related to predictors (Bell et al., 2011), in this case conflict. That is, one should not theorize task conflict as being beneficial to all outcomes, but rather that task conflict may coexist with some benefits, of slight or moderate magnitudes at best, while likely coming at the expense of others. Consequently, I refute the notion of task conflict being particularly beneficial, and instead describe it as an erratic byproduct, an emergent state, that occurs at various points throughout the group lifespan, but that is not particularly useful in and of itself. Rather than endorse task conflict as potentially beneficial, I credit information exchange (comprised of debate and decision comprehensiveness) and collaborative conflict management, both of which being behavioral group processes, as primarily responsible for the performance effectiveness benefits alleged by some as being derived from task conflict.

For some time scholars have attempted to decipher when and how task conflict can be leveraged into beneficial performance outcomes. I believe this focus to be misplaced. Conflict is a perceptual state of disagreement, and in the case of task conflict, pertains to work-related issues. Even amidst some beneficial outcome, others will be adversely affected, as most individuals are averse to conflict and do not enjoy this state (De Dreu & Weingart, 2003; Jehn &

Bendersky, 2003; Jehn & Mannix, 2001). Affective and interpersonal types of outcomes are particularly likely to suffer in the presence of task conflict, especially if there is a lack of trust, or if relationship conflict is high. It appears that for conflict to coexist with beneficial outcomes, disagreement, via information exchange, must lead to confronting poor logic or flawed ideas, and only in situations where outcomes include creativity, innovation, or decision-making effectiveness. Studying conflict in conjunction with productivity outcomes is incomplete without considering information exchange as the primary catalyst. The state of cognitive disagreement is equivocal with respect to being of any particular benefit. However, behavioral processes of debate and decision comprehensiveness, in addition to collaborative conflict management, do appear generally constructive.

These conclusions were derived from testing a theoretical model of the intragroup conflict dynamic, encompassing informational diversity, substantive conflict, information exchange, perceived task and relationship conflict, intragroup trust, conflict management and performance effectiveness outcomes. Whereas previous research efforts have isolated facets of the working model, a more holistic approach was undertaken to study the interrelations more completely. Conflict, by nature, is complex and dependent on a combination of behaviors, perceptions, and reactions, and ultimately manifests as an emergent state variable. The majority of conflict studies through present omit integral components of this dynamic, depicting only portion at a time. By looking more

closely at the entire conflict dynamic we can better understand how sequences of inputs, mediators, and outputs are intertwined.

Finally, I offer a taxonomical suggestion for future endeavors in these aforementioned realms of research. Journals and research studies bearing the *conflict* moniker have historically depicted a divergent range of foci, with the spectrum of conceptualizations being described by Mannes (2009) as inconsistent, broad, and pervasive. To avoid further convoluting, I suggest the term *conflict* not be applied haphazardly, and recommend distinguishing with greater specificity intended conceptualizations of the conflict dynamic, both in title and text. I recommend against continuing to use *conflict* as a research appellation in cases where group process behaviors (e.g., the information exchange process) are of primary interest. This study highlights that the emergent state of conflict, as it is often measured, inadequately captures underlying group process behaviors, yet remains used as both a gauge and label to represent this construct. In reaction, and for the purposes of clarity, I call for a cessation of the term *conflict* in describing behavioral processes.

CHAPTER V

SUMMARY

The current study was designed to empirically test components of the conflict dynamic within the context of groups or teams. A model was proposed in an attempt to clarify existing construct confusion and misapplication of terminologies throughout the field (e.g., task conflict) as well as to consolidate literatures (e.g., informational diversity, information exchange, task and

relationship conflict perceptions, and conflict management) and ultimately clarify several contradictory empirical conclusions regarding the equivocal nature of conflict in relation to team effectiveness outcomes. Information exchange and conflict management processes were proposed to be more directly responsible for the proposed theoretical benefits derived from task conflict (see Jehn & Bendersky, 2003) than the presence of conflict itself, which may be more accurately described as a byproduct, or emergent state, resulting from these processes. Collectively, the proposed model attends to cognitive inputs, behavioral processes, and perceptual emergent states comprising the conflict dynamic and examined how these relate to group effectiveness, particularly when effectiveness outcomes relate to innovation, creativity, or group decision-making quality.

The sample of the current study was comprised of university undergraduate and graduate student volunteers working in project teams embedded in the design of their courses. Participant data was collected electronically using a 73-item survey with a reward incentive offered. Hypotheses were tested using Pearson product-moment correlations, *t*-tests, regression analyses, and hierarchical linear modeling. Results suggest that predictors vary in utility based on team effectiveness appraisal source (e.g., relationship conflict predicted only student-provided outcomes whereas informational diversity predicted only instructor-provided outcomes). Also, in general, collaborative conflict management predicted intragroup affective- and cognition-based trust, reduced relationship conflict, and student-provided team effectiveness outcomes.

Relationship conflict was positively related to task conflict, with cognition-based trust moderating this association. A focal conclusion of this research is to highlight qualitative and quantitative dissimilarities between task conflict and information exchange; while task conflict was negatively associated with most outcomes, information exchange was generally positively associated. An in depth discussion of these findings and their implications are provided.

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Appendix A

Participant Demographic Information

Please provide the following information about yourself:

1) Your First Name: _____ (this must be provided in order to properly categorize students into their groups)

2) Your Last Name: _____ (this must be provided in order to properly categorize students into their groups)

3) Your Age (in years): _____

4) Your Gender: 1) Male 2) Female

5) Your Race:
1) American Indian or Alaska Native
2) Asian
3) Black or African American
4) Native Hawaiian or Other Pacific Islander
5) White
6) Multiracial
7) Some other race

6): Your class standing in college:
1) Freshman
2) Sophomore
3) Junior
4) Senior
5) Graduate student
6) Other

7) Your academic major: _____

8) Of what academic discipline was this course (e.g., psychology, accounting, history): _____

9) What was the course number and section number of this class? ___-___

10) Your instructor's last name: _____

11) Was this course required as part of your major?
1) Yes 2) No

12) How many members comprised your project group?
(if not sure you may approximate):

1) 1	7) 7
2) 2	8) 8
3) 3	9) 9
4) 4	10) 10
5) 5	11) more than 10
6) 6	

13) NOT including yourself, what are the names the other members of your group (first and last names)?

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

Appendix B

Elaboration of Task-Relevant Information

(Kearney & Gebert, 2009)

Based on your experiences thus far, please indicate the extent that each statement describes information exchange in your work group.

1) The members of this group complement each other by openly sharing their knowledge.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

2) The members of this group carefully consider all perspectives in an effort to generate optimal solutions.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

3) The members of this group carefully consider the unique information provided by each individual group member.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

4) As a group, we generate ideas and solutions that are much better than those we could develop as individuals.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

Appendix C

Intragroup Conflict Scale

(Jehn, Northcraft, & Neale, 1999; Pearson, Ensley, & Amason, 2002)

Based on your interactions with your work group as a whole, for each statement please indicate the description that best reflects the following forms of conflict.

1) How many disagreements over different ideas were there?

1	2	3	4	5
Almost None	A Little	A Moderate Amount	Quite A Bit	A Great Deal

2) How many differences about the content of decisions did the group have to work through?

1	2	3	4	5
Almost None	A Little	A Moderate Amount	Quite A Bit	A Great Deal

3) How many differences of opinion were there within the group?

1	2	3	4	5
Almost None	A Little	A Moderate Amount	Quite A Bit	A Great Deal

4) How much anger was there among the members of the group?

1	2	3	4	5
Almost None	A Little	A Moderate Amount	Quite A Bit	A Great Deal

5) How much personal friction was there in the group during decisions?

1	2	3	4	5
Almost None	A Little	A Moderate Amount	Quite A Bit	A Great Deal

6) How much tension was there in the group during decisions?

1	2	3	4	5
Almost None	A Little	A Moderate Amount	Quite A Bit	A Great Deal

7) How much conflict was there about delegation of tasks within your work unit?

1	2	3	4	5
Almost None	A Little	A Moderate Amount	Quite A Bit	A Great Deal

8) How often did members of your work unit disagree about who should do what?

1	2	3	4	5
Almost Never	A Little	A Moderate Amount	Quite A Bit	Very Frequently

9) How frequently did members of your work unit disagree about the way to complete a group task?

1	2	3	4	5
Almost Never	A Little	A Moderate Amount	Quite A Bit	Very Frequently

Appendix D

Trust Scale

(Costigan, Insinga, Berman, Ilter, Kranas, & Kureshow, 2006)

Based on your experiences thus far with members of your **work group**, for each statement please indicate the description that best reflects your level of trust.

1) If I share my problems with my group members, I can count on them to respond constructively and caringly.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

2) Members of my work group have a sharing relationship; we can share our ideas, feelings, and hopes.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

3) I can talk freely to other group members about difficulties I am having at work and know that they will want to listen.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

4) We would all feel a sense of loss if one of our group members was transferred and all of us could no longer work together.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

5) My group members approach their jobs with professionalism and dedication.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

6) Given my group's track record, I see no reason to doubt our competence or preparation for the job.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

7) I can rely on my group not to make my job more difficult by careless work.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

8) Most people (even those who aren't close friends) trust and respect the other members of my group.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

9) Other work associates of mine who must interact with my group consider us to be trustworthy.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

Appendix E

Conflict Management

Task conflict occurs in work groups when there are disagreements over work-related ideas or solutions to task-related problems. To what extent do each of the following statements characterize how your group has handled (or would handle) differing opinions, ideas, and beliefs over work-related issues?

1) Members are respectful of other work-related views, even ones they may not agree with.

1	2	3	4	5
Not At All	Only Slightly	Moderately	Quite A Bit	To A Great Extent

2) Members maintain a polite and tactful demeanor during task disagreements.

1	2	3	4	5
Not At All	Only Slightly	Moderately	Quite A Bit	To A Great Extent

3) During task disagreement, members may use rudeness, harsh language, or condescending remarks.

1	2	3	4	5
Not At All	Only Slightly	Moderately	Quite A Bit	To A Great Extent

4) During task disagreement, members are insensitive of the views of others.

1	2	3	4	5
Not At All	Only Slightly	Moderately	Quite A Bit	To A Great Extent

5) Members maintain an emotional 'cool' even amidst work-related disagreement.

1	2	3	4	5
Not At All	Only Slightly	Moderately	Quite A Bit	To A Great Extent

6) During group disagreement, members stick to work issues and do not engage in personal attacks.

1	2	3	4	5
Not At All	Only Slightly	Moderately	Quite A Bit	To A Great Extent

7) When task disagreement occurs, members are active in trying to reach a compromise.

1	2	3	4	5
Not At All	Only Slightly	Moderately	Quite A Bit	To A Great Extent

8) Members weigh opposing views in order to come up with mutually acceptable work solutions.

1	2	3	4	5
Not At All	Only Slightly	Moderately	Quite A Bit	To A Great Extent

9) Members try to work with other group members for a proper understanding of unresolved work-related problems.

1	2	3	4	5
Not At All	Only Slightly	Moderately	Quite A Bit	To A Great Extent

10) Members try to find middle ground or a course of action to resolve an impasse or stalemate of work issues.

1	2	3	4	5
Not At All	Only Slightly	Moderately	Quite A Bit	To A Great Extent

11) During task disagreements, members express and critique the merits of their dissimilar positions.

1	2	3	4	5
Not At All	Only Slightly	Moderately	Quite A Bit	To A Great Extent

12) Members avoid discussing work topic they do not agree upon.

1	2	3	4	5
Not At All	Only Slightly	Moderately	Quite A Bit	To A Great Extent

Appendix F

Conflict Resolution

(Jehn, 1995)

1) Disagreements about *the specific work being done* are usually resolved in my work group.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

2) *Emotional conflicts* are usually resolved in my work group.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

3) Disagreements about *who should do what* are usually resolved in my work unit.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

Appendix G

First Recruitment Email to Instructors

Marc A. Lukasik, Primary Researcher, Doctoral Candidate
mlukasi1@depaul.edu

Dear Instructor,

I am sincerely and earnestly requesting assistance from instructors having student project teams embedded in the design of their courses. As an incentive, participating instructors will be placed in a drawing to win a $50 Amazon.com gift card.

I am a doctoral student pursuing my Ph.D. in Industrial/Organizational Psychology at DePaul University. I am currently collecting data for my dissertation, a research study that examines student project teams. Due to the large sample size requirements to adequately study this phenomenon (i.e., 1 team = 1 *N*), instructor assistance is especially important in order to complete my dissertation in a timely manner.

The topic of my study is intragroup conflict, and includes factors such as group information exchange, conflict perceptions, conflict management behaviors, and how these relate to performance outcomes. In order to be included in this study, student projects must involve at least one of the following performance dimensions: creativity, innovation, and/or group decision effectiveness.

To briefly summarize the scope of involvement:

Instructors announce the study to their class (via email or in class – using a flyer/script that will be provided). Instructors report the project grades/performance of participating students and answer 8 brief questions about the project in general. As a token of gratuity, participating instructors will have a chance to win a raffle of a $50 Amazon.com gift card for gratuity.

Students can volunteer to complete an (approximately) 15-minute electronic questionnaire (on their own time – class time does NOT need to be used). Participating students will have a chance to win a raffle of a $50 Amazon.com gift card for gratuity.

I am also willing to present a brief overview of the study and guest speak on the topic of conflict in the workplace should instructors be interested in having me. Questionnaires can be administered in class if instructors so desire as part of a learning exercise.

The study protocol has been approved by the DePaul University Institutional Review Board (IRB). Please reply to this email with your questions or interest and I will gladly provide more details at that time.

Thank you,

Marc A. Lukasik, M.A.
Part-Time Graduate Instructor
Industrial/Organizational Psychology M.A. & Ph.D. Program
DePaul University
mlukasi1@depaul.edu

Appendix H

Second Recruitment Email to Instructors

Marc A. Lukasik, Primary Researcher, Doctoral Candidate
mlukasi1@depaul.edu

Hello,

Thank you for your interest. Below you will find more information about the study! In order to be included in this study, student projects must involve at least one of the following performance dimensions: creativity, innovation, or group decision effectiveness.

As an incentive, participating instructors will be placed in a drawing to win a $50 Amazon.com gift card.

In terms of participation of instructors:

Step 1) Answer a few brief questions about the nature of the course project (see attached – please complete and return at this time).

Once eligibility has been confirmed by the primary researcher,

Step 2) Instructors announce the study to class via email or in class (see attached script and flyer). Study does not require class time.

Once projects have been graded by instructor,

Step 3) Instructors will be emailed a spreadsheet to provide project grades of only those students that opted to participate.

Optional) Per instructor requests, as a guest speaker I am willing to provide an overview on the topic of conflict in the workplace. Also, questionnaires (on a voluntary basis) can be completed during class time should instructors so desire this exercise as part of a class/learning activity.

All information collected will be treated with strict confidentiality and no names or identifier will be revealed in any capacity outside of the context of this research study.

In terms of participation of students:

Students voluntarily complete a 73-item (~15 minutes) electronic questionnaire after submitting their group project. This can be done at students' own time (outside of class). The questionnaire involves topics such as group information exchange, conflict intensity, conflict management, and other attitudes.

In terms of incentives, student participants will be placed in a separate drawing to win a $50 Amazon.com gift card. Additionally, students may be provided extra credit (at the discretion of their instructor) for participating.

If you are interested, you may browse through a pilot version of the materials at the link provided below.
https://www.surveymonkey.com/s/Conflict-Teams-LUKASIK-Pilot

(the above link contains a *sample* of the study materials should you wish to preview them; responses provided will not interfere with the study in any way and will not be analyzed; I encourage you to explore these measures if you so desire)

Thank you so much for your interest and I will be more than happy to answer any questions you might have!

Marc A. Lukasik
Psychology Department – Byrne 420
2219 N. Kenmore Ave.
Chicago, IL 60614
mlukasi1@depaul.edu

The primary investigator has human subjects research certification by:
- The Collaborative Institutional Training Initiative (CITI),
- The Program for Education and Evaluation in Responsible Research Scholarship (PEERRS),
- The National Institute of Health (NIH)

Dissertation faculty sponsor: Alice Stuhlmacher, Ph.D.

Appendix I

Course Information Measure (Instructor Evaluation)

Instructions: Please indicate the following course information below.

1) In a sentence or two please describe briefly the scope of the student project, including mention of the outcome being assessed.

2) Do most groups have more than two members?

a) yes b) no

3) To what extent would you describe project grades as being a direct reflection of group creativity or innovativeness?

1	2	3	4	5	6	7
Entirely Not	To A Weak Degree	Less So Than Not	Somewhat So, Somewhat Not	More So Than Not	To A Strong Degree	Entirely So

4) To what extent would you describe project grades as being a direct reflection of group decision quality making?

1	2	3	4	5	6	7
Entirely Not	To A Weak Degree	Less So Than Not	Somewhat So, Somewhat Not	More So Than Not	To A Strong Degree	Entirely So

5) To what extent is there "one best way" to complete the group project?

1	2	3	4	5	6	7
Entirely Not	To A Weak Degree	Less So Than Not	Somewhat So, Somewhat Not	More So Than Not	To A Strong Degree	Entirely So

6) Approximately what percentage of the student's final course grade does the grade on this project comprise?

_____ %

7) To what extent is a student's grade on this project determined by or dependent upon the contribution of others in the group?

1	2	3	4	5	6	7
Entirely Not	To A Weak Degree	Less So Than Not	Somewhat So, Somewhat Not	More So Than Not	To A Strong Degree	Entirely So

8) Please provide an estimated date that I may contact you again to receive student grade information. The date should be <u>at least one week after</u> the date students will have completed their group project. This will allow for sufficient time for students to respond to surveys.

Month: _____ Day: _____ Year: _____

9) Please complete the information below.

Instructor Name: _____

Instructor Email: _____

Departmental Affiliation of this Course: _____

Course Number: _____

Section Number: _____

Appendix J

Performance Effectiveness Measure (Student Evaluation)

1) On the whole, how satisfied were you working in your group?

1	2	3	4	5	6	7
Totally Dissatisfied	Mostly Dissatisfied	Moderately Dissatisfied	Neither Satisfied Nor Dissatisfied	Moderately Satisfied	Mostly Satisfied	Totally Satisfied

2) If you had to estimate, how well would you appraise the *timeliness* at which your group worked compared to other groups? In other words, the speed at which my group worked was probably _____.

1	2	3	4	5	6	7
Worse Than Almost All	Considerably Worse Than Most	Slightly Worse Than Average	About Average	Slightly Better Than Average	Considerably Better Than Average	Better Than Almost All

3) How satisfied were you with the *outcome quality* of your work group?

1	2	3	4	5	6	7
Totally Dissatisfied	Mostly Dissatisfied	Moderately Dissatisfied	Neither Satisfied Nor Dissatisfied	Moderately Satisfied	Mostly Satisfied	Totally Satisfied

4) If you had to estimate, how well do you expect the *outcome quality* of your group's finished product would compared to that of other groups? In other words, my group's outcome quality was probably _____.

1	2	3	4	5	6	7
Worse Than Almost All	Considerably Worse Than Most	Slightly Worse Than Average	About Average	Slightly Better Than Average	Considerably Better Than Average	Better Than Almost All

5) How satisfied are you with the *quality* of work <u>you</u> did (<u>not</u> including your group members' contributions)?

1	2	3	4	5	6	7
Totally Dissatisfied	Mostly Dissatisfied	Moderately Dissatisfied	Neither Satisfied Nor Dissatisfied	Moderately Satisfied	Mostly Satisfied	Totally Satisfied

6) How satisfied are you with the *quality* of work of <u>other group members</u> (<u>not</u> including your own contributions)?

1	2	3	4	5	6	7
Totally Dissatisfied	Mostly Dissatisfied	Moderately Dissatisfied	Neither Satisfied Nor Dissatisfied	Moderately Satisfied	Mostly Satisfied	Totally Satisfied

7) How satisfied were you with the *creativity* or *innovativeness* reflected in your work group's final product?

1	2	3	4	5	6	7
Totally Dissatisfied	Mostly Dissatisfied	Moderately Dissatisfied	Neither Satisfied Nor Dissatisfied	Moderately Satisfied	Mostly Satisfied	Totally Satisfied

8) To what extent would you prefer to (or oppositely oppose) working again with this group in the future?

1	2	3	4	5	6	7
Completely Oppose	Very Much Oppose	Moderately Oppose	Neither Prefer Nor Oppose	Moderately Prefer	Very Much Prefer	Completely Prefer

9) On a scale of 1-7, to what extent would you describe your group as having variety in terms of industry, work, and/or educational backgrounds?

1	2	3	4	5	6	7
Low Variety			Moderate Variety			High Variety

10) On a scale of 1-7, to what extent would you describe your group as having variety in terms of race, age, and/or gender?

1	2	3	4	5	6	7
Low Variety			Moderate Variety			High Variety

11) If you, as an outsider, had to assign all members of your group one grade based on the quality of the finished product submitted, what letter grade would you assign?

12)	93-100%	A
11)	90-92%	A–
10)	86-89%	B+
9)	83-85%	B
8)	80-82%	B–
7)	76-79%	C+
6)	73-75%	C
5)	70-72%	C–
4)	66-69%	D+
3)	63-66%	D
2)	60-62%	D–
1)	0-59%	F

Appendix K

Student Recruitment Script

[*THE FOLLOWING RECRUITMENT SCRIPT MAY BE READ OR EMAILED TO STUDENTS*]

Class,

I would like to announce the opportunity to participate in an ongoing research study being conducted at DePaul University. The study is being conducted by a psychology Ph.D. candidate on the topic of group conflict and performance. Because we had a group project in our class he is asking for student volunteers to complete a brief survey, which is about 15 minutes long. The researcher will also need to collect your name and grade on the project. He is asking that I provide your grade to him at a later time if you agree to participate in this study.

I personally am not affiliated with the study in any way and your participation is entirely voluntary. At the end of the study you can enter for a chance to win a $50 Amazon.com gift card as a token of appreciation. Please see the flyer for more information. There is no penalty for not participating. [*For instructors using class time to conduct the study*] *Students not wishing to participate may leave at this time without penalty.*

[*Instructors reading these instructions may distribute the flyer at this time and, if they so desire, may read aloud the contents of the flyer.*]

[*OPTIONAL INSTRUCTIONS TO INSTRUCTORS WISHING TO OFFER STUDENTS EXTRA CREDIT AS INCENTIVE FOR PARTICIPATING*]

I am willing to offer extra credit to students choosing to participate in the study. If you opt to participate in this study you will receive a grade boost of +1% to your final course grade. Alternately, if you do not wish to participate an alternative extra credit assignment, also worth +1% to your final grade, is to write a 2-page reflection on a topic of interest to you covered throughout the course.

Appendix L

Student Recruitment Flyer

ATTENTION: PARTICIPANTS NEEDED!!!!

PLEASE HELP FILL OUT A QUESTIONNAIRE

Because you have taken part in a group class project, you are being asked to participate in a study conducted at DePaul University on group dynamics and performance. The study is being conducted by a psychology Ph.D. student.

The researcher is asking this of you because he is trying to learn more about the association between information exchange, conflict, and performance, particularly in the context of teams or groups.

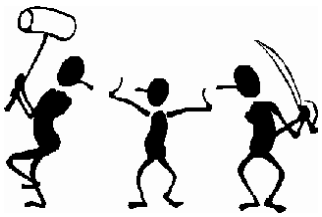
This study will take about 15 minutes of your time and is entirely voluntary. If you agree to participate in this study, you will be asked to fill out an **online survey** about your student project team/group. The survey will gather information on topics such as conflict, performance, and other general questions about your group's activities. This is an opportunity for you to reflect on your group experience and provide some evaluative feedback and also to assess other members in your group. The researcher is interested in how you perceived your group experience and believes you may find this task to be both interesting and rewarding as well. If you participate in the study, **your professor will, at a later time, provide the researcher with your project grade** in order to be matched to your individual responses.

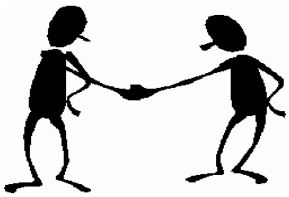
At the conclusion of the study, you will be given a chance to win a $50 Amazon.com gift card as a token of gratitude for participating.

If you are interested, all you need to do is go to this web site **after** you have submitted/completed your group project. You do not need to wait to be assigned a grade on the project. Instructions will follow here:

https://www.surveymonkey.com/s/ConflictAndTeams-Lukasik

Please complete this questionnaire within one week of submitting your project.





Appendix M

Participant Informed Consent Form

CONSENT TO PARTICIPATE IN RESEARCH

INTRAGROUP WORK CONFLICT FRAMEWORK

What is the purpose of this research?
We are asking you to be in a research study because we are trying to learn more about conflict in group settings. You are invited to participate in this study because you are student that took part in a group project that might contain elements of conflict. This study is being conducted by graduate student Ph.D. candidate, Marc A. Lukasik, at DePaul University, under the supervision of this faculty sponsor Alice Stuhlmacher.

How much time will this take?
This study will take about 15 minutes of your time.

What will I be asked to do if I agree to participate in this study?
If you agree to be in this study, you will be asked to fill out a survey about your student project team/group. The survey will involve topics such as conflict, performance, and other general questions about your group's activities. You are also asked to allow the researcher to record your eventual group project grade.

What are the risks involved in participating in this study?
Being in this study does not involve any risks other than what you would encounter in daily life. The only foreseeable risks are if survey responses and project grades, both confidential information, would by accident become lost, in which case confidential information may be revealed to an outsider. However, there are concerted efforts being taken to protect confidentiality and prevent this from happening.

What are the benefits of my participation in this study?
You will not personally benefit from being in this study. However, the indirect benefits are that after the study is completed, information will be provided to you on the topic of work group conflict. Your participation will also help benefit society by providing a more complete picture of how conflict operates within work teams.

Will I receive any kind of payment for being in this study?
You will be entered in a raffle for a chance to win a $50 Amazon.com gift card. One winning participant will be selected.

Can I decide not to participate? If so, are there other options?
Yes, you can choose not to participate. Even if you agree to be in the study now, you can change your mind later and leave the study. There will be no negative consequences if you decide not to participate or change your mind later. If class time is being used, you may leave class early and choose not to participate or withdraw from the study at any time without penalty. If your instructor is offering extra credit for participating, there will be an extra credit assignment, a 2-page writing reflection paper, of an equal extra credit value that you may choose to do instead.

How will the confidentiality of the research records be protected?
The records of this study will be kept confidential. In any report we might publish, we will not include any information that will identify you. Research records will be stored securely and only the researchers will have access to the records that identify you by name. Some people might review our records in order to make sure we are doing what we

are supposed to. For example, the DePaul University Institutional Review Board may review your information. If they look at our records, they will keep your information confidential.

As part of this study, you will be asked to provide information about some of your group's qualities and also your group's performance outcomes. The responses you provide will not be shared with anyone besides the primary researcher. Your fellow group members will not be able to view any of your responses. Also, your instructor will not be able to view any of your responses.

Whom can I contact for more information?

If you have questions about this study, please contact the primary investigator, Marc A. Lukasik (phone: 773-325-4271, email: mlukasi1@depaul.edu) and/or his faculty advisor Alice Stuhlmacher (phone: 773-325-2050, email: astuhlma@depaul.edu). If you have questions about your rights as a research subject, you may contact Susan Loess-Perez, DePaul University's Director of Research Protections at 312-362-7593 or by email at sloesspe@depaul.edu.

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have all my questions answered. (Check one:)

☐ I consent to be in this study. ☐ I **DO NOT** consent to be in this study.

Printed name: _____

Signature: _____

Date: _____

Continue

As part of this study, certain information will be collected for the purpose of identifying groups, and for matching group qualities with group outcomes. You will be asked to provide your name to the researcher in order to link your responses to your group membership. Also, your professor will provide your project grade to the researcher. The release of any grade information is protected by federal law (Family Educational Rights and Privacy Act, i.e., FERPA) and cannot be done without student permission.

In order to ensure you are fully aware and in agreement with releasing your project grade information to the researcher, click the checkbox that indicates you have read the above statement and type your Signature (First and Last Name) and DePaul Student ID in the boxes below as an indicator that you agree to the above statement and wish to proceed.

☐ **I have read the above statement and I consent to participate in this study.**
Signature (First and Last Name): _____
DePaul 7-digit Student ID: _____

[for web studies only]
I order to continue, please login to your email address, which should be the email account associated with DePaul's Campus Connect. Please complete this page and then copy and paste ALL the completed information in the boxes above and send to mlukasi1@depaul.edu. In the subject line of the email please type your name (first and last) followed by your 7-digit DePaul student ID. This is being done to verify you, the student, are authorizing grade release.

☐ **I have emailed the above information in order to participate in this study.**

You may print or save this information for your records.

Please click 'Continue' if you agree to the above statements and wish to proceed. You may opt to not continue if you wish with no penalty.

Continue

Appendix N

Raffle Contact Form

As a token of appreciation for your participation in today's study, you can enter a raffle for a chance to win a $50 Amazon.com gift card. The winner will be emailed an electronic gift card that can be applied to an Amazon.com order or to an existing account to be used later. In order to enter please submit your contact information below. The information you submit below will not be used for any purpose other than to contact you in the event you are the winner.

Name:	
Email Address:	

When you have finished entering in your information above you may click 'Continue' to proceed. If you do not wish to enter the raffle you do not need to submit your contact information and you may click 'Continue' to proceed.

Continue

Appendix O

Participant Debrief Form

Thank you for your participation in today's study! In this study you were asked to provide responses to a set of items assessing the following variables: informational diversity, information exchange, conflict perceptions, conflict management, trust, and performance quality. Responses will be studied at the group level in relation to the above variables. Today's study is part of ongoing research in the field of industrial/organizational psychology.

The purpose of this study was to investigate the complexities of the conflict dynamic. The influence of conflict on performance has been of interest to researchers for some time. Researchers distinguish between different types of conflict, including conflict that involves disagreements of a personal nature (i.e., relationship conflict) and those that involve the way tasks are completed or determined (i.e., task conflict). Relationship conflict is thought to influence performance negatively in virtually all circumstances. However, because task conflict may be a byproduct of the information exchange process, it may be associated with beneficial group outcomes, particularly in low or moderate amounts. With this in mind, some researchers propose that the manner in which conflict is managed also becomes an important determinant in whether conflict is effective or not. The current study was conducted to examine the roles of information exchange, conflict, and conflict management in relation to performance outcomes to clarify the extent (task) conflict may or may not be beneficial.

Because the study has not been completed yet, I would ask that you please not discuss the purpose of the study with other persons. This helps to assure that all participants have the same information going into the study. Participants who know about the study prior may jeopardize the results.

Your participation in today's study will potentially further the body of research in this area. Thank you for your participation; it is kindly appreciated. If you have any additional questions or concerns regarding your participation, please contact me at mlukasi1@depaul.edu or at my office phone: (773) 325-4271. You are encouraged to print a copy of this page for your records.

Marc A. Lukasik, M.A.
Ph.D. candidate, Industrial/Organizational Psychology
DePaul University

If you would like to read more about conflict and performance, I suggest the following readings:

De Dreu, K. W., & Weingart, L. R. (2003). Task versus relationship conflict, team performance, and team member satisfaction: A meta-analysis. *Journal of Applied Psychology, 88,* 741-749.

Jehn, K. (1995). A multimethod examination of the benefits and detriments of intragroup conflict. *Administrative Science Quarterly, 40,* 256-282.

Again, thank you for participating in today's study! The study is now complete.

Appendix P

Performance Effectiveness Measure (Instructor Evaluation)

Instructions: Below contains a list of only those students that have consented to participate in the project. Please list the **assigned project grade** and **estimated project grade** below for each student.

The **assigned project grade** is the actual grade that was assigned to each student on their project. For assigned grade, you may report *either* percentages or letter grade, although percentages are preferred.

The **estimated grade** is the grade you would assign to each student (or group) using the following 7-point scale:

Good Performance

7 – Among the very best quality projects submitted; met or exceeded virtually all expectations.
6 – Quality was good; met most expectations; demonstrated competence.
5 – Quality was slightly *above* acceptable; followed most procedures although missed some minor issues.
4 – Acceptable quality; followed procedures but still room for improvement.
3 – Quality was slightly *below* acceptable; addressed some issues but took shortcuts or did not fully develop ideas.
2 – Quality was poor; much room for improvement; met only a few expectations and left many requirements unfulfilled.
1 – Quality was unacceptable; not at all up to standards; unable to demonstrate much competence.

Poor Performance

Instructor Name: _____

Instructor Email: _____

Departmental Affiliation of this Course: _____

Course Number: _____

Section Number: _____

Group #	Student ID	Assigned Project Grade (Percentage or Letter)	Estimated Project Grade (1-7)
